Academic Affairs

Thursday, November 12, 2026 5:30 PM
SASD District Administration Building, 123 Linden Street, Stroudsburg, PA 18360

1.	**MEETING OPENING**	
2.	**CURRICULUM**	
2.A.	Curriculum Review	
2.A.1.	Newcomer 5	**Speaker(s):** Dr. Lepore
2.A.2.	Newcomer 6	**Speaker(s):** Dr. Lepore
2.A.3.	Newcomer 7	**Speaker(s):** Dr. Lepore
2.A.4.	AP Calculus AB	**Speaker(s):** Dr. Lepore
2.A.5.	Principles of Engineering H	**Speaker(s):** Dr. Lepore
2.B.	Odyssey of the Mind	**Speaker(s):** Dr. Lepore
2.C.	Other	
2.D.	Public Comment	
3.	**STUDENT AND COMMUNITY SUPPORT INITIATIVES (SC&I)**	
3.A.	Other	
3.B.	Public Comment	
4.	**POLICY**	
4.A.	806-AR-1 Mandated Reporting	
4.B.	2027 Board Meeting Schedule	**Speaker(s):** Dr. Curry
4.C.	Other	
4.D.	Public Comment	
5.	**PUBLIC RELATIONS**	
5.A.	Other	
5.B.	Public Comment	
6.	**ADJOURNMENT**	

1_Newcomer 5 (Curriculum In Progress)

Grade Level Summary

Course Cover Sheet

Grade Level Modules

Module 1:	My Identity & Surroundings
Module 2:	My World and Me
Module 3:	Exploring Our World
Module 4:	Daily Life & Travel

1_Newcomer 5 (Curriculum In Progress)
My Identity & Surroundings

Unit Description
Course Lessons 1–8
Grammar Lessons 1-17
Vocabulary Lessons 1-16
Lesson 1: My Friends
Lesson 2: At School
Lesson 3: Our Classroom
Lesson 4: My Things
Lesson 5: Our Favorite Animals
Lesson 6: This is My Family
Lesson 7: This is My Room
Lesson 8: Review: This is Me

Course Lessons-Theme and Focus: Personal Introductions, identity, and the immediate environment. This foundational module is designed to help newcomer students establish their identity within their new school and community. Students begin by learning essential greetings and formal and informal ways to introduce themselves and others. The lessons transition into the classroom environment, where students identify common school objects and learn to follow basic academic instructions. As the module progresses, students explore their personal things, animals, learning to describe their family members, things, colors, and finally finishing with a review of this is me.

Grammar Lessons- Focus: Mastery of present and past tense. Using simple sentences, questions and negatives.

Key Vocabulary: Lessons 1-16 of English for Everyone Junior: 5 Words a Day introduce young learners to essential, everyday vocabulary through visual, thematic units designed to build confidence. Covering fundamental topics like colors, numbers, family members, classroom objects, and basic body parts, these early lessons focus on foundational nouns and simple verbs. The structured approach reinforces 5 words per day, ensuring children grasp basic English, build vocabulary for exams, and understand simple sentence structure. Key vocabulary include: Greetings (Hello, Hi, Nice to meet you) school supplies,(pencil, notebook, book, desk), numbers (age and counting) colors, family members, actions, places in a house, animals, foods, sports, opposites, parts of the body.

Content Vocabulary: Survival English in school

Standards

CC.1.1.1.E	-	Read with accuracy and fluency to support comprehension: * Read on-level text with purpose and understanding. * Read on-level text orally with accuracy, appropriate rate, and expression on successive readings. * Use context to confirm or self-correct word recognition and understanding, rereading as necessary.
CC.1.1.2.E	-	Read with accuracy and fluency to support comprehension: * Read on-level text with purpose and understanding. * Read on-level text orally with accuracy, appropriate rate, and expression on successive readings. * Use context to confirm or self-correct word recognition and understanding, rereading as necessary.
CC.1.1.4.D	-	Know and apply grade-level phonics and word analysis skills in decoding words. * Use combined knowledge of all letter-sound correspondences, syllabication patterns, and morphology to read accurately unfamiliar multisyllabic words.
CC.1.4.1.B	-	Identify and write about one specific topic.
CC.1.1.5.D	-	Know and apply grade-level phonics and word analysis skills in decoding words. * Use combined knowledge of all letter-sound correspondences, syllabication patterns, and morphology to read accurately unfamiliar multisyllabic words.
CC.1.1.5.D	-	Know and apply grade-level phonics and word analysis skills in decoding words. * Use combined knowledge of all letter-sound correspondences, syllabication patterns, and morphology to read accurately unfamiliar multisyllabic words.
CC.1.2.4.J	-	Acquire and use accurately grade-appropriate conversational, general academic, and domain-specific words and phrases, including those that signal precise actions, emotions, or states of being and that are basic to a particular topic.

Essential Questions

- 1. How do I make a friend?
- 2. How do I count numbers?
- 3. How do I tell someone my age?
- 4. How do I identify places at school?
- 5. How do I identify actions I need to use at school?
- 6. How do I ask someone their name?
- 7. How do I name objects in my classroom and school?
- 8. How do I identify colors?
- 9. How do I answer questions that start with "what's this?"
- 10. How do I answer questions
- 11. How do I identify and name animals?
- 12. How can I talk about my favorites?
- 13. How do I identify members of my family?
- 14. How do I identiy different professions?
- 15. How do I identify places and things in my bedroom?
- 16. How do I identify and use present, past and future tenses?
- 17. How can learning new English words help me to understand and communicate with others?

Objectives

English for Everyone--Course Book
Lesson 1: My Friends
I can greet others, introduce myself, and ask and answer questions about names and ages.
Lesson 2: At School
I can name school items, follow classroom directions, and use his and her when talking about people’s names.
Lesson 3: Our Classroom
I can name classroom activities, use “Let’s” to suggest an activity, and count objects using plural nouns.
Lesson 4: My Things
I can name objects, describe their colors, and ask and answer questions about them.
Lesson 5: Our Favorite Animals
I can name animals and ask and answer questions about my favorite animal.
Lesson 6: This Is My Family
I can identify family members, introduce them using he and she, and describe their jobs.
Lesson 7: This Is My Room
I can identify things in my room and ask and answer questions about what I have and do not have.
Lesson 8: Review

I can use what I have learned to write and talk about myself, my family, my favorite things, and my possessions.

GRAMMAR LESSONS BOOK:

Lesson 1: Present Simple
I can use the present simple to talk and write about habits, routines, and facts.
Lesson 2: Present Simple Negatives
I can use “don’t” and “doesn’t” to describe things people do not do.
Lesson 3: Present Simple Questions
I can ask and answer questions about habits and routines using “do” and “does.”
Lesson 4: Present Continuous
I can use “am,” “is,” or “are” with an -ing verb to describe actions happening now.
Lesson 5: Present Continuous Negatives
I can use “am not,” “isn’t,” and “aren’t” with an -ing verb to describe actions that are not happening now.
Lesson 6: Present Continuous Questions
I can ask and answer questions about what people are doing now.
Lesson 7: Present Tenses Overview
I can choose the present simple for routines and facts and the present continuous for actions happening now.
Lesson 8: Past Simple
I can use regular and irregular past-tense verbs to describe actions that happened in the past.
Lesson 9: Past Simple Negatives
I can use “didn’t” with the base form of a verb to describe actions that did not happen.
Lesson 10: Past Simple Questions
I can use “did” with the base form of a verb to ask and answer questions about past actions.
Lesson 11: Past Continuous
I can use “was” or “were” with an -ing verb to describe actions that were happening at a particular time in the past.
Lesson 12: Past Continuous Negatives
I can use “wasn’t” and “weren’t” with an -ing verb to describe actions that were not happening at a particular time in the past.
Lesson 13: Past Continuous Questions
I can ask and answer questions about what people were doing at a particular time in the past.
Lesson 14: Present Perfect
I can use “have” or “has” with a past participle to describe experiences and past actions connected to the present.
Lesson 15: Present Perfect Negatives
I can use “haven’t” and “hasn’t” with a past participle to describe things that have not happened.
Lesson 16: Present Perfect Questions
I can use “have” and “has” with a past participle to ask and answer questions about experiences and things that have happened.
Lesson 17: Past Tenses Overview
I can choose the past simple, past continuous, or present perfect to describe past events and experiences.

Vocabulary Book:

Week 1
I can say, read, and write words for numbers 1–5, fruits, colors, and classroom items.
Week 2
I can say, read, and write words for numbers 6–10, school, toys, and art supplies.
Week 3
I can identify numbers 11–15 and use words for neighborhood places, family members, and learning activities.
Week 4
I can identify numbers 16–20 and name farm animals, rooms in a home, and colors.
Week 5
I can name wild animals, school supplies, and fruits and use action words related to learning.
Week 6
I can name body parts, sports, pets, and things found at the seaside.
Week 7
I can use vocabulary to identify clothes, people, foods, and living-room items.
Week 8
I can name bedroom items and times of day, follow classroom directions, and identify wildlife.
Week 9
I can name clothes and family members and use words to describe sports actions, people, and things.
Week 10
I can name farm items and toys, follow worksheet directions, and identify words for individuals and groups of people.
Week 11
I can name creative activities, facial features, and clothes and use describing words.
Week 12
I can name breakfast foods and feelings and use position words to describe where things are.
Week 13

I can use words to talk about lunch, plants, ways of traveling, and weather.
Week 14
I can use words to talk about dinner, hobbies, family members, and things around a home and garden.
Week 15
I can name sports equipment, beach features, and vegetables and use words for movement.
Week 16
I can name household items, pets, and party items and use words for everyday actions.

Key Vocabulary and Definitions

Key Vocabulary and Definitions

Unit Learning Activities

Course Book:
Lesson 1: My Friends
Learning Activities:
Listen to and practice greetings and introductions from the book.
Work with a partner to ask and answer “What’s your name?” “How are you?” and “How old are you?”
Match numbers 1–10 to their written words.
Write and share a short introduction using “My name is…” and “I am…years old.”
Lesson 2: At School
Learning Activities:
Identify and label school items using the book’s pictures.
Play a classroom directions game using “stand up,” “sit down,” “open,” “close,” and “listen.”
Practice asking “What’s his name?” and “What’s her name?” using character pictures.
Write sentences introducing classmates using “His name is…” and “Her name is…”
Lesson 3: Our Classroom
Learning Activities:
Match classroom action words, such as read, write, draw, and count, to pictures.
Act out an activity while classmates identify the action.
Take turns suggesting activities using “Let’s read” or “Let’s draw.”
Count pictured objects up to 20 and write number phrases using plural nouns, such as “twelve books.”
Lesson 4: My Things
Learning Activities:
Match everyday objects and colors to their vocabulary words.
Ask and answer “What’s this?” and “What are these?” using classroom objects.
Practice using “a” and “an” when naming objects.
Draw and label three objects, then write sentences describing their colors.
Lesson 5: Our Favorite Animals
Learning Activities:
Match animal pictures to their names and practice pronunciation.
Use pictures near and far to practice “What’s this?” “What’s that?” and “What are those?”
Interview classmates using “What’s your favorite animal?”
Draw a favorite animal and complete the sentence “My favorite animal is…”
Lesson 6: This Is My Family
Learning Activities:
Label a real or imaginary family picture using family vocabulary.
Practice asking and answering “Who’s this?” and “Who’s that?”
Ask yes-or-no questions about family pictures, such as “Is she your sister?”
Match jobs to pictures and write sentences such as “He is a teacher.”
Introduce a real or imaginary family to a partner.
Lesson 7: This Is My Room
Learning Activities:
Identify and label furniture, toys, and other room items.
Use pictures to practice “This is,” “That is,” “These are,” and “Those are.”
Draw a room and write sentences using “I have” and “I don’t have.”
Interview a partner using “Do you have…?” and answer “Yes, I do” or “No, I don’t.”
Lesson 8: Review
Learning Activities:
Review vocabulary with picture matching and a partner guessing game.
Read the book’s model description and identify information about the character.
Write an “All About Me” paragraph using sentence starters for name, age, favorites, possessions, and family.

Share the paragraph with a partner and ask each other a follow-up question.
Complete the book's review activities to check understanding.

GRAMMAR BOOK:

Lesson 1: Present Simple
Learning Activities:
Read the book's examples and identify present simple verbs.
Sort daily activities by subject: I, you, we, they, he, or she.
Complete sentences using the correct verb form, including -s or -es.
Write and share three sentences about daily routines.

Lesson 2: Present Simple Negatives
Learning Activities:
Practice changing positive sentences into negative sentences using "don't" and "doesn't."
Complete sentences using the correct negative form.
Tell a partner two things you do not do.
Write sentences about what you and another person do not do.

Lesson 3: Present Simple Questions
Learning Activities:
Arrange word cards to build questions using "do" and "does."
Practice answering questions with "Yes, I do" or "No, I don't."
Interview a partner about daily routines.
Write three questions and record your partner's answers.

Lesson 4: Present Continuous
Learning Activities:
Match action pictures to sentences describing what is happening.
Practice combining "am," "is," or "are" with an -ing verb.
Play an action guessing game using sentences such as "You are drawing."
Write three sentences about what people are doing in a picture.

Lesson 5: Present Continuous Negatives
Learning Activities:
Change positive sentences into negative sentences using "am not," "isn't," and "aren't."
Look at pictures and correct false statements about the actions.
Tell a partner what people are doing and what they are not doing.
Complete the book's practice activities.

Lesson 6: Present Continuous Questions
Learning Activities:
Arrange words to form questions such as "Is she reading?"
Ask and answer questions about action pictures.
Play a guessing game using yes-or-no questions about someone's action.
Write questions and short answers using "am," "is," and "are."

Lesson 7: Present Tenses Overview
Learning Activities:
Sort sentences into "usually happens" and "happening now."
Choose the present simple or present continuous to complete sentences.
Compare routines with current actions using "usually" and "now."
Write sentence pairs, such as "I usually read after school. I am reading now."

Lesson 8: Past Simple
Learning Activities:
Identify past-tense verbs in the book's examples.
Match base verbs to regular and irregular past-tense forms.
Complete sentences about yesterday using the correct verbs.
Write and share three sentences about a past day or event.

Lesson 9: Past Simple Negatives
Learning Activities:
Change positive past-tense sentences into negatives using "didn't."
Practice using the base form of the verb after "didn't."
Compare what a character did and did not do in a picture sequence.
Write three sentences about things you did not do yesterday.

Lesson 10: Past Simple Questions
Learning Activities:
Arrange word cards to build questions using "did."
Practice short answers such as "Yes, I did" and "No, I didn't."
Interview a partner about yesterday or last weekend.
Write three questions and record your partner's answers.

Lesson 11: Past Continuous
Learning Activities:
Match pictures to sentences using “was” or “were” with an -ing verb.
Complete sentences describing actions at a specific past time.
Ask classmates what they were doing at a chosen time yesterday.
Write three sentences describing a scene in the past.
Lesson 12: Past Continuous Negatives
Learning Activities:
Change past continuous sentences into negatives using “wasn’t” and “weren’t.”
Correct false statements about a pictured past scene.
Tell a partner what characters were and were not doing.
Write three negative sentences using past continuous verbs.
Lesson 13: Past Continuous Questions
Learning Activities:
Arrange words to form questions using “was” and “were.”
Ask and answer questions about a pictured past scene.
Interview a partner using “What were you doing yesterday at…?”
Write questions and answers about actions happening at a specific past time.
Lesson 14: Present Perfect
Learning Activities:
Match base verbs to their past participles.
Complete sentences using “have” or “has” with a past participle.
Read examples and identify experiences or actions connected to the present.
Write and share three sentences about experiences using sentence starters.
Lesson 15: Present Perfect Negatives
Learning Activities:
Change positive sentences into negatives using “haven’t” and “hasn’t.”
Complete sentences with the correct past participle.
Use a checklist to describe tasks a character has and has not completed.
Write three sentences about things you have not done.
Lesson 16: Present Perfect Questions
Learning Activities:
Arrange words to build questions using “have” or “has.”
Practice short answers such as “Yes, I have” and “No, I haven’t.”
Interview a partner using “Have you ever…?”
Write three questions and record your partner’s answers.
Lesson 17: Past Tenses Overview
Learning Activities:
Sort examples into past simple, past continuous, and present perfect.
Match sentences to their meanings: a finished past action, an action in progress in the past, or an experience connected to the present.
Choose the correct tense to complete sentences.
Write one sentence in each tense and explain the choice using a sentence starter.

VOCABULARY BOOK
Week 1
Learning Activities:
Listen to, repeat, and write the daily vocabulary words.
Match numbers 1–5, fruits, colors, and classroom words to pictures.
Count objects and identify their colors.
Complete the weekly review activities.
Week 2
Learning Activities:
Listen to, repeat, and write the daily vocabulary words.
Match numbers 6–10, school words, toys, and art supplies to pictures.
Find and name classroom supplies using “This is a…”
Complete the weekly review activities.
Week 3
Learning Activities:
Listen to, repeat, and write the daily vocabulary words.
Practice counting and writing numbers 11–15.
Label pictures of neighborhood places and family members.
Act out learning activities while classmates identify the words.
Complete the weekly review activities.

Week 4
Learning Activities:
Listen to, repeat, and write the daily vocabulary words.
Match numbers 16–20 and farm animals to pictures.
Label rooms in a home and sort objects by color.
Complete the weekly review activities.

Week 5
Learning Activities:
Listen to, repeat, and write the daily vocabulary words.
Sort picture cards into wild animals, school supplies, fruits, and learning actions.
Act out learning actions, such as listening and pointing.
Complete the weekly review activities.

Week 6
Learning Activities:
Listen to, repeat, and write the daily vocabulary words.
Label body parts on a drawing.
Match sports, seaside words, and pets to pictures.
Tell a partner about a favorite sport or pet using a sentence starter.
Complete the weekly review activities.

Week 7
Learning Activities:
Listen to, repeat, and write the daily vocabulary words.
Sort pictures into clothes, people, foods, and living-room items.
Label a living-room picture.
Practice naming pictured items using “I see…”
Complete the weekly review activities.

Week 8
Learning Activities:
Listen to, repeat, and write the daily vocabulary words.
Label bedroom items and match wildlife words to pictures.
Put times of day in order.
Follow directions such as “open,” “close,” “sit down,” and “stand up.”
Complete the weekly review activities.

Week 9
Learning Activities:
Listen to, repeat, and write the daily vocabulary words.
Match clothes and family words to pictures.
Act out sports actions, such as throwing, catching, and kicking.
Use describing words to complete sentences about pictures.
Complete the weekly review activities.

Week 10
Learning Activities:
Listen to, repeat, and write the daily vocabulary words.
Label a farm picture and identify pictured toys.
Practice worksheet directions, such as circle, match, and add.
Match words for individuals and groups, such as person and people.
Complete the weekly review activities.

Week 11
Learning Activities:
Listen to, repeat, and write the daily vocabulary words.
Match creative activities and clothes to pictures.
Label facial features on a drawing.
Sort pictures using describing words, such as big, small, clean, and dirty.
Complete the weekly review activities.

Week 12
Learning Activities:
Listen to, repeat, and write the daily vocabulary words.
Match breakfast foods and feelings to pictures.
Place objects in different positions and describe them using position words.
Label features of an apartment building.
Complete the weekly review activities.

Week 13
Learning Activities:
Listen to, repeat, and write the daily vocabulary words.

Label lunch foods and parts of plants.
Act out travel actions while classmates identify them.
Match weather words to pictures and describe the weather.
Complete the weekly review activities.

Week 14

Learning Activities:
Listen to, repeat, and write the daily vocabulary words.
Sort pictures into dinner foods, hobbies, family, and home-and-garden items.
Label a real or imaginary family picture.
Tell a partner about a hobby using "I like…"
Complete the weekly review activities.

Week 15

Learning Activities:
Listen to, repeat, and write the daily vocabulary words.
Act out movement words, such as climb, jump, and skip.
Match sports equipment and vegetables to pictures.
Draw a beach scene and label its features.
Complete the weekly review activities.

Week 16

Learning Activities:
Listen to, repeat, and write the daily vocabulary words.
Match household items, pets, and party words to pictures.
Act out everyday actions, such as washing, cooking, eating, and drinking.
Draw a party scene and label items using the week's vocabulary.
Complete the weekly review activities.

Unit Resources

English for Everyone Junior

- Course book by Thomas Booth and Ben Ffrancon Davies
- DK-Penguin Random House

English for Everyone Junior practice

- book by Ben Ffrancon Davies
- DK-Penguin Random House

English for Everyone Junior - English Grammar

- book by Ben Ffrancon Dowds
- DK-Penguin Random House

English for Everyone Junior- 5 Words a day

- by Elizabeth Blakemore and Sophie Adam
- DK-Penguin Random House

Assessments (Formative and Summative)

ENGLISH FOR EVERYONE JUNIOR: BEGINNER'S COURSE

Lesson 1: My Friends
Assessment: Students introduce themselves, state their age, and ask a partner their name and age. Students match numbers 1–10 to their written words.
Lesson 2: At School
Assessment: Students identify five school items, follow three classroom directions, and introduce two people using "His name is…" and "Her name is…"
Lesson 3: Our Classroom
Assessment: Students identify four classroom actions, make two suggestions using "Let's," and count pictured objects using numbers and plural nouns.
Lesson 4: My Things

Assessment: Students name five objects and their colors. Students answer “What’s this?” and “What are these?” using singular and plural forms and “a” or “an” when appropriate.
Lesson 5: Our Favorite Animals
Assessment: Students identify five animals, answer questions about animals near and far, and ask and answer “What’s your favorite animal?”
Lesson 6: This Is My Family
Assessment: Students label five family members in a real or imaginary family picture. Students introduce family members using “he” and “she,” answer a yes-or-no question, and name two jobs.
Lesson 7: This Is My Room
Assessment: Students label five room items, identify objects using “this,” “that,” “these,” and “those,” and write one “I have” and one “I don’t have” sentence. Students ask and answer “Do you have…?”
Lesson 8: Review
Assessment: Students write and share an “All About Me” paragraph that includes their name, age, favorite animal, favorite color, possessions, and family. Students complete the book’s review activities.

ENGLISH FOR EVERYONE JUNIOR: ENGLISH GRAMMAR

Lesson 1: Present Simple
Assessment: Students complete five sentences using the correct present simple verb form and write two sentences about their routines.
Lesson 2: Present Simple Negatives
Assessment: Students change five sentences into negatives using “don’t” or “doesn’t” and the base form of the verb.
Lesson 3: Present Simple Questions
Assessment: Students write three questions using “do” or “does” and give appropriate short answers.
Lesson 4: Present Continuous
Assessment: Students write five sentences describing action pictures using “am,” “is,” or “are” with an -ing verb.
Lesson 5: Present Continuous Negatives
Assessment: Students change five sentences into negatives using “am not,” “isn’t,” or “aren’t” with an -ing verb.
Lesson 6: Present Continuous Questions
Assessment: Students write three questions about action pictures and answer them using appropriate short answers.
Lesson 7: Present Tenses Overview
Assessment: Students choose the correct tense in six sentences and write one sentence about a routine and one about an action happening now.
Lesson 8: Past Simple
Assessment: Students complete six sentences using regular and irregular past-tense verbs and write two sentences about yesterday.
Lesson 9: Past Simple Negatives
Assessment: Students change five past-tense sentences into negatives using “didn’t” and the base form of the verb.
Lesson 10: Past Simple Questions
Assessment: Students write three questions using “did” and the base form of the verb, then ask a partner and record the answers.
Lesson 11: Past Continuous
Assessment: Students write five sentences about a pictured past scene using “was” or “were” with an -ing verb.
Lesson 12: Past Continuous Negatives
Assessment: Students correct five false statements about a pictured past scene using “wasn’t” or “weren’t” with an -ing verb.
Lesson 13: Past Continuous Questions
Assessment: Students write three questions about a pictured past scene and provide appropriate answers.
Lesson 14: Present Perfect
Assessment: Students complete five sentences using “have” or “has” with a past participle and write two sentences about experiences or completed actions connected to the present.
Lesson 15: Present Perfect Negatives
Assessment: Students use a task checklist to write five sentences about unfinished actions using “haven’t” or “hasn’t” with a past participle.
Lesson 16: Present Perfect Questions
Assessment: Students write three questions using “have” or “has” with a past participle and give appropriate short answers.
Lesson 17: Past Tenses Overview
Assessment: Students choose the correct tense in six sentences and write one example each using past simple, past continuous, and present perfect.

ENGLISH FOR EVERYONE JUNIOR: 5 WORDS A DAY

For each week, use the book’s Day 5 review and a brief vocabulary check covering all four topic groups. Have students match words to pictures, write selected words, and say or use selected words in a simple phrase or sentence.
Week 1: Numbers 1–5, Fruits, Colors, Classroom Vocabulary
Assessment: Students identify and write number words, name pictured fruits and colors, and label classroom vocabulary.
Week 2: Numbers 6–10, School Vocabulary, Toys, Art Supplies
Assessment: Students match number words to quantities and identify, say, and write selected school, toy, and art-supply words.
Week 3: Numbers 11–15, Neighborhood Places, Family, Learning Activities
Assessment: Students identify number words, label places and family members, and name pictured learning actions.

Week 4: Numbers 16–20, Farm Animals, Rooms, Colors
Assessment: Students match number words to quantities, label animals and rooms, and identify colors.
Week 5: Wild Animals, School Supplies, Learning Actions, Fruits
Assessment: Students sort vocabulary into the four groups, label selected pictures, and demonstrate a learning action.
Week 6: Body Parts, Sports, Seaside Vocabulary, Pets
Assessment: Students label body parts and identify, say, and write selected sports, seaside, and pet words.
Week 7: Clothes, People, Foods, Living-Room Items
Assessment: Students sort and label pictures from each group and name selected items aloud.
Week 8: Bedroom Items, Times of Day, Classroom Directions, Wildlife
Assessment: Students label bedroom items and wildlife, put times of day in order, and demonstrate classroom directions.
Week 9: Clothes, Sports Actions, Grandparents, Describing Words
Assessment: Students identify clothes and family relationships, name sports actions, and choose describing words that match pictures.
Week 10: Farm Vocabulary, Toys, Worksheet Directions, People and Plurals
Assessment: Students label farm items and toys, follow worksheet directions, and match words for individuals and groups.
Week 11: Creative Activities, Describing Words, Facial Features, Clothes
Assessment: Students name creative activities, label facial features and clothes, and select describing words for pictures.
Week 12: Breakfast, Feelings, Position Words, Apartment Vocabulary
Assessment: Students identify breakfast foods and feelings, describe object positions, and label apartment features.
Week 13: Lunch, Plants, Travel Actions, Weather
Assessment: Students label lunch foods and plant vocabulary, identify travel actions, and match weather words to pictures.
Week 14: Dinner, Hobbies, Family, Home and Garden
Assessment: Students identify vocabulary from each group and use selected words to describe a hobby, family member, or home feature.
Week 15: Movement, Sports Equipment, Beach Vocabulary, Vegetables
Assessment: Students demonstrate movement words and identify, say, and write selected equipment, beach, and vegetable words.
Week 16: Household Items, Pets, Daily Actions, Parties
Assessment: Students label household items, pets, and party pictures and identify or demonstrate everyday actions.

Formative assessments will check progress during learning and guide your instruction. Summative assessments measure learning after a lesson, week, or group of lessons. The same activity can serve either purpose depending on when and how you use it.

ENGLISH FOR EVERYONE JUNIOR: BEGINNER'S COURSE

Formative Assessments:
Picture and vocabulary matching during lessons.
Teacher observation of partner conversations.
Practice introductions and questions.
Classroom direction checks.
Sentence completion and short writing practice.
Exit tickets using the lesson's vocabulary or sentence patterns.

Summative Assessments:
Lesson 1: Greeting, name, and age assessment; numbers 1–10 check.
Lesson 2: School vocabulary, classroom directions, and his/her assessment.
Lesson 3: Classroom actions, "Let's," counting, and plural nouns assessment.
Lesson 4: Objects, colors, singular/plural forms, and a/an assessment.
Lesson 5: Animal identification and favorite-animal conversation assessment.
Lesson 6: Family vocabulary, introductions, and jobs assessment.
Lesson 7: Room vocabulary, this/that/these/those, and possession assessment.
Lesson 8: "All About Me" writing and speaking assessment and completed review.

ENGLISH FOR EVERYONE JUNIOR: ENGLISH GRAMMAR

Formative Assessments:
Book practice exercises checked during instruction.
Word-card sentence and question building.
Oral responses and partner interviews.
Sentence sorting and error correction.
Short writing samples.
Exit tickets demonstrating the grammar skill.

Summative Assessments:
Lesson 1: Present simple sentence assessment.
Lesson 2: Present simple negatives assessment.
Lesson 3: Present simple questions and answers assessment.
Lesson 4: Present continuous picture-description assessment.
Lesson 5: Present continuous negatives assessment.
Lesson 6: Present continuous questions and answers assessment.

Lesson 7: Present tenses review assessment.
Lesson 8: Regular and irregular past simple assessment.
Lesson 9: Past simple negatives assessment.
Lesson 10: Past simple questions and answers assessment.
Lesson 11: Past continuous picture-description assessment.
Lesson 12: Past continuous negatives assessment.
Lesson 13: Past continuous questions and answers assessment.
Lesson 14: Present perfect sentence assessment.
Lesson 15: Present perfect negatives assessment.
Lesson 16: Present perfect questions and answers assessment.
Lesson 17: Past tenses review assessment.

ENGLISH FOR EVERYONE JUNIOR: 5 WORDS A DAY

Formative Assessments for Weeks 1–16:
Daily pronunciation and word-reading checks.
Picture-to-word matching.
Daily vocabulary writing and spelling practice.
Vocabulary sorting.
Teacher observation of actions and oral responses.
Short phrases or sentences using new words.
Day 5 review used to identify words needing more practice.

Summative Assessments:

Week 1: Numbers 1–5, fruits, colors, and classroom vocabulary check.
Week 2: Numbers 6–10, school vocabulary, toys, and art supplies check.
Week 3: Numbers 11–15, neighborhood places, family, and learning activities check.
Week 4: Numbers 16–20, farm animals, rooms, and colors check.
Week 5: Wild animals, school supplies, learning actions, and fruits check.
Week 6: Body parts, sports, seaside vocabulary, and pets check.
Week 7: Clothes, people, foods, and living-room items check.
Week 8: Bedroom items, times of day, classroom directions, and wildlife check.
Week 9: Clothes, sports actions, grandparents, and describing words check.
Week 10: Farm vocabulary, toys, worksheet directions, and people/plurals check.
Week 11: Creative activities, describing words, facial features, and clothes check.
Week 12: Breakfast, feelings, position words, and apartment vocabulary check.
Week 13: Lunch, plants, travel actions, and weather check.
Week 14: Dinner, hobbies, family, and home-and-garden vocabulary check.
Week 15: Movement, sports equipment, beach vocabulary, and vegetables check.
Week 16: Household items, pets, daily actions, and party vocabulary check.
You can also use the Day 5 review as a summative assessment if students complete it independently after instruction and you use it to measure their final understanding.

Curriculum Writer(s)

Stacy Cassady

Board Approval Date

1_Newcomer 5 (Curriculum In Progress)
My World and Me

Unit Description
Course Lessons 9-14
Grammar Lesson 18-- 35
Vocabulary Lessons 17-28
Lesson 9: At the Fair
Lesson 10: Our Pets
Lesson 11: My Body
Lesson 12: Our Town
Lesson 13: My Home
Lesson 14: Review: Where I Live

Course Lessons-Theme and Focus: This module (Lessons 9–14) offers an engaging exploration of a young learner's immediate environment and daily life, moving from personal experiences to their surrounding community. It begins with the excitement of a fair and the responsibility of pet care, then shifts to understanding the body, and expands to recognizing familiar places in town and at home. Finally, a review lesson synthesizes these themes, solidifying the vocabulary and concepts related to "where I live" and nurturing a sense of place and familiarity.

Grammar Lessons-- Focus: Students will master the distinctions between, going to" and "will" for predictions, while exploring modal verbs ("must," "might," "may," "could," "should," "would like") to communicate obligation, possibility, and polite desires, alongside using imperatives for instructions. Through practical, communicative exercises, this course ensures confident, accurate, and context-appropriate application of these key functional English structures in daily conversation.

Key Vocabulary: Lessons 17-28 cover essential beginner vocabulary across key thematic units to establish a foundational understanding of English, beginning with identifying shapes (circle, square, triangle) and following directions (wait, ask, put on, choose). Students will learn to name common insects (bee, ant, dragonfly), recognize food and drink items (water, juice, drinks), and identify birthday words (present, candle, card). Core vocabulary also includes transportation words (bus, driver, taxi), and action words (dream, wake up, make the bed). Additionally, the course introduces basic body parts (foot, knee, stomach), and objects in your bathroom (toothbrush, soap, faucet).

Content Vocabulary: Math

Standards

CC.1.2.6.K	-	Determine or clarify the meaning of unknown and multiple-meaning words and phrases based on grade-level reading and content, choosing flexibly from a range of strategies and tools.
CC.1.5.6.A	-	Engage effectively in a range of collaborative discussions, on grade-level topics, texts, and issues, building on others' ideas and expressing their own clearly.
CC.1.5.6.C	-	Interpret information presented in diverse media and formats (e.g. visually, quantitatively, orally) and explain how it contributes to a topic, text, or issue under study.
CC.1.5.6.E	-	Adapt speech to a variety of contexts and tasks.
CC.1.5.6.F	-	Include multimedia components and visual displays in presentations to clarify information.
CC.1.5.6.G	-	Demonstrate command of the conventions of standard English when speaking based on grade 6 level and content.
CC.1.2.6.K	-	Determine or clarify the meaning of unknown and multiple-meaning words and phrases based on grade-level reading and content, choosing flexibly from a range of strategies and tools.
CC.1.5.6.A	-	Engage effectively in a range of collaborative discussions, on grade-level topics, texts, and issues, building on others' ideas and expressing their own clearly.
CC.1.5.6.C	-	Interpret information presented in diverse media and formats (e.g. visually, quantitatively, orally) and explain how it contributes to a topic, text, or issue under study.
CC.1.5.6.F	-	Include multimedia components and visual displays in presentations to clarify information.
CC.1.5.6.G	-	Demonstrate command of the conventions of standard English when speaking based on grade 6 level and content.

Essential Questions

- 1. How can we use English to describe our feelings and needs?
- 2. How can we describe animals and explain who owns them?
- 3. How can we name body parts and describe physical features?
- 4. How can we describe our homes and neighborhoods?
- 5. How can we explain where people, places, and objects are located?
- 6. How can learning new vocabulary help us communicate clearly?
- 7. How can pictures, sounds, and context help us underrstand unfamiliar words?
- 8. How can we use English to describe our daily routines and activities?
- 9. How can we talk about future plans, arrangements, and predictions?
- 10. How can we ask and answer questions about the future?
- 11. How can we give clear instructions and suggest activities to do together?
- 12. How can we describe what we can and cannot do?
- 13. How can we politely ask for permission and express what we would like?
- 14. How can we explain rules, responsibilities, and things that are optional?
- 15. How can we express possibilities, suggest solutions, and give helpful advice?

Objectives

Objectives

Key Vocabulary and Definitions

Key Vocabulary and Definitions

Unit Learning Activities

Learning Activities

Unit Resources

English for Everyone Junior

- Course book by Thomas Booth and Ben Ffrancon Davies
- DK-Penguin Random House

English for Everyone Junior practice

- book by Ben Ffrancon Davies
- DK-Penguin Random House

English for Everyone Junior - English Grammar

- book by Ben Ffrancon Dowds
- DK-Penguin Random House

English for Everyone Junior- 5 Words a day

- by Elizabeth Blakemore and Sophie Adam
- DK-Penguin Random House

Assessments (Formative and Summative)

Assessments

Curriculum Writer(s)

Stacy Cassady

Board Approval Date

1_Newcomer 5 (Curriculum In Progress)
Exploring Our World

Unit Description
Course Lessons 15-20
Grammar Lessons 36--54
Vocabulary Lessons 29-40
Lesson 15: On the Farm
Lesson 16: Sports
Lesson 17: At the Food Market
Lesson 18: At the Toy Store
Lesson 19: Our Hobbies
Lesson 20: Review: What I like

Course Lessons--Theme and Focus: This series of lessons, spanning Lessons 15 through 20, provides an engaging, thematic exploration of daily life, designed to build practical vocabulary and personal expression. Students will begin by exploring agricultural life and farm animals (Lesson 15), moving into active lifestyles through sports (Lesson 16), and practicing essential shopping vocabulary at the food market (Lesson 17) and the toy store (Lesson 18). The curriculum then transitions to personal development by discussing various hobbies (Lesson 19), culminating in a comprehensive review session (Lesson 20) where students synthesize their learning by identifying and communicating their personal preferences, interests, and "what I like.

Grammar Lessons-- Focus: Lessons 36-54 are designed to strengthen foundational language skills, empowering learners to express cause-and-effect, future possibilities, and precise descriptions with increased accuracy and fluency. Students will master the usage of zero and first conditionals to discuss general truths and real-life future situations, while also developing the ability to formulate questions, provide short answers, and employ various question words for active conversation. The course further delves into verb patterns by distinguishing between gerunds and infinitives, allowing for more nuanced expression. Finally, the curriculum covers essential accuracy tools, including the proper application of articles, demonstratives (this, that, these, those), quantifiers (both, each, every, another), and the correct usage of nouns and pronouns to refine sentence structure and coherence.

Key Vocabulary: Lessons 29-40 provide a foundational overview of essential vocabulary for daily life, covering basic dinner foods, dining, household items, and community places. Students will learn, discuss, and practice, using key terms for face parts, health, outdoor activities, and winter weather. The curriculum integrates practical vocabulary for the gym, supermarkets, and restaurants, including tools and actions, with a focus on conversational, descriptive, and functional language.

Content Vocabulary: Science

Standards

CC.1.2.6.J	-	Acquire and use accurately grade-appropriate general academic and domain-specific words and phrases; gather vocabulary knowledge when considering a word or phrase important to comprehension or expression.
CC.1.2.6.K	-	Determine or clarify the meaning of unknown and multiple-meaning words and phrases based on grade-level reading and content, choosing flexibly from a range of strategies and tools.
CC.1.2.6.K	-	Determine or clarify the meaning of unknown and multiple-meaning words and phrases based on grade-level reading and content, choosing flexibly from a range of strategies and tools.
CC.1.2.6.F	-	Determine the meaning of words and phrases as they are used in grade-level reading and content, including interpretation of figurative language in context.
CC.1.5.6.A	-	Engage effectively in a range of collaborative discussions, on grade-level topics, texts, and issues, building on others' ideas and expressing their own clearly.
CC.1.5.6.E	-	Adapt speech to a variety of contexts and tasks.
CC.1.5.6.G	-	Demonstrate command of the conventions of standard English when speaking based on grade 6 level and content.
CC.1.5.6.G	-	Demonstrate command of the conventions of standard English when speaking based on grade 6 level and content.
CC.1.4.6.X	-	Write routinely over extended time frames (time for research, reflection, and revision) and shorter time frames (a single sitting or a day or two) for a range of discipline-specific tasks, purposes and audiences.
CC.1.4.6.F	-	Demonstrate a grade-appropriate command of the conventions of standard English grammar, usage, capitalization, punctuation, and spelling.
CC.1.5.6.G	-	Demonstrate command of the conventions of standard English when speaking based on grade 6 level and content.
CC.1.4.6.T	-	With guidance and support from peers and adults, develop and strengthen writing as needed by planning, revising, editing, rewriting, or trying a new approach.

Essential Questions

- 1. How do new words help us describe our world?
- 2. How can we use vocabulary to describe people?
- 3. How can we describe places and the things we see there?
- 4. How can we use words to explain what we do each day?
- 5. How can we describe what we like and dislike?
- 6. How can pictures help us understand and remember new words?
- 7. How can we group words to help us remember them?
- 8. How can we choose the right word to express an idea?
- 9. How can we use new words to ask and answer questions?
- 10. How can words help us compare people, places, or things?
- 11. How can we use new vocabulary in a conversation?
- 12. How can we use the words we have learned to share information?
- 13. How can we use English to share information about our lives?
- 14. How can we ask questions to learn about other people?
- 15. How can we describe people, places, and things clearly?
- 16. How can we explain our activities and routines in English?
- 17. How can we keep a conversation going by listening and responding?
- 18. How can we put together what we have learned to communicate in English?
- 19. How does word order help us build a sentence?
- 20. How do we choose words that show who or what a sentence is about?
- 21. How can we show that something is not true?
- 22. How can we give a short, clear answer to a question?
- 23. How can grammar help us add details to a sentence?
- 24. How can we explain when something happens?
- 25. How can we use the grammar we have learned when speaking and writing?
- 26. How can we use sentence patterns to talk about ourselves?
- 27. How can we use grammar to compare things?
- 28. How can we give a short, clear answer to a question?

Objectives
Objectives

Key Vocabulary and Definitions
Key Vocabulary and Definitions

Unit Learning Activities
Unit Learning Activities
Google Slides

Unit Resources
English for Everyone Junior

- Course book by Thomas Booth and Ben Ffrancon Davies
- DK-Penguin Random House

English for Everyone Junior practice

- book by Ben Ffrancon Davies
- DK-Penguin Random House

English for Everyone Junior - English Grammar

- book by Ben Ffrancon Dowds
- DK-Penguin Random House

English for Everyone Junior- 5 Words a day

- by Elizabeth Blakemore and Sophie Adam
- DK-Penguin Random House

Assessments (Formative and Summative)
Assessments (Formative and Summative)

Curriculum Writer(s)
Stacy Cassady

Board Approval Date

1_Newcomer 5 (Curriculum In Progress)
Daily Life & Travel

Unit Description
Course Lessons 21-26
Grammar Lessons 55-76
Vocabulary Lessons 41-51
Lesson 21: Our Party Clothes
Lesson 22: Our Day at the Beach
Lesson 23: Lunchtime
Lesson 24: At the Park
Lesson 25: My Day
Lesson 26: Review: Me and my Day

Course Lessons-Theme and Focus: This module immerses learners in daily life scenarios, starting with vocabulary for clothing and special occasions ("Our party clothes") before transitioning to casual outings at the beach and park, focusing on functional language for leisure activities. Students will develop descriptive skills for food and routines during lunchtime and park scenes, culminating in a personalized exploration of their own daily schedule ("My day"). The module concludes with a comprehensive review ("Me and my day") that reinforces vocabulary and grammar structures—such as present continuous and possessives—used to describe personal routines and surroundings.

Grammar Lesson- Focus: Lessons 55-76 are designed to equip learners with essential structures for daily communication, starting with the usage of possessive adjectives, moving into possessive pronouns, relative pronouns and learning "there is/there are" and their negative forms to describe environments. The unit then extends to past tense with "there was/there were". Students will build descriptive proficiency by exploring adjectives, comparative and superlative forms for ranking, and intensifiers to add emphasis. The curriculum further covers numerical vocabulary, expressions of quantity, and precise prepositional usage to indicate location and relationships, including "with" and "without". Finally, learners will improve sentence flow by integrating conjunctions to connect ideas, ensuring a comprehensive foundation for both speaking and writing.

Key Vocabulary: Lessons 41-51 provide practical, foundational vocabulary for navigating daily life and social scenarios. Through targeted units, students will acquire essential terms for planning vacations, navigating the theater, managing time, discussing outdoor activities, and exploring music. The curriculum further extends to practical life skills, including identifying common condiments, communicating in a hospital setting, expressing complex emotions, discussing academic subjects, and giving or following directions. The course concludes with a comprehensive review of all units to ensure proficiency and confidence in using this vocabulary in real-world situations

Content Vocabulary: Social Studies

Standards

CC.1.4.6.T	-	With guidance and support from peers and adults, develop and strengthen writing as needed by planning, revising, editing, rewriting, or trying a new approach.
CC.1.4.6.F	-	Demonstrate a grade-appropriate command of the conventions of standard English grammar, usage, capitalization, punctuation, and spelling.
CC.1.5.6.G	-	Demonstrate command of the conventions of standard English when speaking based on grade 6 level and content.
CC.1.5.6.A	-	Engage effectively in a range of collaborative discussions, on grade-level topics, texts, and issues, building on others' ideas and expressing their own clearly.
CC.1.5.6.C	-	Interpret information presented in diverse media and formats (e.g. visually, quantitatively, orally) and explain how it contributes to a topic, text, or issue under study.
CC.1.5.6.E	-	Adapt speech to a variety of contexts and tasks.
CC.1.5.6.G	-	Demonstrate command of the conventions of standard English when speaking based on grade 6 level and content.
CC.1.4.6.X	-	Write routinely over extended time frames (time for research, reflection, and revision) and shorter time frames (a single sitting or a day or two) for a range of discipline-specific tasks, purposes and audiences.
CC.1.2.6.J	-	Acquire and use accurately grade-appropriate general academic and domain-specific words and phrases; gather vocabulary knowledge when considering a word or phrase important to comprehension or expression.
CC.1.2.6.K	-	Determine or clarify the meaning of unknown and multiple-meaning words and phrases based on grade-level reading and content, choosing flexibly from a range of strategies and tools.
CC.1.2.6.F	-	Determine the meaning of words and phrases as they are used in grade-level reading and content, including interpretation of figurative language in context.

Essential Questions

- 1. How can we use English to share information about ourselves and our world?
- 2. How can we ask and answer questions to learn more about others?
- 3. How can we use details to describe people, places, and experiences?
- 4. How can we use English to communicate our needs and choices?
- 5. How can listening and responding help us keep a conversation going?
- 6. How can we use what we have learned to communicate more independently?
- 7. How do new words help us understand the world around us?
- 8. How can we use vocabulary to describe people and their actions?
- 9. How can we use words to describe places and objects?
- 10. How can we choose words to explain our daily activities?
- 11. How can we use vocabulary to express our needs and feelings?
- 12. How can pictures and context clues help us understand unfamiliar words?
- 13. How can grouping related words help us remember their meanings?
- 14. How can we choose the most accurate word to express an idea?
- 15. How can we use new vocabulary to ask and answer questions?
- 16. How can we use new vocabulary to ask and answer questions?
- 17. How can we use the vocabulary we have learned to communicate clearly?
- 18. How does grammar help us communicate clearly?
- 19. How can we put words in the correct order to express an idea?
- 20. How can we choose the correct verb for a sentence?
- 21. How can we choose the correct verb for a sentence?
- 22. How can we describe what someone does?
- 23. How can we describe what someone does?
- 24. How can we describe what someone does?
- 25. How can we explain that something is not true?
- 26. How can we add details to make a sentence clearer?
- 27. How can we describe where people and things are?
- 28. How can we describe when things happen?
- 29. How can we apply the grammar we have learned when speaking and writing?
- 30. How can editing help others understand our writing?
- 31. How can we recognize and correct sentence errors?
- 32. How can we use grammar correctly in a conversation?
- 33. How can we use grammar to describe our experiences?
- 34. How can we use sentences to explain our choices?
- 35. How can we connect two ideas in a sentence?

Objectives

Objectives

Key Vocabulary and Definitions

Key Vocabulary and Definitions

Unit Learning Activities

Unit Learning Activities

Unit Resources

English for Everyone Junior

- Course book by Thomas Booth and Ben Ffrancon Davies
- DK-Penguin Random House

English for Everyone Junior practice

- book by Ben Ffrancon Davies
- DK-Penguin Random House

English for Everyone Junior

- English Grammar book by Ben Ffrancon Dowds
- DK-Penguin Random House

English for Everyone Junior

- 5 Words a day by Elizabeth Blakemore and Sophie Adam
- DK-Penguin Random House

Assessments (Formative and Summative)

Assessments (Formative and Summative)

Curriculum Writer(s)

Stacy Cassady

Board Approval Date

1_Newcomer 6 (Curriculum In Progress)

Grade Level Summary

Course Cover Sheet

Grade Level Modules

Module 1:	Unit 1--Welcome
Module 2:	Unit 2--Where are you?
Module 3:	Unit 3 -What do you do in school?
Module 4:	Unit 4--What do you like to do?
Module 5:	Unit 5--What do you like to eat?
Module 6:	Unit 6--How do you feel?
Module 7:	Unit 7--What did you do when the weather changed?
Module 8:	Unit 8--How can you improve our community?

1_Newcomer 6 (Curriculum In Progress)
Unit 1--Welcome

Unit Description

Part 1--I can meet new people.
Part 2--I can tell what I like.
Part 3--I can introduce myself.
Unit review and wrap up
Phonics lessons 1-5 (consonants and short vowels)

In Unit 1: Welcome, students embark on their journey of social and personal expression by building foundational communication skills. The unit begins with Part 1, where students learn the essential social cues and greetings needed to meet new people and foster an inclusive classroom community. Moving into Part 2, the focus shifts to personal expression as students discover how to articulate their interests and share what they like, helping them find common ground with their peers. Finally, in Part 3, students synthesize these skills to confidently introduce themselves, mastering the ability to present their name, background, and unique personality in both formal and informal settings. Phonics lessons consist of consonants and short vowels.

Standards

CC.1.1.K.A	-	Utilize book handing skills.
CC.1.1.K.B	-	Demonstrate understanding of the organization and basic features of print. * Follow words left to right, top to bottom, and page by page. * Recognize that spoken words are represented in written language by specific sequences of letters. * Understand that words are separated by spaces in print. * Recognize and name all upper and lower case letters of the alphabet.
CC.1.1.K.C	-	Demonstrate understanding of spoken words, syllables, and sounds (phonemes). * Recognize and produce rhyming words. * Count, pronounce, blend, and segment syllables in spoken words. * Blend and segment onsets and rimes of single-syllable spoken words. * Isolate and pronounce the initial, medial vowel, and final sound (phonemes) in the three-phoneme (CVC) words.
CC.1.1.K.D	-	Know and apply grade-level phonics and word analysis skills in decoding words. * Demonstrate basic knowledge of one-to-one letter-sound correspondence. * Associate the long and short sounds with common spellings for the five major vowels. * Read grade-level high-frequency sight words with automaticity. * Distinguish between similarly spelled words by identifying the sounds of the letters that differ.
CC.1.2.K.B	-	With prompting and support, answer questions about key details in a text.
CC.1.2.K.L	-	Actively engage in group reading activities with purpose and understanding.
CC.1.5.K.A	-	Participate in collaborative conversations with peers and adults in small and larger groups.
CC.1.2.K.B	-	With prompting and support, answer questions about key details in a text.

Essential Questions

- 1. Who are you?
- 2. How do I make introductions?
- 3. How do I give information?
- 4. How do I greet people?
- 5. How do I express my likes?
- 6. How can I read for information?
- 7. How do I identify details in a story?
- 8. How can I learn new vocabulary words?
- 9. How can I write an informational text?
- 10. How can I edit and publish an informational text?
- 11. How can I read and understand math problems?
- 12. How can I learn new Social Studies words and read a map?

Objectives
Lesson Objectives
Phonics Objectives

Key Vocabulary and Definitions
Key Vocabulary and Definitions-Unit 1--Who are you?

Unit Learning Activities
Unit Learning Activities--Unit 1

Unit Resources
National Geographic Reach Welcome
National Geographic Reach Welcome

Assessments (Formative and Summative)
Assessments Unit 1-Who are you?

Curriculum Writer(s)
Stacy Cassady

Board Approval Date

1_Newcomer 6 (Curriculum In Progress)
Unit 2--Where are you?

Unit Description

Part 1--I can describe where something is.
Part 2--I can describe where someone is.
Part 3--I can give directions.
Unit review and wrap up
Phonics lessons 6-9 (consonants and short vowels)

Unit 2 empowers students to confidently navigate their surroundings by developing essential spatial language and directional skills. Beginning with Part 1, learners will master prepositions of place (e.g., next to, across from, between) to accurately describe where objects and buildings are located in their environment. Building on this, Part 2 transitions to describing where people are located, utilizing similar prepositional phrases to pinpoint individuals in various settings. Part 3 advances these skills to functional communication, enabling students to give and follow specific directions using imperatives and landmarks (e.g., turn left, go straight, past the office). Finally, the unit wraps up with a comprehensive review, allowing students to apply their knowledge through interactive, real-world scenarios that reinforce their ability to ask for and provide directions in a community setting. Phonics lessons continue with consonants and short vowels.

Standards

CC.1.2.6.F	-	Determine the meaning of words and phrases as they are used in grade-level reading and content, including interpretation of figurative language in context.
CC.1.2.6.J	-	Acquire and use accurately grade-appropriate general academic and domain-specific words and phrases; gather vocabulary knowledge when considering a word or phrase important to comprehension or expression.
CC.1.2.6.A	-	Determine the central idea of a text and how it is conveyed through particular details; provide a summary of the text distinct from personal opinions or judgments.
CC.1.4.6.F	-	Demonstrate a grade-appropriate command of the conventions of standard English grammar, usage, capitalization, punctuation, and spelling.
CC.1.2.6.G	-	Integrate information presented in different media or formats (e.g. visually, quantitatively) as well as in words to develop a coherent understanding of a topic or issue.
CC.1.2.6.K	-	Determine or clarify the meaning of unknown and multiple-meaning words and phrases based on grade-level reading and content, choosing flexibly from a range of strategies and tools.
CC.1.3.6.I	-	Determine or clarify the meaning of unknown and multiple-meaning words and phrases based on grade-level reading and content, choosing flexibly from a range of strategies and tools.
CC.1.3.6.J	-	Acquire and use accurately grade-appropriate general academic and domain-specific words and phrases; gather vocabulary knowledge when considering a word or phrase important to comprehension or expression.
CC.1.2.5.B	-	Cite textual evidence by quoting accurately from the text to explain what the text says explicitly and make inferences.
CC.1.4.6.C	-	Develop and analyze the topic with relevant facts, definitions, concrete details, quotations, or other information and examples; include graphics and multimedia when useful to aiding comprehension.
CC.1.4.6.D	-	Organize ideas, concepts, and information using strategies such as definition, classification, comparison/contrast, and cause/effect; use appropriate transitions to clarify the relationships among ideas and concepts; provide a concluding statement or section; include formatting when useful to aiding comprehension.
CC.1.4.6.F	-	Demonstrate a grade-appropriate command of the conventions of standard English grammar, usage, capitalization, punctuation, and spelling.
CC.1.4.6.H	-	Introduce and state an opinion on a topic.
CC.1.4.6.L	-	Demonstrate a grade-appropriate command of the conventions of standard English grammar, usage, capitalization, punctuation, and spelling.
CC.1.4.6.R	-	Demonstrate a grade-appropriate command of the conventions of standard English grammar, usage, capitalization, punctuation, and spelling.

Essential Questions

- 1. Where are you?
- 2. Where is/are a specific object(s)?
- 3. Where is someone or a group of people?
- 4. How do I give directions?
- 5. How can I write an explanatory text?
- 6. How can I describe colors and shapes?
- 7. How can I read, write, listen and speak numbers up to 100?

Objectives

Learning Objectives-Unit 2
Phonics Objectives--Unit 2

Key Vocabulary and Definitions

Unit 2--Key Vocabulary and Definitions

Unit Learning Activities
Unit 2 Learning Activities

Unit Resources
National Geographic Reach Welcome
National Geographic Reach Welcome

Assessments (Formative and Summative)
Unit 2-Assessments

Curriculum Writer(s)
Stacy Cassady

Board Approval Date

1_Newcomer 6 (Curriculum In Progress)
Unit 3 -What do you do in school?

Unit Description
Part 1--I can describe my daily routines.
Part 2--I can ask and answer questions about my routines.
Part 3--I can describe my school routines.
Unit review and wrap up
Phonics lessons 10-14 (diagraphs, blends, multisyllabic words, long vowels)

This comprehensive unit 3 empowers students to master the vocabulary and structures needed to describe their lives, starting with an exploration of daily habits (Part 1), such as waking up, eating meals, and evening routines. Students will transition into conversational practice, enabling them to ask and answer questions about their own routines and those of their peers (Part 2). The focus then shifts to school-based routines, allowing students to describe their morning meetings, classwork, and daily schedule (Part 3). Integrated within this theme, the unit introduces fundamental science skills by examining the "scientific process" of observing and testing, while also exploring social studies through calendar skills to sequence days, months, and routines over time. The unit concludes with a review and wrap-up, providing a holistic understanding of how daily, school, and academic routines bring structure and predictability to their lives.
Phonics lessons include: diagraphs, blends, multisyllabic words and long vowels

Standards

CC.1.1.K.B	-	Demonstrate understanding of the organization and basic features of print. * Follow words left to right, top to bottom, and page by page. * Recognize that spoken words are represented in written language by specific sequences of letters. * Understand that words are separated by spaces in print. * Recognize and name all upper and lower case letters of the alphabet.
CC.1.1.K.B	-	Demonstrate understanding of the organization and basic features of print. * Follow words left to right, top to bottom, and page by page. * Recognize that spoken words are represented in written language by specific sequences of letters. * Understand that words are separated by spaces in print. * Recognize and name all upper and lower case letters of the alphabet.
CC.1.1.K.D	-	Know and apply grade-level phonics and word analysis skills in decoding words. * Demonstrate basic knowledge of one-to-one letter-sound correspondence. * Associate the long and short sounds with common spellings for the five major vowels. * Read grade-level high-frequency sight words with automaticity. * Distinguish between similarly spelled words by identifying the sounds of the letters that differ.
CC.1.2.K.B	-	With prompting and support, answer questions about key details in a text.
CC.1.2.K.L	-	Actively engage in group reading activities with purpose and understanding.
CC.1.5.K.A	-	Participate in collaborative conversations with peers and adults in small and larger groups.
CC.1.2.K.B	-	With prompting and support, answer questions about key details in a text.
CC.1.2.6.F	-	Determine the meaning of words and phrases as they are used in grade-level reading and content, including interpretation of figurative language in context.
CC.1.2.6.J	-	Acquire and use accurately grade-appropriate general academic and domain-specific words and phrases; gather vocabulary knowledge when considering a word or phrase important to comprehension or expression.
CC.1.2.6.A	-	Determine the central idea of a text and how it is conveyed through particular details; provide a summary of the text distinct from personal opinions or judgments.
CC.1.4.6.F	-	Demonstrate a grade-appropriate command of the conventions of standard English grammar, usage, capitalization, punctuation, and spelling.

CC.1.2.6.G	-	Integrate information presented in different media or formats (e.g. visually, quantitatively) as well as in words to develop a coherent understanding of a topic or issue.
CC.1.2.6.K	-	Determine or clarify the meaning of unknown and multiple-meaning words and phrases based on grade-level reading and content, choosing flexibly from a range of strategies and tools.
CC.1.3.6.I	-	Determine or clarify the meaning of unknown and multiple-meaning words and phrases based on grade-level reading and content, choosing flexibly from a range of strategies and tools.
CC.1.3.6.J	-	Acquire and use accurately grade-appropriate general academic and domain-specific words and phrases; gather vocabulary knowledge when considering a word or phrase important to comprehension or expression.
CC.1.2.5.B	-	Cite textual evidence by quoting accurately from the text to explain what the text says explicitly and make inferences.
CC.1.4.6.C	-	Develop and analyze the topic with relevant facts, definitions, concrete details, quotations, or other information and examples; include graphics and multimedia when useful to aiding comprehension.
CC.1.4.6.D	-	Organize ideas, concepts, and information using strategies such as definition, classification, comparison/contrast, and cause/effect; use appropriate transitions to clarify the relationships among ideas and concepts; provide a concluding statement or section; include formatting when useful to aiding comprehension.
CC.1.4.6.F	-	Demonstrate a grade-appropriate command of the conventions of standard English grammar, usage, capitalization, punctuation, and spelling.
CC.1.4.6.F	-	Demonstrate a grade-appropriate command of the conventions of standard English grammar, usage, capitalization, punctuation, and spelling.
CC.1.4.6.H	-	Introduce and state an opinion on a topic.
CC.1.4.6.L	-	Demonstrate a grade-appropriate command of the conventions of standard English grammar, usage, capitalization, punctuation, and spelling.
CC.1.4.6.R	-	Demonstrate a grade-appropriate command of the conventions of standard English grammar, usage, capitalization, punctuation, and spelling.

Essential Questions

- 1. What do you do in school?
- 2. Can you describe your routines?
- 3. What days do you do different activities?
- 4. Can you ask and answer questions about your routines?
- 5. Are you able to describe your school routine?
- 6. Can you write a personal narrative about your school routine?
- 7. Can you talk about your school and personal routines?
- 8. Can you describe the scientific process?
- 9. Can you read, write, understand and speak about a calendar?

Objectives

Unit 3--Learning Objectives
Unit 3-Phonics Objectives

Key Vocabulary and Definitions

Unit 3 Key Vocabulary and Definitions

Unit Learning Activities

Unit 3-Learning Activities

Unit Resources

National Geographic Reach Welcome
National Geographic Reach Welcome

Assessments (Formative and Summative)
Unit 3--Assessments

Curriculum Writer(s)
Stacy Cassady

Board Approval Date

1_Newcomer 6 (Curriculum In Progress)
Unit 4--What do you like to do?

Unit Description

Part 1--I can ask and answer questions about my interests.
Part 2-I can give advice.
Part 3--I can persuade my classmates.
Unit review and wrap up
Phonics lessons 15-19 (diagraphs, blends, multisyllabic words, long vowels)

This comprehensive unit empowers students to develop essential communication, analytical, and scientific skills through a structured, multi-part approach. Initially, students build interpersonal skills by asking and answering questions about personal interests, progressing to providing advice and crafting persuasive arguments to influence their classmates. The unit seamlessly integrates core subjects, with math focus on describing, interpreting, and analyzing data from graphs and charts, while science lessons focus on identifying, classifying, and comparing living and nonliving things based on their characteristics. The unit concludes with a wrap-up that synthesizes these skills, encouraging students to apply their knowledge of classification and data analysis to real-world scenarios, strengthening both their language proficiency and scientific understanding. Phonics lessons include: diagraphs, blends, multisyllabic words and long vowels .

Standards

CC.1.1.K.B	-	Demonstrate understanding of the organization and basic features of print. * Follow words left to right, top to bottom, and page by page. * Recognize that spoken words are represented in written language by specific sequences of letters. * Understand that words are separated by spaces in print. * Recognize and name all upper and lower case letters of the alphabet.
CC.1.1.K.D	-	Know and apply grade-level phonics and word analysis skills in decoding words. * Demonstrate basic knowledge of one-to-one letter-sound correspondence. * Associate the long and short sounds with common spellings for the five major vowels. * Read grade-level high-frequency sight words with automaticity. * Distinguish between similarly spelled words by identifying the sounds of the letters that differ.
CC.1.2.K.B	-	With prompting and support, answer questions about key details in a text.
CC.1.2.K.L	-	Actively engage in group reading activities with purpose and understanding.
CC.1.2.K.A	-	With prompting and support, identify the main idea and retell key details of text.
CC.1.5.K.A	-	Participate in collaborative conversations with peers and adults in small and larger groups.
CC.1.2.6.F	-	Determine the meaning of words and phrases as they are used in grade-level reading and content, including interpretation of figurative language in context.
CC.1.2.6.J	-	Acquire and use accurately grade-appropriate general academic and domain-specific words and phrases; gather vocabulary knowledge when considering a word or phrase important to comprehension or expression.
CC.1.2.6.G	-	Integrate information presented in different media or formats (e.g. visually, quantitatively) as well as in words to develop a coherent understanding of a topic or issue.
CC.1.2.6.K	-	Determine or clarify the meaning of unknown and multiple-meaning words and phrases based on grade-level reading and content, choosing flexibly from a range of strategies and tools.
CC.1.3.6.I	-	Determine or clarify the meaning of unknown and multiple-meaning words and phrases based on grade-level reading and content, choosing flexibly from a range of strategies and tools.
CC.1.3.6.J	-	Acquire and use accurately grade-appropriate general academic and domain-specific words and phrases; gather vocabulary knowledge when considering a word or phrase important to comprehension or expression.
CC.1.2.5.B	-	Cite textual evidence by quoting accurately from the text to explain what the text says explicitly and make inferences.
CC.1.4.6.C	-	Develop and analyze the topic with relevant facts, definitions, concrete details, quotations, or other information and examples; include graphics and multimedia when useful to aiding comprehension.
CC.1.4.6.D	-	Organize ideas, concepts, and information using strategies such as definition, classification, comparison/contrast, and cause/effect; use appropriate transitions to clarify the relationships among ideas and concepts; provide a concluding statement or section; include formatting when useful to aiding comprehension.
CC.1.4.6.F	-	Demonstrate a grade-appropriate command of the conventions of standard English grammar, usage, capitalization, punctuation, and spelling.
CC.1.4.6.H	-	Introduce and state an opinion on a topic.
CC.1.4.6.L	-	Demonstrate a grade-appropriate command of the conventions of standard English grammar, usage, capitalization, punctuation, and spelling.
CC.1.2.7.A	-	Determine two or more central ideas in a text and analyze their development over the course of the text; provide an objective summary of the text.
CC.1.1.1.E	-	Read with accuracy and fluency to support comprehension: * Read on-level text with purpose and understanding. * Read on-level text orally with accuracy, appropriate rate, and expression on successive readings. * Use context to confirm or self-correct word recognition and understanding, rereading as necessary.
CC.1.4.6.D	-	Organize ideas, concepts, and information using strategies such as definition, classification, comparison/contrast, and cause/effect; use appropriate transitions to clarify the relationships among ideas and concepts; provide a concluding statement or section; include formatting when useful to aiding comprehension.
CC.2.3.7.A.1	-	Solve real-world and mathematical problems involving angle measure, area, surface area, circumference, and volume.

Essential Questions

- 1. What do you like to do?
- 2. Can you ask and answer questions about things you like to do?
- 3. Can you ask and answer questions about your opinions?
- 4. Can you ask and answer questions about your favorites?
- 5. Can you give advice to someone?
- 6. What should you do at recess?
- 7. Can you identify opinions and reasons?
- 8. Can you identify the correct image to a given activity?
- 9. Can you persuade your classmates?
- 10. Can you write, read, understand and speak about a persuasive topic?
- 11. Can you describe a graph or chart?
- 12. Can you classify living and nonliving?

Objectives

Unit 4--Learning Objectives
Unit 4--Phonics Objectives

Key Vocabulary and Definitions

Unit 4-Key Vocabulary and Definitions

Unit Learning Activities

Unit 4--Learning Activities

Unit Resources

National Geographic Reach Welcome
National Geographic Reach Welcome

Assessments (Formative and Summative)

Unit 4--Assessments

Curriculum Writer(s)

Stacy Cassady

Board Approval Date

1_Newcomer 6 (Curriculum In Progress)
Unit 5--What do you like to eat?

Unit Description

Part 1-I can ask and answer questions about food.
Part 2--I can make comparisons about data.
Part 3--I can make comparisons about data.
Part 4--I can interpret and describe data.
Unit review and wrap up

Phonics lessons 20--24 (plurals, long vowels, multisyllabic words, verbs with -ed,)
This comprehensive unit engages students in building a healthy lifestyle through inquiry, data analysis, and interdisciplinary exploration. Students begin by asking and answering questions about food to understand nutritional choices. They then transition to evaluating data, making, interpreting, and describing comparisons about dietary patterns to understand nutritional balance. Moving into thematic focus areas, the unit integrates Social Studies by having students describe the vital roles of people in their community, while Science integration allows them to name and understand the functions of body parts. The unit concludes with a review and wrap-up, encouraging students to synthesize their learning about personal health, data interpretation, and community roles. Phonics lessons include: plurals, long vowels, multisyllabic words, verbs with -ed.

Standards

CC.1.2.6.F	-	Determine the meaning of words and phrases as they are used in grade-level reading and content, including interpretation of figurative language in context.
CC.1.2.6.J	-	Acquire and use accurately grade-appropriate general academic and domain-specific words and phrases; gather vocabulary knowledge when considering a word or phrase important to comprehension or expression.
CC.1.2.6.A	-	Determine the central idea of a text and how it is conveyed through particular details; provide a summary of the text distinct from personal opinions or judgments.
CC.1.4.6.F	-	Demonstrate a grade-appropriate command of the conventions of standard English grammar, usage, capitalization, punctuation, and spelling.
CC.1.3.6.I	-	Determine or clarify the meaning of unknown and multiple-meaning words and phrases based on grade-level reading and content, choosing flexibly from a range of strategies and tools.
CC.1.3.6.J	-	Acquire and use accurately grade-appropriate general academic and domain-specific words and phrases; gather vocabulary knowledge when considering a word or phrase important to comprehension or expression.
CC.1.2.5.B	-	Cite textual evidence by quoting accurately from the text to explain what the text says explicitly and make inferences.
CC.1.5.6.C	-	Interpret information presented in diverse media and formats (e.g. visually, quantitatively, orally) and explain how it contributes to a topic, text, or issue under study.
CC.1.4.6.F	-	Demonstrate a grade-appropriate command of the conventions of standard English grammar, usage, capitalization, punctuation, and spelling.
CC.1.4.6.H	-	Introduce and state an opinion on a topic.
CC.1.4.6.L	-	Demonstrate a grade-appropriate command of the conventions of standard English grammar, usage, capitalization, punctuation, and spelling.
CC.1.4.6.R	-	Demonstrate a grade-appropriate command of the conventions of standard English grammar, usage, capitalization, punctuation, and spelling.
CC.1.4.7.D	-	Organize ideas, concepts, and information using strategies such as definition, classification, comparison/contrast, and cause/effect; use appropriate transitions to create cohesion and clarify the relationships among ideas and concepts; provide a concluding statement or section; include formatting when useful to aiding comprehension.
CC.1.1.4.D	-	Know and apply grade-level phonics and word analysis skills in decoding words. * Use combined knowledge of all letter-sound correspondences, syllabication patterns, and morphology to read accurately unfamiliar multisyllabic words.
CC.1.2.7.A	-	Determine two or more central ideas in a text and analyze their development over the course of the text; provide an objective summary of the text.
CC.1.2.8.A	-	Determine a central idea of a text and analyze its development over the course of the text, including its relationship to supporting ideas; provide an objective summary of the text.
CC.1.5.6.A	-	Engage effectively in a range of collaborative discussions, on grade-level topics, texts, and issues, building on others' ideas and expressing their own clearly.
1.5.8.A	-	Write with a sharp, distinct focus.
CC.1.3.8.K	-	Read and comprehend literary fiction on grade level, reading independently and proficiently.
1.5.8.B	-	Write using well-developed content appropriate for the topic.
CC.1.5.7.B	-	Delineate a speaker's argument and specific claims, evaluating the soundness of the reasoning and the relevance and sufficiency of the evidence.
CC.1.4.6.D	-	Organize ideas, concepts, and information using strategies such as definition, classification, comparison/contrast, and cause/effect; use appropriate transitions to clarify the relationships among ideas and concepts; provide a concluding statement or section; include formatting when useful to aiding comprehension.
CC.1.4.6.P	-	Organize an event sequence that unfolds naturally and logically, using a variety of transition words, phrases, and clauses to convey sequence and signal shifts from one time frame or setting to another; provide a conclusion that follows from the narrated experiences and events.

Essential Questions

- 1. What do you like to eat?
- 2. Can you ask and answer questions about food?
- 3. Can you make comparisons using data and foods?
- 4. Can you read an informational text and answer questions about foods?
- 5. Can you use vocabulary words when speaking, reading and writing?
- 6. Can you summarize information in a chart about foods?
- 7. Can you use charts to make comparisons about foods?
- 8. Can you interpret and describe data?
- 9. Can you make a bar graph about your favorite foods?
- 10. Can you complete charts about your favorite lunches?
- 11. Can you speak, read, and write using the words, most, least, delicious, popular and nutritious?
- 12. Can you describe the roles of people in your community?
- 13. Can you name the parts of the body?

Objectives

Unit 5--Learning Objectives
Unit 5--Phonics Objectives

Key Vocabulary and Definitions

Unit 5-Key Vocabulary and Definitions

Unit Learning Activities

Unit 5--Unit Learning Activities

Unit Resources

National Geographic Reach Welcome
National Geographic Reach Welcome

Assessments (Formative and Summative)

Unit 5--Assessments

Curriculum Writer(s)

Stacy Cassady

Board Approval Date

1_Newcomer 6 (Curriculum In Progress)
Unit 6--How do you feel?

Unit Description

Part 1--I can explain how I feel.
Part 2--I can take care of myself.
Part 3--I can give reasons for my feelings.
Part 4--I can explain the steps to take care of myself.
Unit review and wrap up

Phonics lessons 25-30 (long vowels-i, ie, igh, long oo, r-controlled vowels-ar, or, ore, ur, er, it and multisyllabic words: R-controlled Vowels)

In this interdisciplinary unit,"How do you feel?", students embark on a journey of self-awareness and practical life skills by connecting their emotional well-being with measurable physical data. Through four core parts, learners transition from basic emotional identification to identifying specific triggers and mastering self-care strategies. The curriculum integrates STEM concepts to ground these internal experiences in the physical world; students will utilize measurement skills to quantify objects in their environment and learn to read a thermometer to understand the relationship between physical temperature and their own bodily comfort. By the conclusion of the unit, students will be able to articulate their feelings, justify them with reasons, and execute a personal care plan, all while demonstrating foundational proficiency in scientific observation and mathematical precision. Phonics lessons include: long vowels-i, ie, igh, long oo, r-controlled vowels-ar, or, ore, ur, er, it and multisyllabic words: R-controlled Vowels

Standards

CC.1.1.K.B	-	Demonstrate understanding of the organization and basic features of print. * Follow words left to right, top to bottom, and page by page. * Recognize that spoken words are represented in written language by specific sequences of letters. * Understand that words are separated by spaces in print. * Recognize and name all upper and lower case letters of the alphabet.
CC.1.1.K.D	-	Know and apply grade-level phonics and word analysis skills in decoding words. * Demonstrate basic knowledge of one-to-one letter-sound correspondence. * Associate the long and short sounds with common spellings for the five major vowels. * Read grade-level high-frequency sight words with automaticity. * Distinguish between similarly spelled words by identifying the sounds of the letters that differ.
CC.1.2.K.B	-	With prompting and support, answer questions about key details in a text.
CC.1.2.K.L	-	Actively engage in group reading activities with purpose and understanding.
CC.1.2.K.A	-	With prompting and support, identify the main idea and retell key details of text.
CC.1.5.K.A	-	Participate in collaborative conversations with peers and adults in small and larger groups.
CC.1.2.6.F	-	Determine the meaning of words and phrases as they are used in grade-level reading and content, including interpretation of figurative language in context.
CC.1.2.6.J	-	Acquire and use accurately grade-appropriate general academic and domain-specific words and phrases; gather vocabulary knowledge when considering a word or phrase important to comprehension or expression.
CC.1.2.6.G	-	Integrate information presented in different media or formats (e.g. visually, quantitatively) as well as in words to develop a coherent understanding of a topic or issue.
CC.1.2.6.K	-	Determine or clarify the meaning of unknown and multiple-meaning words and phrases based on grade-level reading and content, choosing flexibly from a range of strategies and tools.
CC.1.3.6.I	-	Determine or clarify the meaning of unknown and multiple-meaning words and phrases based on grade-level reading and content, choosing flexibly from a range of strategies and tools.
CC.1.3.6.J	-	Acquire and use accurately grade-appropriate general academic and domain-specific words and phrases; gather vocabulary knowledge when considering a word or phrase important to comprehension or expression.
CC.1.2.5.B	-	Cite textual evidence by quoting accurately from the text to explain what the text says explicitly and make inferences.

CC.1.4.6.C	-	Develop and analyze the topic with relevant facts, definitions, concrete details, quotations, or other information and examples; include graphics and multimedia when useful to aiding comprehension.
CC.1.4.6.D	-	Organize ideas, concepts, and information using strategies such as definition, classification, comparison/contrast, and cause/effect; use appropriate transitions to clarify the relationships among ideas and concepts; provide a concluding statement or section; include formatting when useful to aiding comprehension.
CC.1.4.6.F	-	Demonstrate a grade-appropriate command of the conventions of standard English grammar, usage, capitalization, punctuation, and spelling.
CC.1.4.6.H	-	Introduce and state an opinion on a topic.
CC.1.4.6.L	-	Demonstrate a grade-appropriate command of the conventions of standard English grammar, usage, capitalization, punctuation, and spelling.
CC.1.2.7.A	-	Determine two or more central ideas in a text and analyze their development over the course of the text; provide an objective summary of the text.
CC.1.1.1.E	-	Read with accuracy and fluency to support comprehension: * Read on-level text with purpose and understanding. * Read on-level text orally with accuracy, appropriate rate, and expression on successive readings. * Use context to confirm or self-correct word recognition and understanding, rereading as necessary.
CC.1.4.6.D	-	Organize ideas, concepts, and information using strategies such as definition, classification, comparison/contrast, and cause/effect; use appropriate transitions to clarify the relationships among ideas and concepts; provide a concluding statement or section; include formatting when useful to aiding comprehension.
CC.2.3.7.A.1	-	Solve real-world and mathematical problems involving angle measure, area, surface area, circumference, and volume.
CC.1.1.5.D	-	Know and apply grade-level phonics and word analysis skills in decoding words. * Use combined knowledge of all letter-sound correspondences, syllabication patterns, and morphology to read accurately unfamiliar multisyllabic words.

Essential Questions

- 1. How do you feel?
- 2. Can you explain how you feel?
- 3. Can you give an explanation on how you feel?
- 4. Can you read, write, speak and understand how you and others feel?
- 5. Can you identify feelings when given pictures?
- 6. Can you give an explanation on how to take care of yourself?
- 7. Can you read an explanatory text about taking care of yourself and answer questions abut the text?
- 8. What do you do at a doctor visit?
- 9. What does first aid mean?
- 10. What can you do when you hurt yourself?
- 11. Can you identify causes and effects when it comes to your health?
- 12. Can you identify pictures and images that deal with caring for yourself?
- 13. Can you give reasons for your feelings?
- 14. How do explorers cope with their feelings?
- 15. Can you explain the steps to take care of yourself?
- 16. How can you measure objects?
- 17. Can you read a thermometer?

Objectives

Unit 6--Learning Objectives
Unit 6-Phonics Objectives

Key Vocabulary and Definitions

Unit 6--Key Vocabulary and Definitions

Unit Learning Activities
Unit 6--Learning Activities

Unit Resources
National Geographic Reach Welcome

Assessments (Formative and Summative)
Unit 6--Assessments

Curriculum Writer(s)
Stacy Cassady

Board Approval Date

1_Newcomer 6 (Curriculum In Progress)
Unit 7--What did you do when the weather changed?

Unit Description

Part 1--I can describe the weather.
Part 2--I can describe things I did at school.
Part 3--I can describe things I did at home.
Part 4--I can tell a story about the past.
Unit review and wrap up

Phonics lessons 31-38 (words with y, oi, oy, ow, ou, oo, ou, ew, hard and soft c and g, and words with silent consonants)

In Unit 7, "What did you do when the weather changed?", students explore the connection between environmental changes, daily routines, and the passage of time through an interdisciplinary lens. The unit begins by building vocabulary to describe various weather conditions (Part 1) and progresses to detailing personal activities at school (Part 2) and home (Part 3), with a focus on using past tense to describe these actions. Students will strengthen their narrative skills by recounting stories about the past (Part 4) and, through a Social Studies lens, learn to organize these personal experiences chronologically on a timeline. Intertwining with Science standards, the unit teaches students to describe the four seasons and how these seasonal changes dictate our clothing, activities, and behavior. The unit concludes with a review and wrap-up, enabling students to demonstrate their ability to connect weather, time, and personal history. Phonics lessons include: words with y, oi, oy, ow, ou, oo, ou, ew, hard and soft c and g, and words with silent consonants.

Standards

CC.1.1.K.B	-	Demonstrate understanding of the organization and basic features of print. * Follow words left to right, top to bottom, and page by page. * Recognize that spoken words are represented in written language by specific sequences of letters. * Understand that words are separated by spaces in print. * Recognize and name all upper and lower case letters of the alphabet.
CC.1.1.K.D	-	Know and apply grade-level phonics and word analysis skills in decoding words. * Demonstrate basic knowledge of one-to-one letter-sound correspondence. * Associate the long and short sounds with common spellings for the five major vowels. * Read grade-level high-frequency sight words with automaticity. * Distinguish between similarly spelled words by identifying the sounds of the letters that differ.
CC.1.2.K.B	-	With prompting and support, answer questions about key details in a text.
CC.1.2.K.L	-	Actively engage in group reading activities with purpose and understanding.
CC.1.2.K.A	-	With prompting and support, identify the main idea and retell key details of text.
CC.1.5.K.A	-	Participate in collaborative conversations with peers and adults in small and larger groups.
CC.1.2.6.F	-	Determine the meaning of words and phrases as they are used in grade-level reading and content, including interpretation of figurative language in context.
CC.1.2.6.J	-	Acquire and use accurately grade-appropriate general academic and domain-specific words and phrases; gather vocabulary knowledge when considering a word or phrase important to comprehension or expression.
CC.1.2.6.G	-	Integrate information presented in different media or formats (e.g. visually, quantitatively) as well as in words to develop a coherent understanding of a topic or issue.
CC.1.2.6.K	-	Determine or clarify the meaning of unknown and multiple-meaning words and phrases based on grade-level reading and content, choosing flexibly from a range of strategies and tools.
CC.1.3.6.I	-	Determine or clarify the meaning of unknown and multiple-meaning words and phrases based on grade-level reading and content, choosing flexibly from a range of strategies and tools.
CC.1.3.6.J	-	Acquire and use accurately grade-appropriate general academic and domain-specific words and phrases; gather vocabulary knowledge when considering a word or phrase important to comprehension or expression.
CC.1.2.5.B	-	Cite textual evidence by quoting accurately from the text to explain what the text says explicitly and make inferences.
CC.1.4.6.C	-	Develop and analyze the topic with relevant facts, definitions, concrete details, quotations, or other information and examples; include graphics and multimedia when useful to aiding comprehension.
CC.1.4.6.D	-	Organize ideas, concepts, and information using strategies such as definition, classification, comparison/contrast, and cause/effect; use appropriate transitions to clarify the relationships among ideas and concepts; provide a concluding statement or section; include formatting when useful to aiding comprehension.
CC.1.4.6.F	-	Demonstrate a grade-appropriate command of the conventions of standard English grammar, usage, capitalization, punctuation, and spelling.
CC.1.4.6.H	-	Introduce and state an opinion on a topic.
CC.1.4.6.L	-	Demonstrate a grade-appropriate command of the conventions of standard English grammar, usage, capitalization, punctuation, and spelling.
CC.1.2.7.A	-	Determine two or more central ideas in a text and analyze their development over the course of the text; provide an objective summary of the text.
CC.1.1.1.E	-	Read with accuracy and fluency to support comprehension: * Read on-level text with purpose and understanding. * Read on-level text orally with accuracy, appropriate rate, and expression on successive readings. * Use context to confirm or self-correct word recognition and understanding, rereading as necessary.
CC.1.4.6.D	-	Organize ideas, concepts, and information using strategies such as definition, classification, comparison/contrast, and cause/effect; use appropriate transitions to clarify the relationships among ideas and concepts; provide a concluding statement or section; include formatting when useful to aiding comprehension.
CC.1.1.4.D	-	Know and apply grade-level phonics and word analysis skills in decoding words. * Use combined knowledge of all letter-sound correspondences, syllabication patterns, and morphology to read accurately unfamiliar multisyllabic words.

Essential Questions

- 1. What did you do when the weather changed?
- 2. Can you describe the weather?
- 3. Can you describe things you do at school?
- 4. What are you wearing?
- 5. Can you read a story and answer questions about things the characters did?
- 6. What are the details of a fiction story?
- 7. Can you read, write, listen and speak about the things you do at home?
- 8. Can you read, write, listen and speak about the order of events when given pictures?
- 9. Can you talk about the past?
- 10. Can you read, write, listen and speak about parts of a story?
- 11. Can you write a short narrative about the weather?
- 12. Can you use and understand dates on a timeline?
- 13. Can you describe the seasons?

Objectives

Unit 7-Learning Objectives
Unit 7-Phonics Objectives

Key Vocabulary and Definitions

Unit 7--Key Vocabulary and Definitions

Unit Learning Activities

Unit 7--Learning Activities

Unit Resources

National Geographic Reach Welcome
National Geographic Reach Welcome

Assessments (Formative and Summative)

Unit 7--Assessments

Curriculum Writer(s)

Stacy Cassady

Board Approval Date

1_Newcomer 6 (Curriculum In Progress)
Unit 8--How can you improve our community?

Unit Description

Part 1--I can describe my ideas.
Part 2-I can explain a plan.
Part 3--I can persuade people.
Part 4--I can write a persuasive letter
Unit review and wrap up

Phonics lessons 39-43(words with schwa, suffixes -ly, y,-less, -ful, prefixes un, -re-, multisyllabic words, consonant -le and vowels teams)

In Unit 8: How can you improve our community?, students embark on a multi-step journey to become active, informed citizens. The unit begins with students brainstorming and describing their unique ideas for community enhancement, followed by developing a structured approach to explain a detailed plan. As they refine their communication skills, students learn how to persuade others and ultimately craft a formal persuasive letter to advocate for their vision.Beyond language arts, this unit integrates essential cross-curricular connections:
Social Studies: Students explore the foundational mechanics of their surroundings by learning to describe the economy and how resources impact community growth.
Math: Practical application is emphasized as students utilize logic and calculation to solve word problems related to real-world community challenges.
The unit concludes with a comprehensive review and wrap-up, ensuring students can confidently articulate how their voices and skills contribute to a better society.
Phonics lessons include: words with schwa, suffixes -ly, y,-less, -ful, prefixes un, -re-, multisyllabic words, consonant -le and vowels teams.

Standards

CC.1.1.K.B	-	Demonstrate understanding of the organization and basic features of print. * Follow words left to right, top to bottom, and page by page. * Recognize that spoken words are represented in written language by specific sequences of letters. * Understand that words are separated by spaces in print. * Recognize and name all upper and lower case letters of the alphabet.
CC.1.1.K.D	-	Know and apply grade-level phonics and word analysis skills in decoding words. * Demonstrate basic knowledge of one-to-one letter-sound correspondence. * Associate the long and short sounds with common spellings for the five major vowels. * Read grade-level high-frequency sight words with automaticity. * Distinguish between similarly spelled words by identifying the sounds of the letters that differ.
CC.1.2.K.B	-	With prompting and support, answer questions about key details in a text.
CC.1.2.K.L	-	Actively engage in group reading activities with purpose and understanding.
CC.1.2.K.A	-	With prompting and support, identify the main idea and retell key details of text.
CC.1.5.K.A	-	Participate in collaborative conversations with peers and adults in small and larger groups.
CC.1.2.6.F	-	Determine the meaning of words and phrases as they are used in grade-level reading and content, including interpretation of figurative language in context.
CC.1.2.6.J	-	Acquire and use accurately grade-appropriate general academic and domain-specific words and phrases; gather vocabulary knowledge when considering a word or phrase important to comprehension or expression.
CC.1.2.6.G	-	Integrate information presented in different media or formats (e.g. visually, quantitatively) as well as in words to develop a coherent understanding of a topic or issue.
CC.1.2.6.G	-	Integrate information presented in different media or formats (e.g. visually, quantitatively) as well as in words to develop a coherent understanding of a topic or issue.
CC.1.2.6.K	-	Determine or clarify the meaning of unknown and multiple-meaning words and phrases based on grade-level reading and content, choosing flexibly from a range of strategies and tools.
		Determine or clarify the meaning of unknown and multiple-meaning words and phrases based on grade-level

CC.1.2.6.K	-	reading and content, choosing flexibly from a range of strategies and tools.
CC.1.3.6.I	-	Determine or clarify the meaning of unknown and multiple-meaning words and phrases based on grade-level reading and content, choosing flexibly from a range of strategies and tools.
CC.1.3.6.I	-	Determine or clarify the meaning of unknown and multiple-meaning words and phrases based on grade-level reading and content, choosing flexibly from a range of strategies and tools.
CC.1.3.6.J	-	Acquire and use accurately grade-appropriate general academic and domain-specific words and phrases; gather vocabulary knowledge when considering a word or phrase important to comprehension or expression.
CC.1.2.5.B	-	Cite textual evidence by quoting accurately from the text to explain what the text says explicitly and make inferences.
CC.1.4.6.C	-	Develop and analyze the topic with relevant facts, definitions, concrete details, quotations, or other information and examples; include graphics and multimedia when useful to aiding comprehension.
CC.1.4.6.D	-	Organize ideas, concepts, and information using strategies such as definition, classification, comparison/contrast, and cause/effect; use appropriate transitions to clarify the relationships among ideas and concepts; provide a concluding statement or section; include formatting when useful to aiding comprehension.
CC.1.4.6.F	-	Demonstrate a grade-appropriate command of the conventions of standard English grammar, usage, capitalization, punctuation, and spelling.
CC.1.4.6.H	-	Introduce and state an opinion on a topic.
CC.1.4.6.L	-	Demonstrate a grade-appropriate command of the conventions of standard English grammar, usage, capitalization, punctuation, and spelling.
CC.1.2.7.A	-	Determine two or more central ideas in a text and analyze their development over the course of the text; provide an objective summary of the text.
CC.1.1.1.E	-	Read with accuracy and fluency to support comprehension: * Read on-level text with purpose and understanding. * Read on-level text orally with accuracy, appropriate rate, and expression on successive readings. * Use context to confirm or self-correct word recognition and understanding, rereading as necessary.
CC.1.4.6.D	-	Organize ideas, concepts, and information using strategies such as definition, classification, comparison/contrast, and cause/effect; use appropriate transitions to clarify the relationships among ideas and concepts; provide a concluding statement or section; include formatting when useful to aiding comprehension.
CC.2.3.7.A.1	-	Solve real-world and mathematical problems involving angle measure, area, surface area, circumference, and volume.
CC.1.1.4.D	-	Know and apply grade-level phonics and word analysis skills in decoding words. * Use combined knowledge of all letter-sound correspondences, syllabication patterns, and morphology to read accurately unfamiliar multisyllabic words.

Essential Questions

- 1. How can you improve our community?
- 2. Can you express your wants?
- 3. Can you describe your ideas?
- 4. Can you support your opinions to describe your ideas?
- 5. Can you match sentences to describe your ideas?
- 6. Can you explain a plan?
- 7. Can you make connections in a text?
- 8. Can you persuade people?
- 9 Can you identify opinions and reasons?
- 10. Can you match opinions with reasons?
- 11. Can you read, write and understand a persuasive text?
- 12. What is an economy?
- 13. Can you solve word problems?

Objectives
Unit 8--Learning Objectives
Unit 8-Phonics Objectives

Key Vocabulary and Definitions
Unit 8--Key Vocabulary and Definitions

Unit Learning Activities
Unit 8-Learning Activities

Unit Resources
National Geographic Reach Welcome
National Geographic Reach Welcome

Assessments (Formative and Summative)
Unit 8--Assessments

Curriculum Writer(s)
Stacy Cassady

Board Approval Date

1_Newcomer 7 (Curriculum In Progress)

Grade Level Summary

Course Cover Sheet

Grade Level Modules

Module 1:	Unit 1-Nice to Meet You
Module 2:	Unit 2-Around School
Module 3:	Unit 3--School Routines
Module 4:	Unit 4--School Activities
Module 5:	Unit 5--Food
Module 6:	Unit 6--Health and Well Being
Module 7:	Unit 7--Interests
Module 8:	Unit 8--Our Environment
Module 9:	Unit 9--Social Studies
Module 10:	Unit 10--Science
Module 11:	Unit 11--Math
Module 12:	Unit 12--Setting Future Goals

1_Newcomer 7 (Curriculum In Progress)
Unit 1-Nice to Meet You

Unit Description

Lesson 1-Formal and Informal Greetings
Lesson 2-Give Information
Lesson 3-Make Polite Requests for Help
Lesson 4--Connect and Share
Lesson 5--Read a Story/Writing--Period at the End of a Sentence

Standards

CC.1.2.6.K - Determine or clarify the meaning of unknown and multiple-meaning words and phrases based on grade-level reading and content, choosing flexibly from a range of strategies and tools.

Essential Questions

- 1. How do we greet people in different situations?
- 2. When is a formal greeting more appropriate than an informal one?
- 3. How can we introduce ourselves and share information?
- 4. How does the word I help us speak about ourselves?
- 5. How do we ask for help respectfully?
- 6. How does the word you help us speak to someone?
- 7. How can games help us practice speaking and listening?
- 8. How do we show respect while taking turns?
- 9. How do clues help us understand new words?
- 10. Why do we use periods at the ends of statements?

Objectives

Unit 1 Objectives

Key Vocabulary and Definitions

Unit Learning Activities

Unit Resources

National Geographic Lift Welcome

Assessments (Formative and Summative)

Curriculum Writer(s)

Stacy Cassady

Board Approval Date

1_Newcomer 7 (Curriculum In Progress)
Unit 2-Around School

Unit Description
Lesson 1-Ask for Directions
Lesson 2-Give Directions
Lesson 3--Ask and Answer Questions
Lesson 4--Connect and Share
Lesson 5--Read a Story/Writing--Capitalize the First Letter in a Sentence

Standards

Essential Questions

Objectives
Unit 2 Objectives

Key Vocabulary and Definitions

Unit Learning Activities

Unit Resources
National Geographic Lift Welcome

Assessments (Formative and Summative)

Curriculum Writer(s)
Stacy Cassady

Board Approval Date

1_Newcomer 7 (Curriculum In Progress)
Unit 3--School Routines

Unit Description
Lesson 1-Ask and Answer Questions about People and Places
Lesson 2-Ask and Answer Questions about Time
Lesson 3-Talk About Schedules
Lesson 4--Connect and Share
Lesson 5-Read a Journal/Writing--Use a Question Mark

Standards

Essential Questions

Objectives
Unit 3 Objectives

Key Vocabulary and Definitions

Unit Learning Activities

Unit Resources
National Geographic Lift Welcome

Assessments (Formative and Summative)

Curriculum Writer(s)
Stacy Cassady

Board Approval Date

1_Newcomer 7 (Curriculum In Progress)
Unit 4--School Activities

Unit Description
Lesson 1-Describe Actions
Lesson 2-Make Negative Statements
Lesson 3-Describe What You See
Lesson 4--Connect and Share
Lesson 5--Read a Story/Writing--Capitalize School Names

Standards

Essential Questions

Objectives
Unit 4 Objectives

Key Vocabulary and Definitions

Unit Learning Activities

Unit Resources
National Geographic Lift Welcome

Assessments (Formative and Summative)

Curriculum Writer(s)
Stacy Cassady

Board Approval Date

1_Newcomer 7 (Curriculum In Progress)
Unit 5--Food

Unit Description
Lesson 1-Ask Questions about Likes and Wants
Lesson 2-Tell About Your Meal
Lesson 3-Make Requests When Ordering Food
Lesson 4--Connect and Share
Lesson 5--Read a Story---Write- Using Adjective Order

Standards

Essential Questions

Objectives
Unit 5 Objectives

Key Vocabulary and Definitions

Unit Learning Activities

Unit Resources
National Geographic Lift Welcome

Assessments (Formative and Summative)

Curriculum Writer(s)
Stacy Cassady

Board Approval Date

1_Newcomer 7 (Curriculum In Progress)
Unit 6--Health and Well Being

Unit Description
Lesson 1-Describe How People Feel
Lesson 2-Tell Reasons for Feelings
Lesson 3-Give Advice
Lesson 4--Connect and Share
Lesson 5--Read a Story/Writing--Apostrophe

Standards

Essential Questions

Objectives
Unit 6 Objectives

Key Vocabulary and Definitions

Unit Learning Activities

Unit Resources
National Geographic Lift Welcome

Assessments (Formative and Summative)

Curriculum Writer(s)
Stacy Cassady

Board Approval Date

1_Newcomer 7 (Curriculum In Progress)
Unit 7--Interests

Unit Description
Lesson 1-Expresses Likes and Dislikes
Lesson 2-Talk About Actions in the Past
Lesson 3-Talk About Actions in the Past
Lesson 4--Connect and Share
Lesson 5--Read a Story/Writing-Exclamations point

Standards

Essential Questions

Objectives
Unit 7 Objectives

Key Vocabulary and Definitions

Unit Learning Activities

Unit Resources
National Geographic Lift Welcome

Assessments (Formative and Summative)

Curriculum Writer(s)
Stacy Cassady

Board Approval Date

1_Newcomer 7 (Curriculum In Progress)
Unit 8--Our Environment

Unit Description
Lesson 1-Describe the Weather
Lesson 2-Describe the Weather in the Past
Lesson 3-Give Advice
Lesson 4--Connect and Share
Lesson 5--Read a Story/Writing--Use and Join Adjectives

Standards

Essential Questions

Objectives
Unit 8 Objectives

Key Vocabulary and Definitions

Unit Learning Activities

Unit Resources
National Geographic Lift Welcome

Assessments (Formative and Summative)

Curriculum Writer(s)
Stacy Cassady

Board Approval Date

1_Newcomer 7 (Curriculum In Progress)
Unit 9--Social Studies

Unit Description
Lesson 1-Explain Locations on a Map
Lesson 2-Explain a Timeline
Lesson 3-Talk About Traditions
Lesson 4--Connect and Share
Lesson 5--Read a Story/Writing--Capitalize First and Last Names

Standards

Essential Questions

Objectives
Unit 9 Objectives

Key Vocabulary and Definitions

Unit Learning Activities

Unit Resources
National Geographic Lift Welcome

Assessments (Formative and Summative)

Curriculum Writer(s)
Stacy Cassady

Board Approval Date

1_Newcomer 7 (Curriculum In Progress)
Unit 10--Science

Unit Description
Lesson 1-Explain the Location of Objects
Lesson 2-Ask Questions about the Past
Lesson 3-Answer Questions about the Past
Lesson 4--Connect and Share
Lesson 5--Read a Story/Writing--Capitalize

Standards

Essential Questions

Objectives
Unit 10 Objectives

Key Vocabulary and Definitions

Unit Learning Activities

Unit Resources
National Geographic Lift Welcome

Assessments (Formative and Summative)

Curriculum Writer(s)
Stacy Cassady

Board Approval Date

1_Newcomer 7 (Curriculum In Progress)
Unit 11--Math

Unit Description
Lesson 1-Read Math Problems
Lesson 2-Explain Measurements
Lesson 3-Explain a Graph
Lesson 4--Connect and Share
Lesson 5--Read a Story/Writing--Capitalize Days of the Week

Standards

Essential Questions

Objectives
Unit 11 Objectives

Key Vocabulary and Definitions

Unit Learning Activities

Unit Resources
National Geographic Lift Welcome

Assessments (Formative and Summative)

Curriculum Writer(s)
Stacy Cassady

Board Approval Date

1_Newcomer 7 (Curriculum In Progress)
Unit 12--Setting Future Goals

Unit Description
Lesson 1-Expressing Strengths
Lesson 2-Expressing Intentions
Lesson 3-Expressing Needs
Lesson 4--Connect and Share
Lesson 5--Read a Story/Writing--Using a Period

Standards

Essential Questions

Objectives
Unit 12 Objectives

Key Vocabulary and Definitions

Unit Learning Activities

Unit Resources
National Geographic Lift Welcome

Assessments (Formative and Summative)

Curriculum Writer(s)
Stacy Cassady

Board Approval Date

1_AP Calculus AB (Curriculum In Progress)

Grade Level Summary

Course Cover Sheet

Grade Level Modules

Module 1:	Unit 1: Limits & Continuity
Module 2:	Unit 2: Differentiation: Definition & Fundamental Properties
Module 3:	Unit 3: Differentiation: Composite, Implicit & Inverse Functions
Module 4:	Unit 4: Contextual Applications of Differentiation
Module 5:	Unit 5: Analytical Applications of Differentiation
Module 6:	Unit 6: Integration & Accumulation of Change
Module 7:	Unit 7: Differential Equations
Module 8:	Unit 8: Applications of Integration

To equip every student with the academic knowledge, social skills, and emotional resilience needed to thrive in their future endeavors.

1_AP Calculus AB (Curriculum In Progress)
Unit 1: Limits & Continuity

Unit Description

- Change, Limits, Analysis of Functions

Lesson 1.1 - Explore Instantaneous Rate of Change
Lesson 1.2 - Define Limits and Use Limit Notation
Lesson 1.3 - Estimate Limit values from Graphs
Lesson 1.4 - Estimate Limit values from Tables
Review Quiz #1 - Lessons 1.1-1.4 (Include AP Practice Questions)
Quiz #1 - Lessons 1.1-1.4
Lesson 1.5 - Determine Limits using Algebraic Properties
Lesson 1.6 - Determine Limits using Algebraic Manipulation
Lesson 1.7 - Select procedures/techniques to Determine Limits
Lesson 1.8 - Determine Limits using the Squeeze Theorem
Review Quiz #2 - Lessons 1.5-1.9 (Include AP Practice Questions)
Lesson 1.9 - Connect Multiple Representations of Limits
Quiz #2 - Lessons 1.5 - 1.9; Lesson 1.10 - Explore Types of Discontinuities
Lesson 1.11 - Define Continuity at a Point
Lesson 1.12 - Confirm Continuity over an Interval
Lesson 1.13 - Remove Discontinuities (Holes)
Review Quiz #3 - Lessons 1.10-1.13 (Include AP Practice Questions)
Quiz #3 - Lessons 1.10 - 1.13
Lesson 1.14 - Connect Infinite Limits with Vertical Asymptotes
Lesson 1.15 - Connect Limits at Infinity and Horizontal Asymptotes
Lesson 1.16 - Understand/Apply the Intermediate Value Theorem (IVT)
Review Quiz #4 - 1.14-1.16 (Include Practice Open-Ended Questions)
Quiz #4 Lessons 1.14-1.16
10 - 12% AP Exam weighting

Standards

College Board Course and Exam Description

Objectives

CHA-1.A Interpret the rate of change at an instant in terms of average rates of change over intervals containing that instant.
LIM-1.A Express limits analytically using correct notation
LIM-1.B Interpret limits expressed in analytic notation
LIM-1.C Estimate limits of functions
Investigate a limit using a table or graph
LIM-1.D Determine the limits of functions using limit theorems.
Find the limit of a difference quotient
Find the limit of a sum, difference, product and quotient
Find the limit of a power, root and polynomial
LIM-1.E Determine the limits of functions using equivalent expressions for the function or the squeeze theorem.
Find limits involving trigonometric functions
LIM-2.A Justify conclusions about continuity at a point using the definition.
LIM-2.B Determine intervals over which a function is continuous.
LIM-2.C Determine values of x or solve for parameters that make discontinuous functions continuous, if possible.
LIM-2.D Interpret the behavior of functions using limits involving infinity.
Find vertical and horizontal asymptotes of functions, particularly rational, trigonometric, exponential and logarithmic functions
FUN-1.A Explain the behavior of a function on an interval using the Intermediate Value Theorem.

To equip every student with the academic knowledge, social skills, and emotional resilience needed to thrive in their future endeavors.

Key Vocabulary and Definitions

Limit: The value a function approaches as the input gets closer to a certain value.

- **One-Sided Limits**:
  - **Left-Hand Limit:** The value a function approaches as the input approaches a value from the left.
  - **Right-Hand Limit:** The value a function approaches as the input approaches a value from the right.
- **Limits at Infinity**: The behavior of a function as its input grows arbitrarily large or small.
- **Infinite Limits**: Occur when a function's output grows without bound as the input approaches a certain value

Continuity: A function is continuous if

- its graph can be drawn without lifting the pen, meaning it has no breaks, holes, or jumps
- its graph has no breaks, jumps, or gaps at that point. A function f(x) is continuous at a point c
- if and only if three conditions are met:

  1) f(c) is defined
  2) the limit as x approaches c of f(x) exists (right hand limit equals left hand limit)
  3) the limit of f(x) as x approaches c equals f(c)

Discontinuity: a point where a function is not continuous

- **Jump Discontinuity**: The left-hand and right-hand limits are different.
- **Removable Discontinuity**: A "hole" in the graph where the limit exists, but the function is either undefined or defined at a different value.
- **Infinite Discontinuity**: Occurs where there is a vertical asymptote.

Asymptotes: a line that a function's graph approaches arbitrarily closely as the input (x) approaches a specific value, infinity, or negative infinity. The graph may touch or cross an asymptote; what defines it is the behavior of the graph near the line.

- **Vertical Asymptote:** A vertical line x = a that the graph of a function approaches as f(x) grows without bound, creating an infinite discontinuity. As x approaches a from the left, the right, or both, f(x) goes to positive or negative infinity.
- **Horizontal Asymptote:** A horizontal line y = L that the graph of a function f(x) approaches as x goes to positive or negative infinity, i.e., the limit of f(x) as x approaches positive or negative infinity equals L. The graph may cross a horizontal asymptote.

Unit Learning Activities

- Instruct content according to established timeline found in the Unit Description
- The following techniques will be employed throughout the unit using Unit Resources
  - Direct Instruction
  - Guided Practice/small group instruction
  - Flipped Classroom
  - Independent Practice
- Supplemental Learning Activities will be used as needed throughout
  - SLOT (Spaced Learning Over Time) Activity done weekly for 10-15 minutes reviewing concepts from 4 weeks prior
  - SLOT (Spaced Learning Over Time) Activity done weekly for 5-10 minutes reviewing concepts from 12 weeks prior
  - Worked Solutions - Students are provided worked solutions to problems with a focus on enhancing algebraic reasoning, specifically WHAT and WHY. These will often use content from FlippedMath.com (Mr. Bean).
  - Interleaving Practice Format (IPF) - Students will review three dissimilar skills previously learned. Emphasis is placed on mixing the order of the three skills involving dissimilar concepts. Suggested use 2-3 times monthly. These will often use content from text, "Retain Your Knowledge" questions in each section.

Unit Resources

- AP Calculus online course resources
- Calculus for the AP Course, 4th Edition, Sullivan
- Flipped Math.com
- TI-84+ Graphing Calculator
- Desmos Graphing Calculator (as provided on AP Exam)
- Google Classroom

Assessments (Formative and Summative)

- The Shared Resource Folder contains Assessments and other supplemental materials
- Student Text contains AP Practice Problems, Retain Your Knowledge Problems in each section as well as Chapter Reviews for each Unit for Formative Assessment.
- Teacher Text contains online resources including worksheet and test generator capabilities to create Formative and Summative Assessments
- AP Classroom contains Topic Questions and Progress Checks for Formative and Summative Assessment
- FlippedMath.com contains Corrective Action worksheets useful for Formative Assessment

Must Do Problems from Text for AP Success (Formative Assessment)

Ch 1 - Calculus for the AP Course Text by Sullivan/Miranda
Section 1 AB: 1, 2, 9, 13, 15, 19, 21, 25, 31, 35, 37, 41, 55, and all AP® Practice Problems
Limits Num/Graph

Section 2: AB: 13, 15, 19, 23, 29, 31, 33, 35, 51, 55, 59, 63, 69, 73, and all AP® Practice Problems
Limits Analytic

Section 3: AB: 13, 15, 19, 21, 25, 29, 35, 37, 45, 53, 59, 63, and all AP® Practice Problems
Continuity

Section 4: AB: 5, 9, 15, 19, 23, 25, 31, 33, 35, 39, 45, 47, and all AP® Practice Problems
Trig, Exp & Inv Fcns

Section 5: AB: 9–16, 27, 31, 37, 41, 43, 45, 47, 49, 57, 59, 63, 69, 79, and all AP® Practice Problems
Inf Limits

Curriculum Writer(s)

Monica Calemmo

Board Approval Date

1_AP Calculus AB (Curriculum In Progress)
Unit 2: Differentiation: Definition & Fundamental Properties

Unit Description

- AROC vs IROC (derivative), Slope of Tangent Lines

Lesson 2.1 - Define Average & Instantaneous Rates of Change at a Point (AROC vs IROC)
Lesson 2.2 - Define Derivative of a Function & Use Derivative Notations (Newton & Leibniz)
Lesson 2.3 - Estimate Derivative of a Function at a Point
Lesson 2.4 - Connect Differentiability & Continuity; When does a Derivative Fail to Exist?
Quiz Review Lessons 2.1-2.4 (Include AP Practice Questions)
Quiz Lessons 2.1-2.4
Lesson 2.5 - Apply the Power Rule for Polynomials
Lesson 2.6 - Derivative Rules - Constant, Sum, Difference & Constant Multiple
Lesson 2.7 - Find Derivatives of sin(x), cos(x), e^x, and ln(x)
Lesson 2.8 - Apply the Product Rule for Differentiation
Lesson 2.9 - Apply the Quotient Rule for Differentiation
Lesson 2.10 - Find Derivatives of Remaining Trig Functions
Quiz Review Lessons 2.5-2.10 (Include AP Practice Questions)
(broken into 2 qz 2.1-2.4, 2.5-2.7)
Quiz Lessons 2.5-2.10
Unit 2 Review (Include Practice Open-Ended Questions)
Unit 2 Exam

10 - 12% AP Exam weighting

Standards

College Board Course and Exam Description

Objectives

CHA-2.A Determine average rates of change using difference quotients.
CHA-2.B Represent the derivative of a function as the limit of a difference quotient.
CHA-2.C Determine the equation of a line tangent to a curve at a given point.
CHA-2.D Estimate derivatives.
FUN-2.A Explain the relationship between differentiability and continuity.
FUN-3.A Calculate derivatives of familiar functions including constants, polynomials, trigonometric, exponential and logarithmic functions
LIM-3.A Interpret a limit as a definition of a derivative. Write derivatives using both Newton f'(x) and Leibniz dy/dx notation.
FUN-3.B Calculate derivatives of differentiable functions including sums, differences, products, and quotients.
FUN-3.F Find higher order derivatives; recognize velocity and acceleration as 1st & 2nd derivatives of the position function s(t)

To equip every student with the academic knowledge, social skills, and emotional resilience needed to thrive in their future endeavors.

Key Vocabulary and Definitions

Average rate of change: the slope between two points on a curve (slope of a secant line)

Derivative: The instantaneous rate of change of a function at a specific point; the slope of the line drawn tangent to a curve at a specific point.

Rate of change: how a quantity changes over time

Differentiability: A function is differentiable at a point if its derivative exists there. This requires the function to be continuous and "smooth," without corners, cusps, or vertical tangents.

Continuity: A function is continuous if it can be drawn without lifting the pen. If a function is differentiable at a point, it must be continuous there, but the reverse is not always true.

First Derivative Test: a method to find local maximums and minimums of a continuous function by examining the sign changes of its first derivative f'(x) around a critical point. If f'(x) changes from positive to negative at a critical point, there is a local maximum. If it changes from negative to positive, there is a local minimum. If the sign of f'(x) does not change, the point is neither a local maximum nor a minimum.

Second Derivative Test: determines if a critical point of a function is a local maximum, minimum, or neither by using the concavity of the function at that point. A positive second derivative means the function is concave up and has a local minimum, while a negative second derivative means it's concave down and has a local maximum. If the second derivative is zero or undefined, the test is inconclusive and the first derivative test must be used instead.

Critical point: a point on the graph of a function where the first derivative is either zero or undefined.

Local Extrema: The highest or lowest values of a function within its immediate neighborhood, including local (relative) maximums and local minimums. A function f has a local maximum at x = c if f(c) is greater than or equal to every value of f(x) for x in some open interval containing c, and a local minimum at x = c if f(c) is less than or equal to every value of f(x) for x in some open interval containing c. Local extrema can only occur at critical points, where the derivative is zero (a horizontal tangent) or undefined (such as a corner or cusp). Not every critical point is a local extremum, however; the First or Second Derivative Test is used to confirm. They are "local" because they are the highest or lowest values in their immediate area, but not necessarily the highest or lowest on the entire function's graph.

Absolute extrema: the highest or lowest points on the entire function's graph. To find, evaluate the function at all of its critical points (where the derivative is zero or undefined) and at the endpoints of the interval. The largest value is the absolute maximum, and the smallest value is the absolute minimum.

Velocity: v(t) = s'(t), the derivative of the position function, representing the rate of change of position over an infinitesimally small time interval. This is calculated by finding the derivative of the position function s(t) and then plugging in a specific time.

Acceleration: a(t) = v'(t) = s''(t). The second derivative of the position function s(t) with respect to time, or equivalently, the first derivative of the velocity function v(t). It represents the instantaneous rate at which an object's velocity is changing, and can be found by taking the derivative of the velocity function.

Product rule: calculates derivatives of multiplied functions. The formula is: first * derivative of second + second * derivative of first. d/dx(f*g(x))=f(x)*g'(x) + g(x)*f'(x)

Quotient rule: calculates derivatives of divided functions f/g. The formula is: d/dx (f/g(x))=[g(x)*f'(x)-f(x)g'(x)]/(g(x))^2

Unit Learning Activities

- Instruct content according to established timeline found in the Unit Description
- The following techniques will be employed throughout the unit using Unit Resources
  - Direct Instruction
  - Guided Practice/small group instruction
  - Flipped Classroom
  - Independent Practice
  - Supplemental Learning Activities will be used as needed throughout
    - SLOT (Spaced Learning Over Time) Activity done weekly for 10-15 minutes reviewing concepts from 4 weeks prior
    - SLOT (Spaced Learning Over Time) Activity done weekly for 5-10 minutes reviewing concepts from 12 weeks prior
    - Worked Solutions - Students are provided worked solutions to problems with a focus on enhancing algebraic reasoning, specifically WHAT and WHY. These will often use content from FlippedMath.com (Mr. Bean).
    - Interleaving Practice Format (IPF) - Students will review three dissimilar skills previously learned. Emphasis is placed on mixing the order of the three skills involving dissimilar concepts. Suggested use 2-3 times monthly. These will often use content from text, "Retain Your Knowledge" questions in each section.

Unit Resources

AP Calculus online course resources
Calculus for the AP Course, 4th Edition Sullivan
Calculus: Flipped Math.com
TI-84+ Graphing Calculator
Desmos Graphing Calculator (as provided on AP Exam)
Google Classroom

Assessments (Formative and Summative)

- The Shared Resource Folder contains Assessments and other supplemental materials
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- Teacher Text contains online resources including worksheet and test generator capabilities to create Formative and Summative Assessments.
- AP Classroom contains Topic Questions and Progress Checks for Formative and Summative Assessment
- FlippedMath.com contains Corrective Action worksheets useful for Formative Assessment

Must Do Problems from Text for AP Success (Formative Assessment)
Ch 2 - Calculus for the AP Course Text by Sullivan/Miranda

Section 1 AB: 7, 11, 17, 23, 31, 33, 37, 39, 43, 51, and all AP® Practice Problems
Rate Change

Section 2: AB: 13, 15, 19, 29, 31–34, 35, 39, 41, 45, 47, 59, 63, 67, and all AP® Practice Problems
Differentiability

Section 3: AB: 7, 11, 15, 19, 21, 23, 25, 29, 31, 33, 35, 37, 43, 47, 53, 63, and all AP® Practice Problems
Polys e^x, ln(x)

Section 4: AB: 9, 13, 19, 23, 25, 31, 37, 41, 45, 57, 67, 81, 83, 91, and all AP® Practice Problems
Prod/Quo/f''

Section 5: AB: 5, 7, 11, 15, 19, 21, 29, 37, 41, 45, 55, 57, 63 and all AP® Practice Problems
Trig Deriv

Curriculum Writer(s)

Monica Calemmo

Board Approval Date

1_AP Calculus AB (Curriculum In Progress)
Unit 3: Differentiation: Composite, Implicit & Inverse Functions

Unit Description

- Chain Rule, Trigonometric Functions

Lesson 3.1 - Apply the Chain Rule to differentiate
Lesson 3.2 - Apply the technique of Implicit Differentiation
Lesson 3.3 - Find Derivatives of Inverse Functions
Lesson 3.4 - Find Derivatives of Inverse Trigonometric Functions
Skill Check Unit 3 & Derivative Rules Quiz
Lesson 3.5 - Select procedures/techniques to Find Derivatives
Lesson 3.6 - Calculate Higher Order Derivatives
Unit 3 Review (Include AP Practice Questions ~ Include Open Ended)
Unit 3 Exam
9 - 13% AP Exam weighting.

Standards

College Board Course and Exam Description

Objectives

FUN-3.C Calculate derivatives of compositions of differentiable functions.
FUN-3.D Calculate derivatives of implicitly defined functions.
FUN-3.E Calculate derivatives of inverse and inverse trigonometric functions.
FUN-3.F Determine higher order derivatives of a function.

Key Vocabulary and Definitions

Chain Rule: The method for differentiating composite functions d/dx(f(g(x)) = f'(g(x)) * g'(x)

Implicit Differentiation: A technique used when y is not explicitly solved in terms of x, involving taking the derivative of both sides with respect to x and treating y as a function of x (multiplying by dy/dx whenever a y term is differentiated).

- **Slope of Implicit Equation**: Found by solving for dy/dx after implicit differentiation

Inverse Function Derivative: The derivative of an inverse function g(x) = f-1(x), given by g'(x) = 1/f'(g(x)).

Inverse Trig Derivatives: Formulas for derivatives of inverse sine, cosine, tangent, etc.

Higher-Order Derivatives: Derivatives beyond the first, such as the second (f''(x)) or third (f'''(x)) derivative.

Logarithmic Differentiation: A technique taking the natural log (ln) of both sides before differentiating, often used for functions with variables in both the base and exponent.

Exponential Functions: Formulas for differentiating a^x or e^x

Logarithm Functions: Specifically differentiating $\log_a(x)$ or ln(x)

L'Hopital's Rule: A method for evaluating indeterminate forms (0/0) or (inf/inf) by taking the derivative of the numerator and denominator separately.

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Unit Learning Activities

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Flipped Classroom
Independent Practice
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Unit Resources

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Calculus: Flipped Math.com
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Google Classroom

Assessments (Formative and Summative)

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Must Do Problems from Text for AP Success (Formative Assessment)
Ch 3 - Calculus for the AP Course Text by Sullivan/Miranda
Section 1: AB: 9, 17, 23, 25, 37, 41, 47, 51, 59, 63, 69, 77, 81, 83, 97, 99, and all AP® Practice Problems
Chain Rule

Section 2: AB: 9, 13, 15, 25, 31, 35, 39, 43, 49, 53, 70, and all AP® Practice Problems
Implicit

Section 3: AB: 5, 7, 15, 17, 19, 27, 31, 35, 47, 51, and all AP® Practice Problems
Inverse

Section 4: AB: 9, 11, 17, 23, 27, 35, 45, and all AP® Practice Problems
Log Fcns

Curriculum Writer(s)

Monica Calemmo

Board Approval Date

1_AP Calculus AB (Curriculum In Progress)
Unit 4: Contextual Applications of Differentiation

Unit Description

- Related Rates, Linearity, L'Hopital's Rule

Lesson 4.1 - Interpret the Meaning of the Derivative In Context
Lesson 4.2 - Apply Derivatives to Position, Velocity & Acceleration
Lesson 4.3 - Find Rates of Change Not Related to Motion (geometric)
Lesson 4.4 - Introduce Related Rates of Change
Lesson 4.5 - Find Related Rates of Change in Problems
Lesson 4.6 - Approximate Function Values using Local Linearity/Linearization
Lesson 4.7 - Use L'Hopital's Rule to Determine Limits of Indeterminate Forms
Unit 4 Review (Include AP Practice Questions ~ Include Open Ended)
Unit 4 Exam

10 - 15% AP Exam weighting

Standards

College Board Course and Exam Description

Objectives

CHA-3.A Interpret the meaning of a derivative in context.
CHA-3.B Calculate rates of change in applied contexts.
CHA-3.C Interpret rates of change in applied contexts.
CHA-3.D Calculate related rates in applied contexts.
CHA-3.E Interpret related rates in applied contexts.
CHA-3.F Approximate a value on a curve using the equation of a tangent line
LIM-4.A Determine limits of functions that result in indeterminate forms.

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Key Vocabulary and Definitions

Position: *s(t)* or *x(t)* - The location of an object at time t.

Velocity: *v(t)* or *x'(t)* - The rate of change of position; indicates direction (positive = right/up, negative = left/down).

Acceleration: *a(t)* or *x''(t)* - The rate of change of velocity.

Speed: The absolute value of velocity

- **Speeding Up**: Occurs when velocity and acceleration have the same sign (v(t) & a(t) are both positive or both negative).
- **Slowing Down**: Occurs when velocity and acceleration have opposite signs.
- **At Rest**: Occurs when velocity is zero v(t) =0.

Displacement: Net change in position $s(t_2) - s(t_1)$ also found by the integral of velocity over time.

Average Velocity: Total displacement divided by total time.

Instantaneous Velocity: Velocity at a specific moment.

Optimization: The process of finding the maximum or minimum value of a function (e.g., maximum volume, minimum cost).

Related Rates: Finding a rate of change by differentiating another rate of change with respect to time.

L'Hôpital's Rule: A method to evaluate indeterminate forms (0/0) or (inf/inf) by taking the derivative of the numerator and denominator.

Average Rate of Change: The slope of the secant line.

Instantaneous Rate of Change: The derivative.

Linearization (Tangent Line Approximation): Using the tangent line at a point to approximate nearby function values.

Critical Point: A point where f'(x)=0 or f'(x)=undefined; used to find extrema.

Implicit Differentiation: A technique used for related rates problems when variables are not explicitly separated.

Extreme Value Theorem (EVT): Guarantees absolute extrema on a closed interval.

Key Particle Motion Rules - Changes Direction when v(t) changes signs.

- Moving Right/Up: $v(t) > 0$
- Moving Left/Down: $v(t) < 0$

Unit Learning Activities

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Unit Resources

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Assessments (Formative and Summative)

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Must Do Problems from Text for AP Success (Formative Assessment)
Ch 4 - Calculus for the AP Course Text by Sullivan/Miranda
Section 1: AB: 7, 9, 11, 13, 14, 17, and all AP® Practice Problems
Interpret Deriv

Section 2: AB: 7, 9, 11, 17, 19, 23, 29, 35, 37, 39, and all AP® Practice Problems
Related Rates

Section 3: AB: 25–31 (odd), 35, 37, and all AP® Practice Problems
LinearApprox

Section 4: AB: 7, 27-41 (odd), 61, and all AP® Practice Problems
L'Hopital

Curriculum Writer(s)

Monica Calemmo

Board Approval Date

1_AP Calculus AB (Curriculum In Progress)
Unit 5: Analytical Applications of Differentiation

Unit Description

- Analyze attributes of functions & optimization techniques

Lesson 5.1 - Using the Mean Value Theorem
Lesson 5.2 - Extreme Value Theorem, Global vs Local Extrema & Critical Points
Lesson 5.3 - Determine Intervals where a fcn Increases or Decreases
Lesson 5.4 - Use First Derivative Test to Determine Relative Extrema
Lesson 5.5 - Use the Candidates Test to Determine Absolute Extrema
Lesson 5.6 - Determining Concavity of Functions over Their Domains
Lesson 5.7 - Using the Second Derivative Test to Determine Extrema
Lesson 5.8 - Sketching Graphs of Functions and Their Derivatives
Lesson 5.9 - Connect a Function, Its 1st Derivative &2nd Derivative
Lesson 5.10 - Introduction to Optimization Problems
Lesson 5.11 - Solving Optimization Problems
Lesson 5.12 - Exploring Behaviors of Implicit Relations
15 - 18% AP Exam weighting

Standards

College Board Course and Exam Description

Objectives

FUN-4.A Justify conclusions about the behavior of a function based on the behavior of its derivatives.
FUN-4.B Calculate minimum and maximum values in applied contexts or analysis of functions.
FUN-4.C Interpret minimum and maximum values calculated in applied contexts.
FUN-4.D Determine critical points of implicit relations
FUN-4.E Justify conclusions about the behavior of an implicitly defined function based on evidence from its derivatives

To equip every student with the academic knowledge, social skills, and emotional resilience needed to thrive in their future endeavors.

Key Vocabulary and Definitions

Absolute Extrema (Global Extrema): The highest (maximum) or lowest (minimum) points of a function over its entire domain.

Absolute Value Theorem (EVT): If a function f is continuous on a closed interval [a,b], then f has both an absolute maximum and an absolute minimum on that interval.

Concave Down: The graph of a function lies below its tangent lines, or the slope of the function is decreasing (f''(x)<0).

Concave Up: The graph of a function lies above its tangent lines, or the slope of the function is increasing (f''(x)>0).

Critical Point/Number: A point x = c in the domain of f where the derivative f'(x) = 0 or f'(x) is undefined.

Decreasing Function: A function whose value decreases as the independent variable increases (f'(x)<0).

Extreme Value Theorem (EVT): A theorem guaranteeing the existence of absolute extrema on a closed interval.

Inflection Point: A point on the graph where the function changes concavity (from up to down or vice versa).

Increasing Function: A function whose value increases as the independent variable increases (f'(x)>0).

Local Extrema: A local maximum or local minimum point on the graph.

Local Maximum: A point where the function changes from increasing to decreasing (f'(x) changes from + to -).

Local Minimum: A point where the function changes from decreasing to increasing (f'(x) changes from - to +).

Mean Value Theorem (MVT): If f(x) is continuous and differentiable on [a,b], there exists a number c in [a,b] such that f'(x)=[f(b)-f(a)]/[b-a], specifically the Instantaneous Rate of Change = Average Rate of Change.

Optimization: The process of finding the maximum or minimum value of a function, often for modeling scenarios like cost, volume, or area.

Key Analytical Techniques

- **First Derivative Test**: Uses the sign of f'(x) to determine intervals of increase/decrease and local extrema.
- **Second Derivative Test**: Uses the sign of f''(x) to determine concavity and local extrema.
- **Horizontal Tangent**: A point where f'(x)=0.
- **Vertical Tangent/Asymptote**: A point where f'(x) is undefined (often an asymptote)

Unit Learning Activities

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Unit Resources

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  Google Classroom

Assessments (Formative and Summative)

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Must Do Problems from Text for AP Success (Formative Assessment)
Ch 5 - Calculus for the AP Course Text by Sullivan/Miranda
Section 1: AB: 9, 23, 25, 31, 37, 45, 47, 57, and all AP® Practice Problems
MVT
Section 2: AB: 7, 9, 11, 15, 25, 39, 41, 43, 47, 49, 59, 61, 65, 71, and all AP® Practice Problems
EVT
Section 3: AB: 11, 13, 17, 21, 29, 35, 39, 47, 49, 59, 63, 67, 75, 79, 91, and all AP® Practice Problems
Concavity

Section 4: AB: 53, 55, 59, and all AP® Practice Problems
Calc to Graph f(x)

Section 5: AB: 1, 3, 7, 11, 15, 41, and all AP® Practice Problems
Optimization

Section 6: AB: 11–31 (odd), 41, 47, and all AP® Practice Problems
Antiderivatives

Curriculum Writer(s)

Monica Calemmo

Board Approval Date

1_AP Calculus AB (Curriculum In Progress)
Unit 6: Integration & Accumulation of Change

Unit Description

- Fundamental Theorem of Calculus, Riemann Sums & Integral notation.

Lesson 6.1 - Explore Accumulations of Change
Lesson 6.2 - Approximate Areas with Riemann Sums
Lesson 6.3 - Riemann Sums, Summation & Definite Integral Notation
Lesson 6.4 - Fundamental Theorem of Calculus & Accumulation Fcns
Lesson 6.5 - Interpret the Behavior of Accumulation Functions w/Area
Lesson 6.6 - Applying Properties of Definite Integrals
Lesson 6.7 - Fundamental Theorem of Calculus and Definite Integrals
Lesson 6.8 - Find Antiderivatives, Indefinite Integrals: Rules & Notation
Lesson 6.9 - Integrate Using Substitution
Lesson 6.10 - Integrate Fcns by Long Division & Completing the Square
17 - 20% AP Exam weighting

Standards

College Board Course and Exam Description

Objectives

CHA-4.A Interpret the meaning of areas associated with the graph of a rate of change in context.
LIM-5.A Approximate a definite integral using geometric and numerical methods.
LIM-5.B Interpret the limiting case of the Riemann sum as a definite integral.
LIM-5.C Represent the limiting case of the Riemann sum as a definite integral.
FUN-5.A Represent accumulation functions using definite integrals.

FUN-6.A Calculate a definite integral using areas and properties of definite integrals.
FUN-6.B Evaluate definite integrals analytically using the Fundamental Theorem of Calculus.
FUN-6.C Determine antiderivatives of functions and indefinite integrals, using knowledge of derivatives.
FUN-6.D For integrands requiring substitution or rearrangements into equivalent forms:
(a) Determine indefinite integrals.
(b) Evaluate definite integrals.

Key Vocabulary and Definitions

Antiderivative: A function F is an antiderivative (integral) of f if F'(x) = f(x)

.

Indefinite Integral: Represents a family of functions (the antiderivatives) and always includes the Constant of Integration C.

Definite Integral: Represents the "net signed area" between a function and the x-axis over a specific interval. Also defined as the limit of a Riemann sum as the number of rectangles (n) approaches infinity and their width approaches zero. It calculates the exact net signed area under a curve f(x) on [a,b] by summing the areas of n rectangles with height $f(x_i)$ and width delta x.

Integrand: The function being integrated (the f(x) inside the integral symbol).

Limits of Integration: The lower bound (a) and upper bound (b) of a definite integral.

Approximation Methods - when you can't find an exact integral, you use Riemann Sums to estimate the area using rectangles or trapezoids.

- **Left Riemann Sum** - Uses the height of the function at the left endpoint of each sub-interval.
- **Right Riemann Sum** - Uses the height of the function at the right endpoint of each sub-interval.
- **Midpoint Riemann Sum** - Uses the height of the function at the center of each sub-interval.
- **Trapezoidal Sum** - Uses the average of the left and right endpoints to create trapezoids; usually more accurate than rectangles.

  Overestimation / Underestimation - Whether an approximation is higher or lower than the actual value, determined by whether the function is increasing/decreasing or its concavity.

Fundamental Theorem of Calculus (Part 1): Connects differentiation and integration. The derivative of the accumulation function (area) of f(x) is simply the function f(x) itself. In other words, integrating a function and then differentiating it returns the original function.

Fundamental Theorem of Calculus (Part 2): Provides the method for evaluating definite integrals: to calculate the definite integral of a function f(x) from point a to b, you find the antiderivative F, and calculate the difference F(b) - F(a).

Mean Value Theorem for Integrals: States there exists a number, c in [a,b] such that the function reaches its Average Value. Average Value of a Function: The "average height" of the curve over an interval:

Integration Techniques

Power Rule for Integration: The reverse of the derivative power rule; The integral of xn = (1/n+1)x(n+1) + C
U-Substitution: A method for integrating composite functions; it is the "reverse Chain Rule."
Change of Variables: The process of switching the limits of integration from x-values to u-values when performing u-substitution.

Properties of Definite Integrals:

Additivity: the integral of a sum equals the sum of the integrals
Reversal: the integral from a to b of f(x) equals -1 times the integral from b to a of f(x)
Zero Length: the integral from a to a of f(x) equals 0

Accumulation & Change
Accumulation Function: A definite integral with a variable upper limit, representing the "total buildup" of a quantity over time.
Net Change Theorem: The integral of a rate of change is the net change in the quantity.
Initial Value Problem: Finding a specific antiderivative (solving for C) given a starting point.

Unit Learning Activities

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Direct Instruction
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Independent Practice
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Unit Resources

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Assessments (Formative and Summative)

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Must Do Problems from Text for AP Success (Formative Assessment)
Ch 6 - Calculus for the AP Course Text by Sullivan/Miranda
Section 1: AB: 5, 7, 13, 29, and all AP® Practice Problems
Area

Section 2: AB: 9, 13, 17–23 (odd), 31, 33, 39, 51, 55, 57, and all AP® Practice Problems
Def Integral

Section 3: AB: 5, 11, 15, 17, 21, 23, 31, 33, 39, 45, 53, 61, 63, and all AP® Practice Problems
FTC

Section 4: AB: 9, 13, 17, 19, 21, 25, 29, 33, 39, 43, 49, 53, 63, 65, 71, 75, 85, 97, and all AP® Practice Problems
Prop Def Int

Section 5: AB: 9, 11, 13, 17, 21, 25, 27, 29, 33, 35, 43, 49, 51, 55, 61, 63, 69, and all AP® Practice Problems
Subst

Section 6: AB: 3, 9, 11, 13, 35, 47, 51, 55, and all AP® Practice Problems
Long Div

Curriculum Writer(s)

Monica Calemmo

Board Approval Date

1_AP Calculus AB (Curriculum In Progress)
Unit 7: Differential Equations

Unit Description

- Slope Fields & separable differentiable equations

Lesson 7.1 - Model Situations with Differential Equations
Lesson 7.2 - Verify Solutions for Differential Equations
Lesson 7.3 - Sketch Slope Fields
Lesson 7.4 - Reasoning Using Slope Fields
Lesson 7.6 - Find General Solutions Using Separation of Variables
Lesson 7.7 - Find Particular Solutions Using Initial Condition & Separation of Variables
Lesson 7.8 Exponential Models with Differential Equations
6 - 12% AP Exam weighting

Standards
College Board Course and Exam Description

Objectives

FUN-7.A Interpret verbal statements of problems as differential equations involving a derivative expression.
FUN-7.B Verify solutions to differential equations.
FUN-7.C Estimate solutions to differential equations.
FUN-7.D Determine general solutions to differential equations.
FUN-7.E Determine particular solutions to differential equations.
FUN-7.F Interpret the meaning of a differential equation and its variables in context.
FUN-7.G Determine general and particular solutions for problems involving differential equations in context.

Key Vocabulary and Definitions
Differential Equation: An equation involving a function and one or more of its derivatives.

Order of a Differential Equation: The highest derivative present in the equation.

General Solution: A solution to a differential equation that includes a constant (C), representing a family of curves.

Particular Solution: A specific solution that satisfies a given initial condition, where the constant C has been solved for.

Initial Condition: A value, usually in the form (x_0, y_0), used to find the particular solution.

Separation of Variables: A technique for solving first-order differential equations by separating x terms and dx on one side and y terms and dy on the other.

Slope Field: A graphical representation of a differential equation, showing short line segments with slopes (dy/dx) at various points (x, y) in the plane.

Exponential Growth/Decay Rate: A model where the rate of change of a variable is proportional to itself, defined by the differential equation dy/dt = ky
.
Law of Exponential Change: The solution to dy/dt = ky, which is $y = C*e^{kt}$.

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Unit Learning Activities

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SLOT (Spaced Learning Over Time) Activity done weekly for 5-10 minutes reviewing concepts from 12 weeks prior
Worked Solutions - Students are provided worked solutions to problems with a focus on enhancing algebraic reasoning, specifically WHAT and WHY. These will often use content from FlippedMath.com (Mr. Bean).
Interleaving Practice Format (IPF) - Students will review three dissimilar skills previously learned. Emphasis is placed on mixing the order of the three skills involving dissimilar concepts. Suggested use 2-3 times monthly. These will often use content from text, "Retain Your Knowledge" questions in each section.

Unit Resources

- AP Calculus online course resources
  Calculus for the AP Course, 4th Edition Sullivan
  Calculus: Flipped Math.com
  TI-84+ Graphing Calculator
  Desmos Graphing Calculator (as provided on AP Exam)
  Google Classroom

Assessments (Formative and Summative)

- The Shared Resource Folder contains Assessments and other supplemental materials
- Student Text contains AP Practice Problems, Retain Your Knowledge Problems in each section as well as Chapter Reviews for each Unit for Formative Assessment.
- Teacher Text contains online resources including worksheet and test generator capabilities to create Formative and Summative Assessments
- AP Classroom contains Topic Questions and Progress Checks for Formative and Summative Assessment
- FlippedMath.com contains Corrective Action worksheets useful for Formative Assessment

Must Do Problems from Text for AP Success (Formative Assessment)
Ch 7 - Calculus for the AP Course Text by Sullivan/Miranda

Section 2: AB: 3, 7, 11, 15, 17, 19, 21, 23, 25, 27, 29, 33, 39, and all AP® Practice Problems
Separable DEs

Section 3: AB: 3, 5, 9, 11, 13, 17, and all AP® Practice Problems
Slope Fields

Curriculum Writer(s)

Monica Calemmo

Board Approval Date

1_AP Calculus AB (Curriculum In Progress)
Unit 8: Applications of Integration

Unit Description

- Find the average value of a function, area between two curves and volume of solids formed by cross sections or revolutions using a variety of techniques.

Lesson 8.1 - Find the Average Value of a Function on an Interval
Lesson 8.2 - Connect Position, Velocity, Acceleration Fcns Using Integrals
Lesson 8.3 - Use Accumulation Functions & Definite Integrals in Applied Contexts
Lesson 8.4 - Find Area Between Curves Expressed as Functions of x
Lesson 8.5 - Find Area Between Curves Expressed as Functions of y
Lesson 8.6 - Find Area Between Curves Intersecting at More Than Two Points
Lesson 8.7 - Volumes w/Cross Sections: Squares & Rectangles
Lesson 8.8 - Volumes w/ Cross Sections: Triangles & Semicircles
Lesson 8.9 - Volume w/ Disc Method: Revolve Around the x- or y-Axis
Lesson 8.10 - Volume w/ Disc Method: Revolve Around Other Axes
Lesson 8.11 - Volume w/ Washer Method: Revolve over the x- or y-Axis
Lesson 8.12 - Volume w/ Washer Method: Revolve over Other Axes
10 - 15% AP Exam weighting

Standards

College Board Course and Exam Description

Objectives

CHA-4.B Determine the average value of a function using definite integrals
CHA-4.C Determine values for positions and rates of change using definite integrals in problems involving rectilinear motion.
CHA-4.D Interpret the meaning of a definite integral in accumulation problems.
CHA-4.E Determine net change using definite integrals in applied contexts.
CHA-5.A Calculate areas in the plane using the definite integral.
CHA-5.B Calculate volumes of solids with known cross sections using definite integrals
CHA-5.C Calculate volumes of solids of revolution using definite integrals.

To equip every student with the academic knowledge, social skills, and emotional resilience needed to thrive in their future endeavors.

Key Vocabulary and Definitions

Average Value of a Function: The average "height" of a function f(x) over an interval [a.b] calculated by the formula 1/(b-a) times the integral of f(x) from a to b

Displacement: The net change in position of a particle, found by the integral of the velocity function from a to b.

Total Distance Traveled: The sum of all distances covered, regardless of direction, found by the integral of the absolute value of the velocity function from a to b.

Area Between Curves: The area of a region bounded by two functions, calculated as an integral from left to right on the x axis, of the top function minus the bottom function; or an integral from bottom to top on the y axis, of the right function minus the left function

Cross Section: A 2D "slice" of a 3D solid. Given the cross-sectional shape, the volume is the integral from a to b of the area of the cross-sectional shape.

Common Cross Sections: Squares, Semicircles and Equilateral Triangles

Solid of Revolution: A 3D shape formed by rotating a 2D region around an axis.

Disc Method: Used when the region is flush against the axis of revolution.

Washer Method: Used when there is a gap between the region and the axis, creating a hollow center.

Unit Learning Activities

Instruct content according to established timeline found in the Unit Description
The following techniques will be employed throughout the unit using Unit Resources
Direct Instruction
Guided Practice/small group instruction
Flipped Classroom
Independent Practice
Supplemental Learning Activities will be used as needed throughout
SLOT (Spaced Learning Over Time) Activity done weekly for 10-15 minutes reviewing concepts from 4 weeks prior
SLOT (Spaced Learning Over Time) Activity done weekly for 5-10 minutes reviewing concepts from 12 weeks prior
Worked Solutions - Students are provided worked solutions to problems with a focus on enhancing algebraic reasoning, specifically WHAT and WHY. These will often use content from FlippedMath.com (Mr. Bean).
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Unit Resources

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  Calculus: Flipped Math.com
  TI-84+ Graphing Calculator
  Desmos Graphing Calculator (as provided on AP Exam)
  Google Classroom

Assessments (Formative and Summative)

- The Shared Resource Folder contains Assessments and other supplemental materials
- Student Text contains AP Practice Problems, Retain Your Knowledge Problems in each section as well as Chapter Reviews for each Unit for Formative Assessment.
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- FlippedMath.com contains Corrective Action worksheets useful for Formative Assessment

Must Do Problems from Text for AP Success (Formative Assessment)
Ch 8 - Calculus for the AP Course Text by Sullivan/Miranda
Section 1: AB: 5, 9, 11, 13, and all AP® Practice Problems
Int Linear Motion

Section 2: AB: 3, 7, 15, 19, 21, 31, 33, 41, 59, 61, and all AP® Practice Problems
Area between curves

Section 3: AB: 5, 7, 13, 15, 17, 21, 33, 39, 41, 43, 47, 53, and all AP® Practice Problems
Discs & Washers

Section 5: AB: 3, 5, 7, 9, 17, and all AP® Practice Problems
Cross Sections

Curriculum Writer(s)
Monica Calemmo

Board Approval Date

1_Principles of Engineering H (Curriculum In Progress)

Grade Level Summary

Course Cover Sheet

Grade Level Modules

Module 1:	Lesson 0.1 Engineering Design Process
Module 2:	Lesson 0.2 Collaborative Modeling and Modern Product Design
Module 3:	Lesson 0.3 Material Choice and Testing
Module 4:	Lesson 0.4 Designing a Shoe For You
Module 5:	Lesson 1.1 Simple and Compound Machines
Module 6:	Lesson 1.2 Mechanisms
Module 7:	Lesson 1.3 Agricultural Solutions
Module 8:	Lesson 2.1 Introduction to Robotics
Module 9:	Lesson 2.2 Robotics in Action
Module 10:	Lesson 2.3 Artificial Intelligence
Module 11:	Lesson 2.4 An Electronic Ensemble
Module 12:	Lesson 3.1 Electrical Circuits
Module 13:	Lesson 3.2 Fluid Power
Module 14:	Lesson 3.3 Kinematics
Module 15:	Lesson 3.4 Integration of Circuits, Fluid Power, and Kinematics
Module 16:	Lesson 4.1 Statics
Module 17:	Lesson 4.2 Renewable Energy
Module 18:	Lesson 4.3 Transportation
Module 19:	Lesson 4.4 Infrastructure Redesign

1_Principles of Engineering H (Curriculum In Progress)
Lesson 0.1 Engineering Design Process

Unit Description

In Lesson 0.1, students review and apply their understanding of the engineering design process to design a shoe to meet the specific needs of a customer. They use information gathered in interviews to learn about their client, develop a detailed problem statement, apply different brainstorming techniques, visualize their solution through concept sketches, and create a decision matrix to select the best solution for their client's needs. Students build a prototype and create a testing plan to test and iterate their design and share their results in a detailed presentation.

Standards

3.5.9-12.A	-	Use various approaches to communicate processes and procedures for using, maintaining, and assessing technological products and systems.
3.5.9-12.I (ETS)	-	Evaluate a solution to a complex real-world problem based on prioritized criteria and trade-offs that account for a range of constraints, including cost, safety, reliability, and aesthetics as well as possible social, cultural, and environmental impacts.
3.5.9-12.J	-	Synthesize data and analyze trends to make decisions about technological products, systems, or processes.
3.5.9-12.B	-	Critically assess and evaluate a technology that minimizes resource use and resulting waste to achieve a goal.
3.5.9-12.C	-	Develop a solution to a technological problem that has the least negative environmental and social impact.
3.5.9-12.D	-	Critique whether existing or proposed technologies use resources sustainably.
3.5.9-12.H	-	Evaluate ways that technology and engineering can impact individuals, society, and the environment.
3.5.9-12.E	-	Evaluate how technology and engineering advancements alter human health and capabilities.
3.5.9-12.F	-	Evaluate a technological innovation that arose from a specific society's unique need or want.
3.5.9-12.G	-	Evaluate a technological innovation that was met with societal resistance impacting its development.

Standards (Additional)

ISTE Standards
STEELS Standards

Essential Questions

- How does a design team know what problem to solve?
- Why is empathy an important skill in engineering design?
- How do engineers communicate designs and solutions?
- What is a decision matrix and why is it used?

Objectives

Gather and interpret client information to define an engineering problem.
Develop a detailed problem statement and design requirements.
Generate and communicate multiple solution ideas through brainstorming and concept sketches.
Use a decision matrix to compare alternatives and select a solution.
Build, test, evaluate, and iterate a prototype.
Communicate the design process and results in a detailed presentation.

To equip every student with the academic knowledge, social skills, and emotional resilience needed to thrive in their future endeavors.

Key Vocabulary and Definitions

Engineering Design Process: an iterative process used to define problems, generate solutions, test ideas, and improve designs.
Empathy: understanding a user's needs, experiences, and perspective.
Design Brief: a document that summarizes a problem, user needs, criteria, and constraints.
Problem Statement: a clear description of the problem to be solved.
Criteria: requirements used to judge the success of a solution.
Constraints: limits or restrictions placed on a design.
Brainstorming: a method for generating many possible ideas without immediately judging them.
Concept Sketch: a quick drawing used to communicate a design idea.
Decision Matrix: a tool that compares alternatives using weighted criteria.
Prototype: a physical or digital model used to test a design idea.
Iteration: repetition of a process or set of instructions.

Unit Learning Activities

- Conduct a client interview and identify user needs.
- Develop a problem statement and design brief.
- Practice brainstorming techniques and create concept sketches.
- Use a decision matrix to select a preferred solution.
- Construct and test a prototype.
- Develop a test plan, iterate the design, and present results.

Unit Resources

MyPLTW, Laptop cart with engineering software, VEX Robotics equipment

Assessments (Formative and Summative)

Formative:
Conclusion Questions
Question and Answer
Notebook Checks

Summative:
Engineering design process documentation
Shoe design prototype and testing presentation

Curriculum Writer(s)

Drew Meckes

Board Approval Date

1_Principles of Engineering H (Curriculum In Progress)
Lesson 0.2 Collaborative Modeling and Modern Product Design

Unit Description
In Lesson 0.2 students use a 3-D modeling software to learn different tools used to develop a detailed solution and are introduced to basic manufacturing techniques and practices. Students use 3-D modeling software to modify an existing shoe model. Students learn manufacturing techniques and apply their knowledge to optimize a shoe design process.

Standards

3.5.9-12.A	-	Use various approaches to communicate processes and procedures for using, maintaining, and assessing technological products and systems.
3.5.9-12.I (ETS)	-	Evaluate a solution to a complex real-world problem based on prioritized criteria and trade-offs that account for a range of constraints, including cost, safety, reliability, and aesthetics as well as possible social, cultural, and environmental impacts.
3.5.9-12.J	-	Synthesize data and analyze trends to make decisions about technological products, systems, or processes.

Standards (Additional)
ISTE Standards
STEELS Standards

Essential Questions
- What techniques do engineers use to visually present design ideas?
- What advantages does Computer-Aided Design (CAD) provide over traditional paper and pencil design?
- What advantages does paper and pencil design provide over CAD?
- What would happen if engineers did not follow accepted dimensioning standards and guidelines, but instead, used their own individual dimensioning methods?
- What are the differences between manufacturing processes?

Objectives
Create and interpret sketches and technical drawings.
Use CAD tools to create and modify 3-D solid models.
Apply accepted dimensioning standards and guidelines.
Compare the advantages of hand sketching and CAD for communicating design ideas.
Describe and compare manufacturing processes.
Modify a product design with manufacturability in mind.

Key Vocabulary and Definitions
Computer-Aided Design (CAD): the use of computer software to create, modify, analyze, or document designs.
Parametric Model: a computer model controlled by dimensions, constraints, and defined relationships.
Constraint: a rule or limitation that controls a design or model.
Dimension: a numerical value that defines size or location.
Tolerance: the allowable variation from a specified dimension.
Orthographic Projection: a set of two-dimensional views used to describe a three-dimensional object.
Isometric Sketch: a pictorial drawing that represents three dimensions in a single view.
Manufacturing Process: a method used to transform materials into a finished product.
Additive Manufacturing: a process that creates an object by adding material layer by layer.
Subtractive Manufacturing: a process that creates an object by removing material.

Unit Learning Activities
- Practice pictorial and multiview sketching.
- Create and modify a shoe model using 3-D modeling software.
- Apply dimensions and constraints to a model.
- Create technical documentation for a modeled part.
- Investigate manufacturing methods and optimize the design for production.

Unit Resources
MyPLTW, Laptop cart with engineering software, VEX Robotics equipment

Assessments (Formative and Summative)
Formative:
Conclusion Questions
Question and Answer
Notebook Checks

Summative:
CAD model and technical drawing
Product design/manufacturing optimization task

Curriculum Writer(s)
Drew Meckes

Board Approval Date

1_Principles of Engineering H (Curriculum In Progress)
Lesson 0.3 Material Choice and Testing

Unit Description
In Lesson 0.3, students experiment with different material options to determine which material properties are best paired with specific use cases and why. They design a repeatable test that causes an object to fail or break in a consistent manner, producing meaningful data about the material. Students also model a shoe sole custom-sized for their foot and choose a material that best meets the needs of a shoe application of their choice.

Standards

3.5.9-12.A	-	Use various approaches to communicate processes and procedures for using, maintaining, and assessing technological products and systems.
3.5.9-12.I (ETS)	-	Evaluate a solution to a complex real-world problem based on prioritized criteria and trade-offs that account for a range of constraints, including cost, safety, reliability, and aesthetics as well as possible social, cultural, and environmental impacts.
3.5.9-12.J	-	Synthesize data and analyze trends to make decisions about technological products, systems, or processes.

Standards (Additional)
ISTE Standards
STEELS Standards

Essential Questions
- What properties should be considered when evaluating material choice for a product?
- What data should be collected in a testing process?
- How is material testing data useful?
- How does an engineer predict the performance and safety of a selected material?
- What is the difference between the independent variable and the dependent variable in experimental design?

Objectives
Identify material properties important to product design.
Design a repeatable experimental protocol for material testing.
Distinguish independent, dependent, and controlled variables.
Collect, organize, visualize, and analyze test data.
Use statistical evidence to compare materials and predict performance.
Select and justify a material based on design requirements and test results.

Key Vocabulary and Definitions
Material Property: a measurable characteristic that describes how a material behaves.
Independent Variable: the factor intentionally changed during an experiment.
Dependent Variable: the factor measured in response to a change.
Controlled Variable: a factor kept constant during an experiment.
Experimental Design: a planned procedure for collecting evidence to answer a question.
Failure Test: a test used to determine when or how a material or product fails.
Mean: the arithmetic average of a data set.
Median: the middle value of an ordered data set.
Standard Deviation: a measure of how spread out values are around the mean.
Sample: a subset of a larger population used for analysis.
Population: the complete group about which conclusions are made.

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Unit Learning Activities
- Investigate properties of candidate materials.
- Design and conduct a repeatable material failure test.
- Collect and graph experimental data.
- Calculate and interpret appropriate descriptive statistics.
- Model a custom shoe sole and select a material for a specific application.

Unit Resources
MyPLTW, Laptop cart with engineering software, VEX Robotics equipment

Assessments (Formative and Summative)
Formative:
Conclusion Questions
Question and Answer
Notebook Checks

Summative:
Material testing investigation
Material selection justification and shoe sole model

Curriculum Writer(s)
Drew Meckes

Board Approval Date

1_Principles of Engineering H (Curriculum In Progress)
Lesson 0.4 Designing a Shoe For You

Unit Description
In the final lesson, students apply their knowledge gained through the entire unit to identify a client with a specific footwear need to design and develop a solution. They interview their client, document their engineering design process, create a 3-D model, develop a physical prototype, and iterate with their client to design a shoe tailored to their needs.

Standards

3.5.9-12.A	-	Use various approaches to communicate processes and procedures for using, maintaining, and assessing technological products and systems.
3.5.9-12.I (ETS)	-	Evaluate a solution to a complex real-world problem based on prioritized criteria and trade-offs that account for a range of constraints, including cost, safety, reliability, and aesthetics as well as possible social, cultural, and environmental impacts.
3.5.9-12.J	-	Synthesize data and analyze trends to make decisions about technological products, systems, or processes.
3.5.9-12.B	-	Critically assess and evaluate a technology that minimizes resource use and resulting waste to achieve a goal.
3.5.9-12.C	-	Develop a solution to a technological problem that has the least negative environmental and social impact.
3.5.9-12.D	-	Critique whether existing or proposed technologies use resources sustainably.
3.5.9-12.H	-	Evaluate ways that technology and engineering can impact individuals, society, and the environment.
3.5.9-12.E	-	Evaluate how technology and engineering advancements alter human health and capabilities.
3.5.9-12.F	-	Evaluate a technological innovation that arose from a specific society's unique need or want.
3.5.9-12.G	-	Evaluate a technological innovation that was met with societal resistance impacting its development.

Standards (Additional)
ISTE Standards
STEELS Standards

Essential Questions
- What are two possible ways that a team could come to a consensus in a disagreement over a solution to a problem?
- Why is it important for the team to come to a consensus on the issues that arise? What are some reasons that the team leader should not dictate the direction of the group?
- How can you design a product that meets the needs of a user?

Objectives
Collaborate effectively to reach consensus during design decisions.
Apply an iterative engineering design process to an authentic client need.
Develop and maintain technical design documentation.
Create a 3D model and physical prototype of a proposed solution.
Evaluate the solution with a client and use feedback to improve the design.
Communicate and justify the final design.

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Key Vocabulary and Definitions
Collaboration: working with others toward a shared goal.
Client: a person or organization for whom a solution is developed.
User-Centered Design: a design approach that prioritizes the needs and experiences of intended users.
Prototype: a physical or digital model used to test a design idea.
Iteration: repetition of a process or set of instructions.
Feedback: information used to evaluate and improve a design.
Project Management: planning, organizing, and coordinating resources and tasks to complete a project.

Unit Learning Activities
- Identify and interview a client with a specific footwear need.
- Develop design requirements and generate solution concepts.
- Reach team consensus on a solution path.
- Create a 3D model and physical prototype.
- Test the design with the client and collect feedback.
- Iterate and communicate the final solution.

Unit Resources
MyPLTW, Laptop cart with engineering software, VEX Robotics equipment

Assessments (Formative and Summative)
Formative:
Conclusion Questions
Question and Answer
Notebook Checks

Summative:
Unit 0 shoe design problem
Final design documentation, prototype, and presentation

Curriculum Writer(s)
Drew Meckes

Board Approval Date

1_Principles of Engineering H (Curriculum In Progress)
Lesson 1.1 Simple and Compound Machines

Unit Description

In Lesson 1.1, students explore simple machines, where they are found, how they are used, and why they are the foundation of mechanical devices. They will explore the fundamentals of energy, work, and power, then apply their understanding to maximize efficiency and power. Students then investigate the factors that affect pulley systems, how to maximize pulley efficiency, and design their own pulley system in a simulation. Students explore the benefits and drawbacks of different gears and gear trains, and how to optimize speed or torque through gear ratios. Finally, students use force and acceleration sensors, along with their understanding of simple machines, to design a robot that can pull with the greatest force.

Standards

3.5.9-12.A	-	Use various approaches to communicate processes and procedures for using, maintaining, and assessing technological products and systems.
3.5.9-12.I (ETS)	-	Evaluate a solution to a complex real-world problem based on prioritized criteria and trade-offs that account for a range of constraints, including cost, safety, reliability, and aesthetics as well as possible social, cultural, and environmental impacts.
3.5.9-12.J	-	Synthesize data and analyze trends to make decisions about technological products, systems, or processes.

Standards (Additional)

ISTE Standards
STEELS Standards

Essential Questions

- How do engineers quantify the mechanical advantage of a system?
- How do engineers apply their knowledge of simple machines to solve problems?
- How do engineers quantify energy, work, and power?
- How do engineers apply their knowledge of energy, work, and power to solve problems?

Objectives

Identify and distinguish the six simple machines and their applications.
Measure forces and distances in mechanical systems.
Calculate mechanical advantage, work, power, efficiency, and drive ratios.
Analyze pulley systems and determine factors that affect efficiency.
Analyze gear trains and use gear ratios to optimize speed or torque.
Apply simple-machine concepts to design a mechanical solution.

Key Vocabulary and Definitions

Simple Machine: a basic mechanical device that changes the magnitude or direction of a force.
Mechanical Advantage: the ratio describing how a machine multiplies force.
Ideal Mechanical Advantage: mechanical advantage predicted from geometry without friction losses.
Actual Mechanical Advantage: the ratio of measured output force to input force.
Efficiency: the ratio of useful output to total input, usually expressed as a percent.
Work: force applied through a distance.
Power: the rate at which work is done.
Pulley: a grooved wheel and rope or belt used to transmit force.
Gear Ratio: the relationship between the number of teeth or rotational speeds of meshing gears.
Torque: a turning effect produced by a force.
Compound Machine: a machine made from two or more simple machines.

To equip every student with the academic knowledge, social skills, and emotional resilience needed to thrive in their future endeavors.

Unit Learning Activities
- Identify examples and applications of simple machines.
- Complete calculations involving mechanical advantage, work, power, and efficiency.
- Investigate pulley-system variables and model a pulley system in simulation.
- Investigate gears, gear trains, speed, and torque.
- Use force and acceleration sensors in a robot-pulling design challenge.

Unit Resources
MyPLTW, Laptop cart with engineering software, VEX Robotics equipment

Assessments (Formative and Summative)
Formative:
Conclusion Questions
Question and Answer
Notebook Checks

Summative:
Mechanical systems calculations
Pulley simulation/design
Robot pulling force challenge

Curriculum Writer(s)
Drew Meckes

Board Approval Date

1_Principles of Engineering H (Curriculum In Progress)
Lesson 1.2 Mechanisms

Unit Description

Students begin Lesson 1.2 by examining the four types of motion and their applications in different mechanical devices. They apply their understanding of motion by designing and building a latch mechanism to fix a broken door. Students build on their understanding of motion by creating a variety of mechanisms and exploring how they convert one type of motion to another. The lesson ends with a motion conversion challenge in which students work collaboratively to design, build, and test individual segments of a machine, then combine their machines into a large-scale device to solve a problem.

Standards

3.5.9-12.A	-	Use various approaches to communicate processes and procedures for using, maintaining, and assessing technological products and systems.
3.5.9-12.I (ETS)	-	Evaluate a solution to a complex real-world problem based on prioritized criteria and trade-offs that account for a range of constraints, including cost, safety, reliability, and aesthetics as well as possible social, cultural, and environmental impacts.
3.5.9-12.J	-	Synthesize data and analyze trends to make decisions about technological products, systems, or processes.

Standards (Additional)

ISTE Standards
STEELS Standards

Essential Questions

- How are mechanisms used to convert one type of motion to another?
- How do engineers manipulate motion to solve design problems?

Objectives

Identify and describe rotary, linear, reciprocating, and oscillating motion.
Analyze mechanisms to determine input and output motion.
Calculate and interpret drive ratios where appropriate.
Design and build a mechanism to meet defined requirements.
Use mechanisms to convert one type of motion to another.
Collaborate to integrate multiple mechanisms into a functioning system.

Key Vocabulary and Definitions

Mechanism: a system of moving parts that transmits or transforms motion and force.
Rotary Motion: motion around an axis.
Linear Motion: motion along a straight path.
Reciprocating Motion: repeated back-and-forth linear motion.
Oscillating Motion: repeated angular motion back and forth.
Input: information or a signal entering a system.
Output: an action, signal, or result produced by a system.
Linkage: connected rigid members used to transmit motion and force.
Cam: a shaped rotating or sliding component that produces prescribed follower motion.
Follower: a mechanism component that moves in response to a cam.
Crank: a rotating arm used to transmit motion.
Slider: a component constrained to move along a straight path.

To equip every student with the academic knowledge, social skills, and emotional resilience needed to thrive in their future endeavors.

Unit Learning Activities

- Classify motion in common mechanical devices.
- Design and build a latch mechanism for a broken door.
- Build and analyze mechanisms that convert motion.
- Document input/output relationships and mechanical behavior.
- Complete a collaborative motion-conversion challenge.

Unit Resources

MyPLTW, Laptop cart with engineering software, VEX Robotics equipment

Assessments (Formative and Summative)

Formative:
Conclusion Questions
Question and Answer
Notebook Checks

Summative:
Latch mechanism design
Motion conversion mechanism challenge

Curriculum Writer(s)

Drew Meckes

Board Approval Date

1_Principles of Engineering H (Curriculum In Progress)
Lesson 1.3 Agricultural Solutions

Unit Description
In this unit problem, students apply their understanding of simple machines, compound machines, mechanisms, and motion to choose a real-world agricultural problem, then design, test, and build a compound machine to solve it. They then pitch their solution to a team of potential investors in an informative and persuasive presentation.

Standards

3.5.9-12.A	-	Use various approaches to communicate processes and procedures for using, maintaining, and assessing technological products and systems.
3.5.9-12.I (ETS)	-	Evaluate a solution to a complex real-world problem based on prioritized criteria and trade-offs that account for a range of constraints, including cost, safety, reliability, and aesthetics as well as possible social, cultural, and environmental impacts.
3.5.9-12.J	-	Synthesize data and analyze trends to make decisions about technological products, systems, or processes.
3.5.9-12.B	-	Critically assess and evaluate a technology that minimizes resource use and resulting waste to achieve a goal.
3.5.9-12.C	-	Develop a solution to a technological problem that has the least negative environmental and social impact.
3.5.9-12.D	-	Critique whether existing or proposed technologies use resources sustainably.
3.5.9-12.H	-	Evaluate ways that technology and engineering can impact individuals, society, and the environment.

Standards (Additional)
ISTE Standards
STEELS Standards

Essential Questions
- How can you apply your understanding of machines and mechanisms to solve an authentic problem?

Objectives
Research and define an authentic agricultural problem.
Develop criteria and constraints for a mechanical solution.
Apply simple machines, compound machines, mechanisms, and motion conversion in a design.
Build and test a functional prototype.
Use test evidence to evaluate and improve the design.
Deliver an informative and persuasive engineering pitch.

Key Vocabulary and Definitions
Agricultural Engineering: engineering applied to agricultural production, systems, equipment, and resources.
Compound Machine: a machine made from two or more simple machines.
Criteria: requirements used to judge the success of a solution.
Constraint: a rule or limitation that controls a design or model.
Prototype: a physical or digital model used to test a design idea.
Optimization: improving a design to best satisfy selected goals and constraints.
Pitch: a concise persuasive presentation of a proposed solution.
Stakeholder: a person or group affected by or interested in a project.

Unit Learning Activities

- Research agricultural problems that could benefit from a mechanical solution.
- Develop a design brief and generate concepts.
- Design and construct a compound machine.
- Test, evaluate, and iterate the solution.
- Prepare and deliver an investor-style presentation.

Unit Resources

MyPLTW, Laptop cart with engineering software, VEX Robotics equipment

Assessments (Formative and Summative)

Formative:
Conclusion Questions
Question and Answer
Notebook Checks

Summative:
Agricultural Solutions unit problem

Curriculum Writer(s)

Drew Meckes

Board Approval Date

1_Principles of Engineering H (Curriculum In Progress)
Lesson 2.1 Introduction to Robotics

Unit Description
In this lesson, students begin their introduction to robotics by creating a robot that moves forward without wheels. They then investigate what constitutes a robot compared to other programmable mechanical devices. Students conclude the lesson with detailed research on the history of robotics and predict future opportunities in the field.

Standards

3.5.9-12.A	-	Use various approaches to communicate processes and procedures for using, maintaining, and assessing technological products and systems.
3.5.9-12.I (ETS)	-	Evaluate a solution to a complex real-world problem based on prioritized criteria and trade-offs that account for a range of constraints, including cost, safety, reliability, and aesthetics as well as possible social, cultural, and environmental impacts.
3.5.9-12.J	-	Synthesize data and analyze trends to make decisions about technological products, systems, or processes.
3.5.9-12.E	-	Evaluate how technology and engineering advancements alter human health and capabilities.
3.5.9-12.F	-	Evaluate a technological innovation that arose from a specific society's unique need or want.
3.5.9-12.G	-	Evaluate a technological innovation that was met with societal resistance impacting its development.

Standards (Additional)
ISTE Standards
STEELS Standards

Essential Questions
- What characteristics define a robot?

Objectives
Design and build a device that produces controlled movement without wheels.
Identify characteristics that define a robot.
Differentiate robots from other programmable mechanical devices.
Research significant developments in the history of robotics.
Analyze current trends and predict future applications of robotics.

Key Vocabulary and Definitions
Robot: a programmable machine that senses, processes information, and/or acts to perform tasks.
Automation: use of control systems to perform tasks with reduced direct human control.
Autonomous: able to perform actions or make decisions without continuous human control.
Actuator: a device that converts a control signal into physical action.
Sensor: a device that detects or measures a physical condition.
Controller: a device or program that processes inputs and directs outputs.
Input: information or a signal entering a system.
Output: an action, signal, or result produced by a system.

Unit Learning Activities

- Design and build a device that moves forward without wheels.
- Develop criteria for determining whether a device is a robot.
- Classify examples of robots and programmable machines.
- Research milestones in robotics history.
- Predict and communicate future opportunities in robotics.

Unit Resources

MyPLTW, Laptop cart with engineering software, VEX Robotics equipment

Assessments (Formative and Summative)

Formative:
Conclusion Questions
Question and Answer
Notebook Checks

Summative:
Non-wheeled movement design task
Robotics history/future research product

Curriculum Writer(s)

Drew Meckes

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1_Principles of Engineering H (Curriculum In Progress)
Lesson 2.2 Robotics in Action

Unit Description

In lesson 2.2 students develop best coding practices, differentiate between open and closed loop systems, apply conditional statements, utilize a variety of different sensors, and apply their understanding to solve a problem. Students build and program a simple robot vehicle that can drive as close as possible to an obstacle without the use of sensors. Students are then introduced to bumper and limit switches, a potentiometer, a servo motor, and optical sensors and program each device to solve different problems. They conclude this unit by applying their understanding of programming to design and build a robot that replicates an animal's behavior.

Standards

3.5.9-12.A	-	Use various approaches to communicate processes and procedures for using, maintaining, and assessing technological products and systems.
3.5.9-12.I (ETS)	-	Evaluate a solution to a complex real-world problem based on prioritized criteria and trade-offs that account for a range of constraints, including cost, safety, reliability, and aesthetics as well as possible social, cultural, and environmental impacts.
3.5.9-12.J	-	Synthesize data and analyze trends to make decisions about technological products, systems, or processes.

Standards (Additional)

ISTE Standards
STEELS Standards

Essential Questions

- What practices do programmers use to write effective code?
- How do engineers use sensors to solve design problems?

Objectives

Apply effective programming practices and debug code systematically.
Distinguish open-loop and closed-loop control systems.
Create programs using sequences, conditional statements, and iteration.
Program and apply bumper and limit switches, a potentiometer, servo motor, optical sensor, and other inputs/outputs.
Design a control system that uses sensor feedback to solve a problem.
Build and program a robot to replicate a selected animal behavior.

Key Vocabulary and Definitions

Algorithm: a defined sequence of steps used to solve a problem.
Pseudocode: a plain-language representation of program logic.
Flowchart: a graphical representation of steps and decisions in a process.
Conditional Statement: a programming structure that selects actions based on whether a condition is true or false.
Iteration: repetition of a process or set of instructions.
Open-Loop System: a control system that operates without using feedback to adjust its output.
Closed-Loop System: a control system that uses feedback to adjust its behavior.
Sensor: a device that detects or measures a physical condition.
Bumper Switch: a digital sensor activated by physical contact.
Limit Switch: a switch used to detect when a mechanism reaches a position or limit.
Potentiometer: a variable resistor commonly used to measure rotational position.
Servo Motor: a motor designed for controlled position or motion.
Optical Sensor: a sensor that uses light to detect objects, color, or other conditions.
Debugging: the process of finding and correcting errors in a program or system.

Unit Learning Activities
- Develop and debug programs using accepted coding practices.
- Build and program a robot vehicle to approach an obstacle without sensors.
- Compare open- and closed-loop control.
- Program bumper/limit switches, potentiometer, servo motor, and optical sensors.
- Apply sensor feedback to solve programming challenges.
- Design and build a robot that replicates an animal behavior.

Unit Resources
MyPLTW, Laptop cart with engineering software, VEX Robotics equipment

Assessments (Formative and Summative)
Formative:
Conclusion Questions
Question and Answer
Notebook Checks

Summative:
Programming and sensor challenges
Animal behavior robot project

Curriculum Writer(s)
Drew Meckes

Board Approval Date

1_Principles of Engineering H (Curriculum In Progress)
Lesson 2.3 Artificial Intelligence

Unit Description

Students continue exploring robotics with artificial intelligence and machine learning. They design and build a robot using a supervised machine learning algorithm, a distance sensor, and a bumper switch to train their robot to give a physical greeting. Students then investigate the ethical concerns involved in implementing artificial intelligence and conduct research to determine the best course of action in a given scenario. To finish this unit, students apply their understanding of artificial intelligence to design and build a robot that can help someone.

Standards

3.5.9-12.A	-	Use various approaches to communicate processes and procedures for using, maintaining, and assessing technological products and systems.
3.5.9-12.I (ETS)	-	Evaluate a solution to a complex real-world problem based on prioritized criteria and trade-offs that account for a range of constraints, including cost, safety, reliability, and aesthetics as well as possible social, cultural, and environmental impacts.
3.5.9-12.J	-	Synthesize data and analyze trends to make decisions about technological products, systems, or processes.
3.5.9-12.B	-	Critically assess and evaluate a technology that minimizes resource use and resulting waste to achieve a goal.
3.5.9-12.C	-	Develop a solution to a technological problem that has the least negative environmental and social impact.
3.5.9-12.D	-	Critique whether existing or proposed technologies use resources sustainably.
3.5.9-12.H	-	Evaluate ways that technology and engineering can impact individuals, society, and the environment.
3.5.9-12.E	-	Evaluate how technology and engineering advancements alter human health and capabilities.
3.5.9-12.F	-	Evaluate a technological innovation that arose from a specific society's unique need or want.
3.5.9-12.G	-	Evaluate a technological innovation that was met with societal resistance impacting its development.

Standards (Additional)

ISTE Standards
STEELS Standards

Essential Questions

- What is artificial intelligence, and how do engineers use it to solve problems?
- What are some of the ethical implications of artificial intelligence?

Objectives

Describe artificial intelligence and machine learning in an engineering context.
Apply a supervised machine-learning process to a robotic system.
Integrate sensor data into an AI-enabled robot behavior.
Evaluate ethical implications and stakeholder impacts of AI applications.
Use research and evidence to recommend a course of action in an AI-related scenario.
Design and build an AI-enabled robot that addresses a human need.

To equip every student with the academic knowledge, social skills, and emotional resilience needed to thrive in their future endeavors.

Key Vocabulary and Definitions

Artificial Intelligence: computer-based methods that perform tasks associated with human-like perception, learning, or decision making.
Machine Learning: a form of AI in which a system learns patterns from data.
Supervised Learning: machine learning using labeled examples to train a model.
Training Data: examples used to develop a machine-learning model.
Classification: assigning data to one of several defined categories.
Algorithm: a defined sequence of steps used to solve a problem.
Bias: systematic error or unfair influence in data, models, or decisions.
Ethics: principles used to evaluate responsible choices and impacts.
Sensor Data: measurements or signals produced by sensors.

Unit Learning Activities

- Investigate examples and applications of AI and machine learning.
- Build and train a robot to give a physical greeting using supervised machine learning.
- Analyze an AI ethics scenario and research stakeholder impacts.
- Develop and justify a recommended course of action.
- Design and build a robot using AI to help someone.

Unit Resources

MyPLTW, Laptop cart with engineering software, VEX Robotics equipment

Assessments (Formative and Summative)

Formative:
Conclusion Questions
Question and Answer
Notebook Checks

Summative:
AI ethics analysis
Machine-learning greeting robot
AI assistive robot project

Curriculum Writer(s)

Drew Meckes

Board Approval Date

1_Principles of Engineering H (Curriculum In Progress)
Lesson 2.4 An Electronic Ensemble

Unit Description
In this unit problem, students create a robotic system that can perform a piece of music. They research different instruments from around the world, construct a functional prototype of their chosen instrument, and then design, build, and program a robot that can play their instrument. Students collaborate to coordinate their individual robots into a system that can play a piece of music.

Standards

3.5.9-12.A	-	Use various approaches to communicate processes and procedures for using, maintaining, and assessing technological products and systems.
3.5.9-12.I (ETS)	-	Evaluate a solution to a complex real-world problem based on prioritized criteria and trade-offs that account for a range of constraints, including cost, safety, reliability, and aesthetics as well as possible social, cultural, and environmental impacts.
3.5.9-12.J	-	Synthesize data and analyze trends to make decisions about technological products, systems, or processes.
3.5.9-12.B	-	Critically assess and evaluate a technology that minimizes resource use and resulting waste to achieve a goal.
3.5.9-12.C	-	Develop a solution to a technological problem that has the least negative environmental and social impact.
3.5.9-12.D	-	Critique whether existing or proposed technologies use resources sustainably.
3.5.9-12.H	-	Evaluate ways that technology and engineering can impact individuals, society, and the environment.

Standards (Additional)
ISTE Standards
STEELS Standards

Essential Questions
- How can you apply your understanding of mechanics and programming to solve a design problem?

Objectives
Research the function and cultural context of a musical instrument.
Construct a functional physical prototype of an instrument.
Design and program a robotic mechanism to play an instrument.
Integrate mechanical and control-system components into a reliable solution.
Coordinate timing and behavior across multiple robotic systems.
Collaborate to test, troubleshoot, and perform as a complete system.

Key Vocabulary and Definitions
System: a set of interacting components working together.
Subsystem: a smaller system that performs a function within a larger system.
Synchronization: coordinating actions so they occur at intended times.
Timing: control of when events or actions occur.
Automation: use of control systems to perform tasks with reduced direct human control.
Prototype: a physical or digital model used to test a design idea.
Mechanism: a system of moving parts that transmits or transforms motion and force.
Integration: combining components or subsystems into a functioning whole.

To equip every student with the academic knowledge, social skills, and emotional resilience needed to thrive in their future endeavors.

Unit Learning Activities

- Research instruments from around the world.
- Select and prototype a functional instrument.
- Design, build, and program a robot to play the instrument.
- Test and refine timing and reliability.
- Coordinate multiple robotic systems to perform a musical piece.

Unit Resources

MyPLTW, Laptop cart with engineering software, VEX Robotics equipment

Assessments (Formative and Summative)

Formative:
Conclusion Questions
Question and Answer
Notebook Checks

Summative:
Electronic Ensemble unit problem
Functional robotic instrument and ensemble performance

Curriculum Writer(s)

Drew Meckes

Board Approval Date

1_Principles of Engineering H (Curriculum In Progress)
Lesson 3.1 Electrical Circuits

Unit Description

In Lesson 3.1, students explore the basic components of electrical circuits and model them through a hands-on introduction. The students explore the basic elements of electricity and electrical circuits and build simple circuits with breadboards and online simulations. Students collect data to derive the formula for Ohm's Law, then apply their understanding of Ohm's Law to solve problems. They then compare series and parallel circuits and explore their similarities and differences. Students continue hands-on breadboarding and simulations to derive Kirchhoff's voltage and current laws. They end the lesson with a final project that applies all the skills acquired to design and build their own functional safe.

Standards

3.5.9-12.A	-	Use various approaches to communicate processes and procedures for using, maintaining, and assessing technological products and systems.
3.5.9-12.I (ETS)	-	Evaluate a solution to a complex real-world problem based on prioritized criteria and trade-offs that account for a range of constraints, including cost, safety, reliability, and aesthetics as well as possible social, cultural, and environmental impacts.
3.5.9-12.J	-	Synthesize data and analyze trends to make decisions about technological products, systems, or processes.

Standards (Additional)

ISTE Standards
STEELS Standards

Essential Questions

- How do you differentiate between circuit types?
- How do you model electrical circuits?
- How do you test circuit parameters?
- What are the mathematical relationships between circuit parameters?
- Why are Kirchhoff's Laws important to engineers and designers of electrical circuits?

Objectives

Identify and describe basic electrical circuit components and parameters.
Build and model circuits using breadboards and simulations.
Collect data and derive the mathematical relationship expressed by Ohm's Law.
Analyze series and parallel circuits and calculate equivalent resistance.
Apply Kirchhoff's voltage and current laws to circuit analysis.
Design and build a functional electrical system that meets requirements.

Key Vocabulary and Definitions

Voltage: electric potential difference between two points.
Current: the rate of electric charge flow.
Resistance: opposition to electric current.
Ohm's Law: the relationship V = IR among voltage, current, and resistance.
Series Circuit: a circuit with components connected along a single current path.
Parallel Circuit: a circuit with components connected across common nodes, creating multiple current paths.
Equivalent Resistance: a single resistance value that represents the combined effect of multiple resistors.
Kirchhoff's Voltage Law: the principle that the algebraic sum of voltage changes around a closed loop is zero.
Kirchhoff's Current Law: the principle that current entering a junction equals current leaving it.
Breadboard: a reusable board for building temporary electronic circuits.
Schematic: a diagram that uses symbols to represent circuit components and connections.

To equip every student with the academic knowledge, social skills, and emotional resilience needed to thrive in their future endeavors.

Unit Learning Activities
- Identify circuit components and construct introductory circuits.
- Use online simulation and breadboards to model circuits.
- Collect voltage/current/resistance data and derive Ohm's law.
- Build and compare series and parallel circuits.
- Derive and apply Kirchhoff's laws.
- Design and build a functional safe using electrical circuits.

Unit Resources
MyPLTW, Laptop cart with engineering software, VEX Robotics equipment

Assessments (Formative and Summative)
Formative:
Conclusion Questions
Question and Answer
Notebook Checks

Summative:
Circuit analysis problems/labs
Functional safe design project

Curriculum Writer(s)
Drew Meckes

Board Approval Date

1_Principles of Engineering H (Curriculum In Progress)
Lesson 3.2 Fluid Power

Unit Description
In this lesson, students learn the fundamentals of hydraulic and pneumatic fluid power. They begin by exploring the differences between hydraulic and pneumatic systems as well as common mathematical formulas that support fluid power engineering. Students the apply these concepts to complete a problem set surrounding fluid power mathematics. This lesson concludes with students designing and building their own working hydraulic system.

Standards

3.5.9-12.A	-	Use various approaches to communicate processes and procedures for using, maintaining, and assessing technological products and systems.
3.5.9-12.I (ETS)	-	Evaluate a solution to a complex real-world problem based on prioritized criteria and trade-offs that account for a range of constraints, including cost, safety, reliability, and aesthetics as well as possible social, cultural, and environmental impacts.
3.5.9-12.J	-	Synthesize data and analyze trends to make decisions about technological products, systems, or processes.

Standards (Additional)
ISTE Standards
STEELS Standards

Essential Questions
- What impact does fluid power have on our everyday lives?
- What devices or systems might be improved with the use of fluid power?
- What are the similarities and differences of mechanical advantage in simple machines?
- Why are Pascal's Law, the perfect gas laws, Bernoulli's Principle, and other similar rules important to engineers and designers of fluid power systems?

Objectives
Identify devices and systems that use hydraulic and pneumatic power.
Compare hydraulic and pneumatic systems and their relative advantages.
Apply Pascal’s law to fluid-power systems.
Calculate pressure, force, area, flow rate, and flow velocity in fluid systems.
Apply gas laws and Bernoulli’s principle where appropriate.
Design and build a functional hydraulic system.

Key Vocabulary and Definitions
Fluid Power: the use of pressurized liquids or gases to transmit and control power.
Hydraulics: fluid-power systems that primarily use liquids.
Pneumatics: fluid-power systems that primarily use compressed gases.
Pressure: force applied per unit area.
Flow Rate: the volume of fluid passing a point per unit time.
Flow Velocity: the speed of fluid moving through a system.
Pascal's Law: the principle that pressure applied to a confined fluid is transmitted throughout the fluid.
Bernoulli's Principle: a relationship among fluid pressure, velocity, and elevation for flowing fluids.
Boyle's Law: the inverse relationship between pressure and volume for a fixed amount of gas at constant temperature.
Charles' Law: the direct relationship between gas volume and absolute temperature at constant pressure.
Gay-Lussac's Law: the direct relationship between gas pressure and absolute temperature at constant volume.
Absolute Pressure: pressure measured relative to a perfect vacuum.
Absolute Temperature: temperature measured from absolute zero.

To equip every student with the academic knowledge, social skills, and emotional resilience needed to thrive in their future endeavors.

Unit Learning Activities
- Compare hydraulic and pneumatic systems and applications.
- Complete fluid-power mathematics and problem solving.
- Investigate Pascal's law and fluid mechanical advantage.
- Apply gas laws and flow relationships.
- Design, construct, and test a working hydraulic system.

Unit Resources
MyPLTW, Laptop cart with engineering software, VEX Robotics equipment

Assessments (Formative and Summative)
Formative:
Conclusion Questions
Question and Answer
Notebook Checks

Summative:
Fluid power problem set
Hydraulic system design/build

Curriculum Writer(s)
Drew Meckes

Board Approval Date

1_Principles of Engineering H (Curriculum In Progress)
Lesson 3.3 Kinematics

Unit Description

In Lesson 3.3, students explore the physics of moving objects. They begin by experimentally measuring gravitational acceleration. Then, students consider motion in the vertical and horizontal directions and derive the equations that govern horizontal projectile motion. This lesson culminates in an engineering design challenge in which students design and build a zipline and calculate where an object will land when dropped.

Standards

3.5.9-12.A	-	Use various approaches to communicate processes and procedures for using, maintaining, and assessing technological products and systems.
3.5.9-12.I (ETS)	-	Evaluate a solution to a complex real-world problem based on prioritized criteria and trade-offs that account for a range of constraints, including cost, safety, reliability, and aesthetics as well as possible social, cultural, and environmental impacts.
3.5.9-12.J	-	Synthesize data and analyze trends to make decisions about technological products, systems, or processes.

Standards (Additional)

ISTE Standards
STEELS Standards

Essential Questions

- How do we graph and analyze motion?
- What equations govern how objects move?
- How do we predict where projectiles will land?

Objectives

Collect and analyze experimental motion data.
Determine gravitational acceleration experimentally.
Calculate displacement, velocity, acceleration, and time for one-dimensional motion.
Analyze vertical motion under gravity.
Analyze horizontal projectile motion and predict landing location.
Apply kinematics to design, build, and evaluate a zipline system.

Key Vocabulary and Definitions

Kinematics: the study of motion without focusing on the forces that cause it.
Displacement: change in position with magnitude and direction.
Velocity: rate of change of displacement.
Acceleration: rate of change of velocity.
Gravity: the force of attraction between masses; near Earth's surface, it causes objects to accelerate downward at about 9.8 m/s^2.
Vertical Motion: motion along the vertical direction.
Horizontal Motion: motion parallel to a reference horizontal plane.
Projectile Motion: motion of an object moving under the influence of gravity after launch.
Trajectory: the path followed by a moving object.

To equip every student with the academic knowledge, social skills, and emotional resilience needed to thrive in their future endeavors.

Unit Learning Activities
- Conduct an experiment to estimate gravitational acceleration.
- Graph and analyze displacement, velocity, and acceleration.
- Solve vertical-motion problems.
- Derive and apply horizontal projectile-motion equations.
- Design and build a zipline and predict where a dropped object will land.

Unit Resources
MyPLTW, Laptop cart with engineering software, VEX Robotics equipment

Assessments (Formative and Summative)
Formative:
Conclusion Questions
Question and Answer
Notebook Checks

Summative:
Kinematics calculations/lab
Zipline projectile-motion design challenge

Curriculum Writer(s)
Drew Meckes

Board Approval Date

1_Principles of Engineering H (Curriculum In Progress)
Lesson 3.4 Integration of Circuits, Fluid Power, and Kinematics

Unit Description
In this unit problem, students will combine their knowledge of electrical circuits and kinematics to design and build an automated golfer and a golf course. Students will also create two targets: one that illuminates an LED and another that produces a sound. This problem requires a deep understanding of series and parallel circuits, fluid power, as well as horizontal and vertical motion.

Standards

3.5.9-12.A	-	Use various approaches to communicate processes and procedures for using, maintaining, and assessing technological products and systems.
3.5.9-12.I (ETS)	-	Evaluate a solution to a complex real-world problem based on prioritized criteria and trade-offs that account for a range of constraints, including cost, safety, reliability, and aesthetics as well as possible social, cultural, and environmental impacts.
3.5.9-12.J	-	Synthesize data and analyze trends to make decisions about technological products, systems, or processes.
3.5.9-12.B	-	Critically assess and evaluate a technology that minimizes resource use and resulting waste to achieve a goal.
3.5.9-12.C	-	Develop a solution to a technological problem that has the least negative environmental and social impact.
3.5.9-12.D	-	Critique whether existing or proposed technologies use resources sustainably.
3.5.9-12.H	-	Evaluate ways that technology and engineering can impact individuals, society, and the environment.

Standards (Additional)
ISTE Standards
STEELS Standards

Essential Questions
- How can electrical circuits, fluid power, and kinematics be integrated to solve a complex engineering problem?

Objectives
Integrate concepts from circuits, fluid power, and kinematics in a complex system.
Design and construct an automated mechanism that produces repeatable motion.
Apply projectile-motion analysis to predict and control system performance.
Design circuit-based targets that activate light and sound outputs.
Test subsystems and integrate them into a complete engineered system.
Document, troubleshoot, and improve system performance.

Key Vocabulary and Definitions
System Integration: combining subsystems so they function together as a complete system.
Subsystem: a smaller system that performs a function within a larger system.
Automation: use of control systems to perform tasks with reduced direct human control.
Actuator: a device that converts a control signal into physical action.
Target: an intended destination or object used to detect or evaluate performance.
Trajectory: the path followed by a moving object.
Repeatability: the ability to produce consistent results under the same conditions.
Troubleshooting: systematically identifying and correcting problems.

To equip every student with the academic knowledge, social skills, and emotional resilience needed to thrive in their future endeavors.

Unit Learning Activities

- Define performance requirements for an automated golfer and course.
- Design and build the golfer mechanism.
- Apply kinematics to predict ball motion.
- Construct targets that trigger an LED and sound output.
- Integrate and test all subsystems.
- Iterate the system based on performance data.

Unit Resources

MyPLTW, Laptop cart with engineering software, VEX Robotics equipment

Assessments (Formative and Summative)

Formative:
Conclusion Questions
Question and Answer
Notebook Checks

Summative:
Energy in Action unit problem
Automated golfer, course, and responsive target system

Curriculum Writer(s)

Drew Meckes

Board Approval Date

1_Principles of Engineering H (Curriculum In Progress)
Lesson 4.1 Statics

Unit Description

In Lesson 4.1, students explore various aspects of static structures and apply mathematical approaches to solve structural problems. They begin the lesson by applying an engineering design process to design and test a cantilever beam. Students then compare materials and their properties that impact beam deflection; they also use 3-D modeling software to analyze and investigate factors that impact beam deflection and solve an engineering design problem. Students analyze and solve systems using free body diagrams, force vectors, moment calculations, and the method of joints. They will also explore internal forces in materials and the relationship between stress and strain. Students culminate the lesson by designing their own bridge truss to support a given load at the lowest cost.

Standards

3.5.9-12.A	-	Use various approaches to communicate processes and procedures for using, maintaining, and assessing technological products and systems.
3.5.9-12.I (ETS)	-	Evaluate a solution to a complex real-world problem based on prioritized criteria and trade-offs that account for a range of constraints, including cost, safety, reliability, and aesthetics as well as possible social, cultural, and environmental impacts.
3.5.9-12.J	-	Synthesize data and analyze trends to make decisions about technological products, systems, or processes.

Standards (Additional)

ISTE Standards
STEELS Standards

Essential Questions

- What factors impact beam deflection?
- Why is the value of beam deflection useful?
- What are the properties of structural members and why are they useful?
- What is a centroid and how is it applied in structural members?
- Why is it crucial for designers and engineers to construct accurate free body diagrams of the parts and structures that they design?
- Why must designers and engineers calculate forces acting on bodies and structures?
- What are the differences between stress and strain?
- Why are stress and strain important factors to consider when designing?
- How does the stress-strain curve help engineers during tensile testing?
- What is a moment and how does it help solve problems in static structures?
- When solving truss forces, why is it important to know that the structure is statically determinate?
- How is the method of joints used to determine internal forces in trusses?
- How do material properties affect structural stability, internal forces, and cost?

Objectives

Analyze factors that affect beam deflection.
Use models and calculations to evaluate structural member properties.
Create free body diagrams and resolve force vectors.
Calculate moments and apply equations of static equilibrium.
Calculate and interpret stress and strain and analyze stress-strain behavior.
Use the method of joints to determine internal truss-member forces.
Design and evaluate a truss based on load capacity, material properties, and cost.

To equip every student with the academic knowledge, social skills, and emotional resilience needed to thrive in their future endeavors.

Key Vocabulary and Definitions

Statics: the study of forces on systems in equilibrium.
Beam Deflection: the displacement of a beam from its original position under load.
Centroid: the geometric center of an area or shape.
Free Body Diagram: a diagram showing an isolated object and all external forces acting on it.
Vector: a quantity with both magnitude and direction.
Equilibrium: a condition in which the net force and net moment are zero.
Moment: the turning effect of a force about a point or axis.
Stress: internal force per unit area within a material.
Strain: deformation per unit original dimension.
Modulus of Elasticity: a measure of a material's stiffness in the elastic range.
Tension: a pulling internal force.
Compression: a pushing or squeezing internal force.
Truss: a structure composed of connected members arranged to carry loads.
Method of Joints: a truss-analysis method that applies equilibrium at individual joints.
Statically Determinate: a structure whose forces can be solved using equilibrium equations alone.

Unit Learning Activities

- Design and test a cantilever beam.
- Compare material properties that affect beam deflection.
- Use 3D modeling software to analyze beam deflection.
- Create free body diagrams and solve force-vector problems.
- Calculate moments and analyze equilibrium.
- Investigate stress, strain, and tensile-test data.
- Use the method of joints to analyze trusses.
- Design a bridge truss to support a specified load at minimum cost.

Unit Resources

MyPLTW, Laptop cart with engineering software, VEX Robotics equipment

Assessments (Formative and Summative)

Formative:
Conclusion Questions
Question and Answer
Notebook Checks

Summative:
Statics/structural analysis problems
Cantilever beam investigation
Bridge truss design challenge

Curriculum Writer(s)

Drew Meckes

Board Approval Date

1_Principles of Engineering H (Curriculum In Progress)
Lesson 4.2 Renewable Energy

Unit Description
In lesson 4.2, students discover various sources of energy and research their effects on social, environmental, political, and economic systems to develop assertions and debate important environmental topics. They apply an engineering design process to design, construct, and test a device that converts the mechanical energy of falling water into electrical energy.

Standards

3.5.9-12.A	-	Use various approaches to communicate processes and procedures for using, maintaining, and assessing technological products and systems.
3.5.9-12.I (ETS)	-	Evaluate a solution to a complex real-world problem based on prioritized criteria and trade-offs that account for a range of constraints, including cost, safety, reliability, and aesthetics as well as possible social, cultural, and environmental impacts.
3.5.9-12.J	-	Synthesize data and analyze trends to make decisions about technological products, systems, or processes.
3.5.9-12.B	-	Critically assess and evaluate a technology that minimizes resource use and resulting waste to achieve a goal.
3.5.9-12.C	-	Develop a solution to a technological problem that has the least negative environmental and social impact.
3.5.9-12.D	-	Critique whether existing or proposed technologies use resources sustainably.
3.5.9-12.H	-	Evaluate ways that technology and engineering can impact individuals, society, and the environment.
3.5.9-12.E	-	Evaluate how technology and engineering advancements alter human health and capabilities.
3.5.9-12.F	-	Evaluate a technological innovation that arose from a specific society's unique need or want.
3.5.9-12.G	-	Evaluate a technological innovation that was met with societal resistance impacting its development.

Standards (Additional)
ISTE Standards
STEELS Standards

Essential Questions
- What are renewable and nonrenewable resources and how do humans use them?
- In what innovative ways could the efficiency of electricity production using solar cells be maximized throughout the day?

Objectives
Distinguish renewable and nonrenewable energy resources.
Research and evaluate energy sources using social, environmental, political, and economic criteria.
Develop and support evidence-based assertions about energy choices.
Analyze energy conversion and efficiency.
Apply an engineering design process to convert mechanical energy into electrical energy.
Build, test, and improve a renewable-energy device.

To equip every student with the academic knowledge, social skills, and emotional resilience needed to thrive in their future endeavors.

Key Vocabulary and Definitions

Renewable Resource: a resource replenished naturally on a human time scale.
Nonrenewable Resource: a finite resource that is not replenished quickly enough to replace its use.
Energy Conversion: the transformation of energy from one form to another.
Efficiency: the ratio of useful output to total input, usually expressed as a percent.
Sustainability: meeting present needs while considering long-term environmental, social, and economic impacts.
Life Cycle: the stages a product or system passes through from resource extraction through disposal or reuse.
Solar Energy: energy obtained from sunlight.
Hydroelectric Energy: energy generated by converting the energy of moving or falling water into electricity.
Mechanical Energy: energy associated with motion or position.
Electrical Energy: energy associated with electric charges and circuits.

Unit Learning Activities

- Research renewable and nonrenewable energy sources.
- Analyze trade-offs using social, environmental, political, and economic criteria.
- Develop and participate in an evidence-based environmental debate.
- Investigate methods of maximizing renewable-energy output.
- Design, construct, and test a device that converts falling-water energy to electrical energy.

Unit Resources

MyPLTW, Laptop cart with engineering software, VEX Robotics equipment

Assessments (Formative and Summative)

Formative:
Conclusion Questions
Question and Answer
Notebook Checks

Summative:
Energy-source analysis/debate
Renewable energy conversion device

Curriculum Writer(s)

Drew Meckes

Board Approval Date

1_Principles of Engineering H (Curriculum In Progress)
Lesson 4.3 Transportation

Unit Description

In lesson 4.3, students examine and apply various mathematical tools to analyze traffic flow, capacity, and speed limits to solve transportation problems. They use hands-on experiments and spreadsheets to determine maximum traffic density and flow rate and calculate the optimal speed limit. Students also model traffic flow at various intersections and use critical lane volume to improve an existing intersection. Students conclude the lesson by applying an engineering design process to meet a client's transportation needs.

Standards

3.5.9-12.A	-	Use various approaches to communicate processes and procedures for using, maintaining, and assessing technological products and systems.
3.5.9-12.I (ETS)	-	Evaluate a solution to a complex real-world problem based on prioritized criteria and trade-offs that account for a range of constraints, including cost, safety, reliability, and aesthetics as well as possible social, cultural, and environmental impacts.
3.5.9-12.J	-	Synthesize data and analyze trends to make decisions about technological products, systems, or processes.
3.5.9-12.B	-	Critically assess and evaluate a technology that minimizes resource use and resulting waste to achieve a goal.
3.5.9-12.C	-	Develop a solution to a technological problem that has the least negative environmental and social impact.
3.5.9-12.D	-	Critique whether existing or proposed technologies use resources sustainably.
3.5.9-12.H	-	Evaluate ways that technology and engineering can impact individuals, society, and the environment.
3.5.9-12.E	-	Evaluate how technology and engineering advancements alter human health and capabilities.
3.5.9-12.F	-	Evaluate a technological innovation that arose from a specific society’s unique need or want.
3.5.9-12.G	-	Evaluate a technological innovation that was met with societal resistance impacting its development.

Standards (Additional)

ISTE Standards
STEELS Standards

Essential Questions

- What factors affect the rate of flow on a roadway?
- How is the optimum speed limit determined for a roadway?
- In your opinion, what type of intersection is prone to the most accidents? What can be done to maximize safety at this type of intersection?

Objectives

Calculate and analyze traffic density, flow rate, and roadway capacity.
Use experimental data and spreadsheets to model traffic flow.
Determine an optimal speed limit using mathematical relationships.
Analyze intersection performance using critical lane volume.
Develop improvements to an existing intersection based on data.
Apply an engineering design process to address an accessible transportation need.

To equip every student with the academic knowledge, social skills, and emotional resilience needed to thrive in their future endeavors.

Key Vocabulary and Definitions
Traffic Flow: the rate at which vehicles pass a point on a roadway.
Traffic Density: the number of vehicles occupying a given length of roadway.
Roadway Capacity: the maximum sustainable traffic flow a roadway can accommodate under specified conditions.
Optimal Speed: a speed selected to balance flow, safety, and operating conditions.
Intersection: a location where two or more roadways meet.
Critical Lane Volume: a traffic-analysis measure based on the highest conflicting lane volumes at an intersection.
Transportation System: an interconnected system used to move people or goods.
Accessibility: designing systems so they can be used by people with varied abilities.

Unit Learning Activities
- Conduct hands-on experiments modeling traffic density and flow.
- Use spreadsheets to calculate and graph transportation data.
- Calculate an optimal roadway speed limit.
- Model traffic flow at different intersection types.
- Use critical lane volume to evaluate and improve an intersection.
- Design a transportation solution for a client with different abilities.

Unit Resources
MyPLTW, Laptop cart with engineering software, VEX Robotics equipment

Assessments (Formative and Summative)
Formative:
Conclusion Questions
Question and Answer
Notebook Checks

Summative:
Traffic flow/capacity analysis
Intersection redesign
Accessible transportation design problem

Curriculum Writer(s)
Drew Meckes

Board Approval Date

1_Principles of Engineering H (Curriculum In Progress)
Lesson 4.4 Infrastructure Redesign

Unit Description

In the unit problem, students select a building to remodel with a renewable energy source, a structural element, and a new intersection that serves the building. They calculate how much energy they can generate from their chosen renewable energy source and determine whether it is sufficient to replace the building's existing energy sources. Students identify a structure to model with a free-body diagram and calculate the forces of each member of their chosen structure. Students analyze a map of their chosen building location to determine the most effective renewable energy source. Finally, they redesign an intersection based on an increased flow rate traveling to and from their remodeled building.

Standards

3.5.9-12.A	-	Use various approaches to communicate processes and procedures for using, maintaining, and assessing technological products and systems.
3.5.9-12.I (ETS)	-	Evaluate a solution to a complex real-world problem based on prioritized criteria and trade-offs that account for a range of constraints, including cost, safety, reliability, and aesthetics as well as possible social, cultural, and environmental impacts.
3.5.9-12.J	-	Synthesize data and analyze trends to make decisions about technological products, systems, or processes.
3.5.9-12.B	-	Critically assess and evaluate a technology that minimizes resource use and resulting waste to achieve a goal.
3.5.9-12.C	-	Develop a solution to a technological problem that has the least negative environmental and social impact.
3.5.9-12.D	-	Critique whether existing or proposed technologies use resources sustainably.
3.5.9-12.H	-	Evaluate ways that technology and engineering can impact individuals, society, and the environment.
3.5.9-12.E	-	Evaluate how technology and engineering advancements alter human health and capabilities.
3.5.9-12.F	-	Evaluate a technological innovation that arose from a specific society’s unique need or want.
3.5.9-12.G	-	Evaluate a technological innovation that was met with societal resistance impacting its development.

Standards (Additional)

ISTE Standards
STEELS Standards

Essential Questions

- What role does creativity have in the engineering design process?
- What do engineers do to clearly document and communicate their work? Why is this important?
- How are different elements of infrastructure related?

Objectives

Apply an iterative engineering design process to an infrastructure redesign problem.
Analyze a site and select an appropriate renewable energy source.
Estimate energy production and compare it to building energy needs.
Model a structural element with a free body diagram and calculate member forces.
Analyze transportation demand and redesign an intersection for increased flow.
Integrate structural, energy, and transportation decisions into a coherent proposal.
Document and communicate the final engineering solution.

To equip every student with the academic knowledge, social skills, and emotional resilience needed to thrive in their future endeavors.

Key Vocabulary and Definitions
Infrastructure: the physical systems and facilities that support a community.
Redevelopment: improving or reusing an existing developed site or facility.
Energy Demand: the amount of energy required by a building, system, or community.
Structural Element: a component designed to carry or transfer loads.
Free Body Diagram: a diagram showing an isolated object and all external forces acting on it.
Traffic Flow: the rate at which vehicles pass a point on a roadway.
Intersection Design: the planning and geometric arrangement of roadway crossings.
Sustainability: meeting present needs while considering long-term environmental, social, and economic impacts.
Trade-Off: a compromise in which improving one design consideration may reduce another.

Unit Learning Activities
- Select an existing building/site for redesign.
- Analyze the site and select an appropriate renewable energy source.
- Calculate expected energy generation and compare it with building needs.
- Select and analyze a structural element using a free body diagram and force calculations.
- Analyze projected traffic flow and redesign an intersection.
- Integrate the subsystems into a final infrastructure redesign proposal.

Unit Resources
MyPLTW, Laptop cart with engineering software, VEX Robotics equipment

Assessments (Formative and Summative)
Formative:
Conclusion Questions
Question and Answer
Notebook Checks

Summative:
Infrastructure Redesign unit problem
Integrated redesign calculations, documentation, and presentation

Curriculum Writer(s)
Drew Meckes

Board Approval Date

Stroudsburg Area School District
Request Proposal to Initate a Student Club/Organization/Sport Group

Name of Proposed Club: Odyssey of the Mind

Name of Advisor/Coach (Person must agree to lead the group): Erin Hiscott

Number of students who would join or participate in the club, organization, sport, or group: 7

Grade level(s): Grades 6 & 7

Season (All year, fall, winter, spring, summer): Fall, Winter, Spring

Number of times this group meets: At least 20

Location Request (Classroom/Area(s)): Stroudsburg Middle School- B408

Purpose/goals for group

Encourage divergent thinking, which means finding many unique answers to a single problem instead of just one right answer

How will this group benefit the school, students, and/or the district?

This will be an opportunity to further enrich our gifted students.

Projected start-up cost (itemize quantity and cost of equipment, supplies, materials, stipends, etc.)

Approximately $400 but I am applying for a new district scholarship.

Projected annual cost thereafter (Stipends, supplies, materials, etc.)

$290 membership if we continue to participate annually.

Please provide the names, signatures, and current grade levels of each student who will join or participate in this club, organization, sport, or group. (Attach the list to this form.)

Director of Athletics/Activities

Date Received: _____ Approved: YES NO

Comments: _____

Signature: _____

Principal

Date Received: _____ Approved: YES NO

Comments: _____

Signature: _____

STROUDSBURG AREA SCHOOL DISTRICT

NO. 806-AR-1

ADMINISTRATIVE REGULATION

APPROVED:

REVISED:

MANDATED REPORTING

Pennsylvania is expanding requirements for reporting suspected child sexual abuse material, including AI-generated images, and hazing or aggravated hazing. The changes affect schools, employers, and other organizations whose personnel are required to report suspected child abuse.

On October 22, 2026, Pennsylvania Gov. Josh Shapiro signed Act 87 into law, establishing these new obligations under the state's Child Protective Services Law (CPSL). The new law takes effect in January 2027.

Key takeaways:

- Mandated reporters must report suspected child sexual abuse material, including AI-generated material, and hazing or aggravated hazing.
- Additional offenses involving minors are now subject to reporting requirements.
- Mandated reporters must make reports personally and immediately, rather than relying on internal reporting procedures.
- The new requirements are expected to take effect on or about January 20, 2027.

Pennsylvania's CPSL requires certain individuals to report suspected child abuse when they have reasonable cause to believe a child is a victim. These individuals, known as mandated reporters, work across a wide range of industries and organizations.

Mandated reporters include all SASD school employees, social services personnel, coaches, independent contractors, and others responsible for children's welfare or who have direct contact with children through qualifying programs or activities.

Act 87 establishes an additional reporting obligation for all mandated reporters under Section 6311(e) of the CPSL.

Mandated reporters must report when they have reasonable cause to suspect:

- The existence of child sexual abuse material or artificially generated child sexual abuse material, including material created, displayed, or shared by a minor.
- That hazing or aggravated hazing has occurred.

Reports must be made through Pennsylvania's ChildLine reporting system at 1-800-932-0313 or through the state's electronic reporting system.

The law also expands the categories of child-on-child conduct subject to reporting requirements. These now include unlawful dissemination of an intimate image, sexual abuse of children, and hazing or aggravated hazing. These changes are particularly relevant to organizations where employees supervise or interact with minors, including schools, athletic programs, camps, and other youth-serving organizations.

Act 87 extends existing institutional reporting procedures to the new categories of reports. **Mandated reporters acting in their capacity as staff members of a school, must make the required report immediately. After doing so, they must immediately notify the person in charge of the institution or that person's designated representative. An internal report to a supervisor does not replace the individual's obligation to report directly to ChildLine.**

We are working on updating our policies and plans for training. We want to ensure our policies clearly distinguish between the individual reporting obligation and any subsequent internal notification requirements. Procedures for internal investigations or disciplinary action should not delay the required report. Although Act 87 expands reporting obligations, several aspects of the law may require additional guidance from the Pennsylvania Department of Human Services.

Hazing involving adults: The new reporting obligation applies to hazing and aggravated hazing without expressly limiting it to incidents involving minors.

Penalties for failing to report at this time have not changed. Existing law establishes criminal penalties for certain failures to report suspected child abuse. However, Act 87 does not amend those penalty provisions.

STROUDSBURG AREA SCHOOL DISTRICT
BOARD OF SCHOOL DIRECTORS
SCHEDULE OF MEETING DATES FOR 2027

ALL MEETINGS WILL BE HELD IN THE HIGH SCHOOL CAFETERIA,
BEGINNING AT 7:00 P.M. UNLESS OTHERWISE NOTED.

MONTH	DATE	MONTH	DATE
JANUARY	20TH	JULY	21ST
FEBRUARY	17TH	AUGUST	18TH
MARCH	17TH	SEPTEMBER	15TH
APRIL	21ST	OCTOBER	20TH
MAY	19TH	NOVEMBER	17TH
JUNE	23RD	DECEMBER	1ST*

* The first meeting in December will be preceded by a reorganization meeting. Per Section 401(b) of the School Code, this meeting shall occur during the first week of December.

APPROVED: _____ Vote: _____