Blue Apple Correlation Document
Grades 3-8

4th Grade Projects

Food for Thought

Prevent the Spread

State of Sustainability

Take a Stand

What's in Your Water?

5Th Grade Projects

50 Years of Interest

High Energy

Lend a Hand

Moments to Remember

The Dirty Truth

50 Years of Interest is correlated to Grade 5 standards but is easily adaptable across Grades 3-8. Use these cross-curricular content connections to align to your grade level standards and content goals.

GRADE 3

Math
UNDERSTANDING FRACTIONS

Lesson 3: Complete the Multiplying Money Activity as a class with student volunteers and plot out a few of the fractions on a number line. Discuss what it means to lose ½ of your money and gain ¼ of your money.

CCSS.MATH.CONTENT.3.NF.A.2

English Language Arts
PUBLISHING WITH TECHNOLOGY

Lesson 9: Help students turn their lesson into a book and publish it using a platform such as Kindle Direct Publishing, Create Space, or Book Baby.

CCSS.ELA-LITERACY.W.3.6

Science
ANIMAL GROUPS

Lesson 1: After watching the Financial Literacy and Rabbits video, introduce the concept of animal groups and how some animals form groups to help members survive, like a rabbit colony!

NGSS 3-LS2-1

Social Studies
ECONOMIC INTERDEPENDENCE

Lesson 2: When considering delayed gratification, discuss different incentives that might be used to encourage responsible behavior. For example, the government might tax things it wishes to discourage, like smoking.

NCSS D2.ECO.15.3-5

GRADE 4

Math
UNDERSTANDING FRACTIONS

Lesson 3: Complete the Multiplying Money Activity as a class with student volunteers, focusing on the multiplying of $60 (their starting money) by the fraction they rolled. Discuss what it means when they lose or gain money by that fraction.

CCSS.MATH.CONTENT.4.NF.B.4

English Language Arts
PUBLISHING WITH TECHNOLOGY

Lesson 9: Help students turn their lesson into a book and publish it using a platform such as Kindle Direct Publishing, Create Space, or Book Baby.

CCSS.ELA-LITERACY.W.4.6

Science
ENERGY CHANGES

Lesson 1: After the Elephant Toothpaste demonstration, discuss heat energy transfer as the yeast and hydrogen peroxide chemically react.

NGSS 4-PS3-3

Social Studies
LIFE IN DIFFERENT TIMES

Lesson 4: As you learn about the way in which money grows, introduce the idea of inflation. Discuss how in the future, goods are likely to cost more money, which reduces purchasing power. Demonstrate this concept by researching the costs of different goods throughout history. (thepeoplehistory.com)

NCSS D2.HIS.2.3-5

GRADE 5

Math
DIVISION WITH DECIMALS

Lesson 3: Show students how applicable their math skills are when they use division with decimals to help them calculate the performance of simulated investments.

CCSS.MATH.CONTENT.5.NBT.B.7

English Language Arts
OPINION WRITING

Lesson 5: Assist students in applying their knowledge of evidence and reasoning to help create persuasive lessons for high school students.

CCSS.ELA-LITERACY.W.5.1

Science
PHYSICAL AND CHEMICAL CHANGES

Lesson 1: Explore the nature of physical and chemical changes as you launch your project with an engaging scientific demonstration.

NGSS 5-PS1-4

Social Studies
COLLABORATIVE ACTION

Lesson 2: Have students reflect on the benefits of working together as you learn about mutual funds. Explore the idea of stocks, and learn how many people, working together, can more easily diversify their investment portfolios.

NCSS D2.CIV.6.3-5

GRADE 6

Math
SUMMARIZING DATA

Lesson 3: After completing the Multiplying Money game, have students calculate the mean and median dollar amount of the class data for safe, medium-risk, and high-risk investments.

CCSS.MATH.CONTENT.6.SP.B.5

English Language Arts
MULTIMEDIA PRESENTATIONS

Lesson 7: Encourage students to use the power of technology and multimedia to enhance their lessons. For example, use Prezi, Google Slides, or Pow Tunes to make their lesson more engaging.

CCSS.ELA-LITERACY.SL.6.5

Life Science
CYCLING OF MATTER

Lesson 4: Connect the movement of money through financial system (producers, consumers, etc.) to the movement of matter and flow of energy through an ecological system (plants, animals, decomposers).

NGSS MS-LS2-3

Economics
INTEREST RATES

Lesson 3: As students explore the Donut Cost Calculator and Money Multiplying game, discuss the influence of changes in interest rates on borrowing and investing.

D2.Eco.10.6-8

Earth and Space Science
HUMAN POPULATION GROWTH

Lesson 4: Have students discuss how an increase in human population influences the economic climate in both local and distant places. Then, have them connect that to the impact on resource consumption and Earth's systems.

NGSS MS-ESS3-4

Geography
ECONOMIC INFLUENCE

Lesson 3: As students learn about borrowing and investing, broaden the discussion to include how economic decisions influence environments in local and distant places.

D2.Geo.4.6-8

Physical Science
CHEMICAL REACTIONS

Lesson 1: Before the Elephant Toothpaste demonstration, have students identify the physical and chemical properties of the substances involved. After the demonstration, have students identify any changes in physical and chemical properties to determine whether a chemical reaction has occurred.

NGSS MS-PS1-2

Civics
MUTUAL FUNDS

Lesson 4: As students learn about the power of investing, discuss the concept of mutual funds and its influence on investing.

D2.Civ.6.6-8

GRADE 7

Math
ALGEBRAIC EXPRESSIONS

Lesson 3: As students complete the Multiplying Money game, have them write expressions to calculate their money after each roll using positive (gain) or negative (loss) fractions.

CCSS.MATH.CONTENT.7.EE.B.3

English Language Arts
MULTIMEDIA PRESENTATIONS

Lesson 7: Encourage students to use the power of technology and multimedia to enhance their lessons. For example, use Prezi, Google Slides, or Pow Tunes to make their lesson more engaging.

CCSS.ELA-LITERACY.SL.7.5

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MUTUAL FUNDS

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D2.Civ.6.6-8

GRADE 8

Math
COMPARE FUNCTIONS

Lesson 2: Using the Million Dollar Challenge game, have students write expressions for each scenario and then graph their results.

CCSS.MATH.CONTENT.8.F.A.2

English Language Arts
PUBLISH WITH TECHNOLOGY

Lesson 9: Have students turn their lesson plans and resources into a book and publish on a platform such as Kindle Direct Publishing, Create Space, or Book Baby.

CCSS.ELA-LITERACY.W.8.6

Life Science
CYCLING OF MATTER

Lesson 4: Connect the movement of money through financial systems (producers, consumers, etc.) to the movement of matter and flow of energy through ecological systems (plants, animals, decomposers).

NGSS MS-LS2-3

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INTEREST RATES

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NGSS MS-PS1-2

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MUTUAL FUNDS

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D2.Civ.6.6-8

Food for Thought is correlated to Grade 4 standards but is easily adaptable across Grades 3-8. Use these cross-curricular content connections to align to your grade level standards and content goals.

GRADE 3

Math

FRACTIONS AS NUMBERS

Lesson 1: Explain fractions as numbers by using a visual model of fractions on a number line to represent the number of people who die from nutrition-related diseases.

CCSS.MATH.CONTENT.3.NF.A.2

English Language Arts

WRITING EXPLANATORY TEXTS

Lesson 5: Have students write recipes focusing on the conventions of informative/explanatory texts and conveying ideas and information clearly.

CCSS.ELA-LITERACY.W.3.2

Science

TRAITS INFLUENCED BY ENVIRONMENT

Lesson 4: As students learn how to read nutrition labels, explore how nutritional choices and other environmental factors influence an organism's traits. For example, insufficient water can stunt plant growth; too much food and little exercise can make a pet dog overweight.

NGSS 3-LS3-2

Social Studies

COMPARISONS WITH HISTORY

Lesson 1: Discuss how, throughout human history, it was hard to get enough energy from food to survive. Our bodies adapted to crave calories. However, in many cultures, overeating is now a bigger problem.

NCSS D2.HIS.2.3-5

GRADE 4

Math
EQUIVALENT FRACTIONS

Lesson 1: Explain that fractions are equivalent by using visual fraction models while sharing the number of people who die from nutrition-related diseases. Use this principle to recognize and generate equivalent fractions.

CCSS.MATH.CONTENT.4.NF.A.1

English Language Arts
WRITING EXPLANATORY TEXTS

Lesson 5: Write recipes focusing on the conventions of informative/explanatory texts and conveying ideas and information clearly.

CCSS.ELA-LITERACY.W.4.2

Science
SENSORY INFORMATION

Lesson 7: As students see, smell, and taste their culinary creations, explore how we receive sensory information, process it in our brains, and respond in different ways.

NGSS 4-LS1-2

Social Studies
ROLE OF SCIENCE AND TECHNOLOGY

Lesson 3: Students discuss and debate the role of science and technology in our lives as they explore the controversial topic of GMOs.

NCSS D2.CIV.10.3-5

GRADE 5

Math

MULTIPLY AND DIVIDE FRACTIONS

Lesson 6: Once students create their recipes, have them increase or decrease their portion size by multiplying and dividing the fractions in their recipes.

CCSS.MATH.CONTENT.5.NF.B.3

English Language Arts

WRITING EXPLANATORY TEXTS

Lesson 5: In addition to writing a recipe using clear information and conventions, have students write an informational text explaining how their recipe meets nutritional recommendations.

CCSS.ELA-LITERACY.W.5.2

Science

ECOSYSTEMS

Lesson 7: As students finalize their recipes, have them investigate how the ingredients in their recipe are part of a food web. Have students develop a model to describe the movement of matter among plants, animals, decomposers, and the environment.

NGSS 5-LS2-1

Social Studies

ECONOMIC INTERDEPENDENCE

Lesson 4: Students examine food to determine if they can figure out where it came from. Consider placing pushpins on a map to help understand the global nature of our food supply.

NCSS D2.ECO.15.3-5

GRADE 6

Math
RATIO REASONING

Lesson 6: Once students create their recipes, have them use ratio reasoning to convert the measurements in their recipes to serve larger or smaller numbers of people.

CCSS.MATH.CONTENT.6.RP.A.3.D

English Language Arts
WRITING INFORMATIVE/EXPLANATORY TEXTS

Lesson 5: Have students write an informational text explaining how their recipe meets nutritional recommendations. They should include relevant facts, definitions, details, transitions, and nutritional vocabulary.

CCSS.ELA-LITERACY.W.6.2

Life Science
ENERGY FLOW

Lesson 4: As students learn how to read nutrition labels, explore the energy flow in organisms. Have students develop a model in which they identify the relevant components for describing how food molecules are rearranged as matter moves through an organism.

NGSS MS-LS1-7

Civics
ROLE OF SCIENCE AND TECHNOLOGY

Lesson 3: Students discuss and debate the role of science and technology in our lives as they explore the controversial topic of GMOs.

NCSS D2.CIV.10.6-8

Earth and Space Science
EARTH AND HUMAN ACTIVITY

Lesson 8: As students finalize their class cookbook, explore the idea of how these recipes depend on resources from the earth. Investigate how increases in human population (and the population's need to eat) impact Earth's systems.

NGSS_MS-ESS3-4

Geography
GLOBAL INTERCONNECTIONS

Lesson 7: Assign students different countries, and challenge them to revise their recipe to reflect the culinary culture of that part of the world.

NCSS D2.GEO.10.6-8

Physical Science
THERMAL ENERGY

Lesson 6: Some recipes require heat (cooking or baking.) Use that opportunity to investigate how adding or removing thermal energy can cause changes in the state of matter.

NGSS MS-PS1-4

Economics
ECONOMIC DECISION MAKING

Lesson 8: Turn the Friends and Family Feast into a restaurant simulation. Have students calculate the cost of their recipes and determine prices that will yield a positive economic result for the class. Guests can earn fake currency and spend it on recipes.

NCSS D2.ECO.1.6-8

GRADE 7

Math
PROPORTIONAL RELATIONSHIPS

Lesson 6: Once students create their recipes, have them use proportional reasoning to convert the measurements in their recipes to serve larger or smaller numbers of people. Challenge them to increase or decrease their portions by a certain percentage.

CCSS.MATH.CONTENT.7.RP.A.3

English Language Arts
WRITING INFORMATIVE/EXPLANATORY TEXTS

Lesson 5: Have students write an informational text explaining how their recipe meets nutritional recommendations. They should include relevant facts, definitions, details, transitions, and nutritional vocabulary.

CCSS.ELA-LITERACY.W.7.2

Life Science
ENERGY FLOW

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NCSS D2.ECO.1.6-8

GRADE 8

Math
PATTERNS OF ASSOCIATION

Lesson 1: After playing *Your Heart or Mine*, have students construct functions to model the linear relationship between the number of students in a class and the expected number of people who would draw each color of card. For instance, in a class of x students, $\frac{x}{4}$ will die of heart disease; the function $f(x) = \frac{x}{4}$ describes the relationship. Write the functions in the form y = mx + b and explore why none of the functions included a nonzero value for b.

CCSS.MATH.CONTENT.8.F.B.4

English Language Arts
WRITING INFORMATIVE/EXPLANATORY TEXTS

Lesson 5: Have students write an informational text explaining how their recipe meets nutritional recommendations. They should include relevant facts, definitions, details, transitions, and nutritional vocabulary.

CCSS.ELA-LITERACY.W.8.2

Life Science
ENERGY FLOW

Lesson 4: As students learn how to read nutrition labels, explore the energy flow in organisms. Have students develop a model in which they identify the relevant components for describing how food molecules are rearranged as matter moves through an organism.

NGSS MS-LS1-7

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NGSS_MS-ESS3-4

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GLOBAL INTERCONNECTIONS

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NCSS D2.GEO.10.6-8

Physical Science
THERMAL ENERGY

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NGSS_MS-PS1-4

Economics
ECONOMIC DECISION MAKING

Lesson 8: Turn the Friends and Family Feast into a restaurant simulation. Have students calculate the cost of their recipes and determine prices that will yield a positive economic result for the class. Guests can earn fake currency and spend it on recipes.

NCSS D2.ECO.1.6-8

High Energy is correlated to Grade 5 standards but is easily adaptable across Grades 3-8. Use these cross-curricular content connections to align to your grade level standards and content goals.

GRADE 3

Math

UNKNOWN WHOLE NUMBERS

Lesson 4: As students calculate the cost of different amounts of electricity, have them solve word problems involving unknown whole numbers. For example, “If an electric blanket costs $4 to run each night for a month, how many months would it take to cost $52?”
CCSS.MATH.CONTENT.3.OA.A.4

English Language Arts

AUDIENCE

Lesson 6: As students draft their presentations to key decision makers, have them consider the wants and needs of their audience and revise their writing accordingly.
CCSS.ELA-LITERACY.W.3.10

Science

WEATHER AND ENERGY USAGE

Lesson 3: As you discuss energy usage, point out how climate control devices like heaters and air conditioners use large amounts of energy. Construct a table of the typical weather in your area by month and use it to discuss how energy usage patterns may vary throughout the year.
NGSS 3-ESS2-1

Social Studies

RULES AND LAWS CHANGE SOCIETY

Lesson 2: Explain to students that in California, as of January 1, 2018, a law was passed that prohibited stores to continue to stock incandescent bulbs because of their "high" energy use. This law is currently set to go into place on a national level in 2020. Discuss and debate.
NCSS D2.CIV.12.3-5

GRADE 4

Math

MULTISTEP WORD PROBLEMS

Lesson 4: As students calculate the cost of different amounts of electricity, have them solve related multistep word problems. For example, “Let’s assume electricity costs 11 cents per kilowatt-hour. If installing a baboon in the room saves 9 kwh per month, how much energy would installing two room baboons save over the course of a year?”
CCSS.MATH.CONTENT.4.OA.A.3

English Language Arts

PURPOSE AND AUDIENCE

Lesson 6: As students draft their presentations to key decision makers, have them consider the wants and needs of their audience and revise their writing accordingly to help them accomplish their purpose.
CCSS.ELA-LITERACY.W.4.4

Science

TRANSFER OF ENERGY

Lesson 2: Lead a discussion on the different ways in which electricity is produced, and how it is transferred to your home or school. Include a discussion on the environmental costs of different means of producing electricity.
NGSS 4-PS3-2

Social Studies

COMPARISONS WITH HISTORY

Lesson 3: Discuss with students how home life in the 19th century was very different than it is today. One big difference was that light bulbs did not exist in homes. Have students brainstorm alternative light sources that may have been available during this time period.
NCSS D2.HIS.2.3-5

GRADE 5

Math

OPERATIONS WITH DECIMALS

Lesson 3: As students calculate the cost of the appliances, they will need to perform operations with decimals. Money gives a great real-world context for addressing this standard.

CCSS.MATH.CONTENT.5.NBT.B.7

English Language Arts

RESEARCH TO BUILD AND SHARE KNOWLEDGE

Lesson 6: As students analyze their audits, they consider the costs of different changes to the school's energy usage, as well as the benefits.

CCSS.ELA-LITERACY.W.5.7

Science

PROTECTING EARTH'S RESOURCES

Lesson 4: As students explore energy efficiency, they learn how to protect the Earth's natural resources.

NGSS 5-ESS3-1

Social Studies

BENEFITS AND COSTS OF INDIVIDUAL CHOICES

Lesson 6: As students analyze their audits, consider the costs of different changes to the school's energy usage, as well as the benefits. Discuss how changes can be associated with positives and negatives, and that we can weigh whether a decision is a good one by whether the benefits outweigh the costs.
NCSS D2.ECO.1.3-5

GRADE 6

Math
EQUIVALENT EXPRESSIONS

Lesson 4: Help students explore equivalent expressions in a real-world context by applying the associative property of multiplication to multistep word problems. For example, write an algebraic expression for the following: "Let's assume electricity costs 11 cents per kilowatt hour. If installing a baboon in the room saves 9 kwh per month, how much energy would installing two room baboons save over the course of a year?"
CCSS.MATH.CONTENT.6.EE.A.3

English Language Arts
REASONS AND EVIDENCE

Lesson 6: As students construct their presentations to key decision-makers, have them revise their writing to improve the clarity and relevance of the evidence they present. For instance, have them clarify how they know that the statistics or metrics they cite are sound by providing their sources.
CCSS.ELA-LITERACY.W.6.1

Life Science
ENERGY FLOW THROUGH SYSTEMS

Lesson 2: Explore the flow of matter and energy through ecosystems. Compare and contrast with the flow of energy through an electrical circuit.
NGSS MS-LS2-3

History
INFLUENCES ON PERSPECTIVE

Lesson 4: As you prepare for the audit of your school, discuss the ways in which technology changes the educational experience, and explore what education would have been like prior to the advent of various technologies. Discuss how this might have influenced not only student experiences, but student perspectives.
D2.HIS.4.6-8

Earth and Space Science
IMPACTS OF ENERGY CONSUMPTION

Lesson 3: As you examine energy consumption, explore the ways in which increasing energy usage puts stress on the natural environment.
NGSS MS-ESS3-4

Geography
MAPPING SPATIAL PATTERNS

Lesson 4: Have students explore the maps at NightEarth.com to identify geographic, economic, and cultural features which contribute to the prevalence of electrical lights across the world.
D2.GEO.3.6-8

Physical Science
EFFECT OF FIELDS BETWEEN OBJECTS

Lesson 1: When learning about electricity, construct an electromagnet and evaluate the nature of the forces exerted using different methods of construction.
NGSS MS-PS2-5

Economics
IMPACT OF ECONOMIC DECISIONS

Lesson 6: As students analyze the results of their audit, explore the idea of well-being through different lenses: physical, environmental, psychological, etc. Have students explain how economic decisions affect individual, business, and social well-being.
D2.ECO.1.6-8

GRADE 7

Math
RANDOM SAMPLING

Lesson 5: During the audit, discuss how random sampling could allow the class to draw inferences about the whole school based on a sample of classrooms or areas randomly selected. Explore variation between different samples, as well as measures of uncertainty.
CCSS.MATH.CONTENT.7.SP.A.2

English Language Arts
REASONS AND EVIDENCE

Lesson 6: As students construct their presentations to key decision-makers, have them revise their writing to improve the clarity and relevance of the evidence they present. For instance, have them introduce and acknowledge opposing claims and compare their conclusions favorably in a clear and compelling fashion.
CCSS.ELA-LITERACY.W.7.1

Life Science
ENERGY FLOW THROUGH SYSTEMS

Lesson 2: Explore the flow of matter and energy through ecosystems, then compare and contrast with the flow of energy through an electrical circuit.
NGSS MS-LS2-3

History
INFLUENCES ON PERSPECTIVE

Lesson 4: As you prepare for the audit of your school, discuss the ways in which technology changes the educational experience, and explore what education would have been like prior to the advent of various technologies. Discuss how this might have influenced not only student experiences, but student perspectives.
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D2.ECO.1.6-8

GRADE 8

Math
FUNCTIONS

Lesson 4: After conducting your investigation of the energy efficiency of different types of light bulbs, construct functions describing the relationship between the usage of different numbers of each type of bulb and the associated energy utilization. Additionally, construct a function demonstrating the energy savings associated with exchanging different numbers of less-efficient bulbs for more-efficient ones.
CCSS.MATH.CONTENT.8.F.A.1

English Language Arts
REASONS AND EVIDENCE

Lesson 6: As students construct their presentations to key decision-makers, have them revise their writing to improve the clarity and relevance of the evidence they present. For instance, as they cite their sources, have them discuss the credibility of each source.
CCSS.ELA-LITERACY.W.8.1

Life Science
ENERGY FLOW THROUGH SYSTEMS

Lesson 2: Explore the flow of matter and energy through ecosystems, then compare and contrast with the flow of energy through an electrical circuit.
NGSS MS-LS2-3

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INFLUENCES ON PERSPECTIVE

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MAPPING SPATIAL PATTERNS

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NGSS MS-PS2-5

Economics
IMPACT OF ECONOMIC DECISIONS

Lesson 6: As students analyze the results of their audit, explore the idea of well-being through different lenses: physical, environmental, psychological, etc. Have students explain how economic decisions affect individual, business, and social well-being.
D2.ECO.1.6-8

Lend a Hand is correlated to Grade 5 standards, but is easily adaptable across Grades 3-8. Use these cross-curricular content connections to align to your grade level standards and content goals.

GRADE 3

Math

MULTISTEP PROBLEMS

Lesson 4: While looking at the KIVA.org website, have students solve two-step word problems based on hypothetical fundraisers. For example, "If our class raised $125, how much more would this person need to meet their goal?"

CCSS.MATH.CONTENT.3.OA.D.8

English Language Arts

ASKING QUESTIONS

Lesson 3: As groups present their puppet plays, have students record three questions to ask the presenters. Then, have them select which of their questions they think best demonstrates understanding of the play.

CCSS.ELA-LITERACY.RI.3.1

Science

CLIMATES OF THE WORLD

Lesson 4: As students research KIVA, have them research the climate of the individuals or groups you may choose to support. Consider the impact the climate in that area might have on people's lives and livelihoods.

NGSS 3-ESS2-2

Social Studies

MEANS OF CHANGING SOCIETY

Lesson 2: As you explore the idea of microlending, compare and contrast it to other means of improving society, such as traditional charitable giving. Explore the potential benefits and detriments of loaning money instead of simply giving it to individuals in developing countries.

D2.CIV.14.3-5

GRADE 4

Math
MULTISTEP PROBLEMS

Lesson 4: While looking at the KIVA.org website, have students solve two-step word problems using remainders based on hypothetical fundraisers. For example, "How many dollars would each member of our class need to raise in order for this person to meet their goal?"

CCSS.MATH.CONTENT.4.OA.A.3

English Language Arts
DOMAIN-SPECIFIC WORDS

Lesson 1: As students learn about economics, use but do not define the terms, *capital good*, *natural resource*, and *microlending*. Have students use context and reason to construct and share definitions of these terms.

CCSS.ELA-LITERACY.RI.4.4

Science
GEOGRAPHY OF THE WORLD

Lesson 4: As students research KIVA, have them research the geography of the areas in which different individuals live. Consider the impact of the geography of the area on people's lives and livelihoods.

NGSS 4-ESS2-2

Social Studies
INFLUENCES OF ENVIRONMENT

Lesson 4: As you explore KIVA stories, discuss ways in which the cultural and physical environment helps or hurts people's ability to conduct specific kinds of business. For instance, in mountainous regions, it may be more difficult to transport goods.

D2.GEO.7.3-5

GRADE 5

Math
NUMERICAL EXPRESSIONS

Lesson 4: When identifying individuals in need of small loans, students apply their understanding of numerical expressions to better understand the requests.

CCSS.MATH.CONTENT.5.OA.A.2

English Language Arts
ACADEMIC VOCABULARY

Lesson 1: As students explore economics, help them determine the meaning of domain-specific vocabulary.

CCSS.ELA-LITERACY.RI.5.4

Science
MATTER AND ITS PROPERTIES

Lesson 1: As students explore the materials in the "Fish Out of Water" game, help them understand how the properties of matter relate to their function.

NGSS 5-PS1-3

Social Studies
VARIETY OF RESOURCES

Lesson 1: As students explore capital goods and natural resources, ask them to identify examples in the book *22 Cents: Muhammad Yunus and the Village Bank*. Then, have them identify which items were capital goods and natural resources in Fish Out of Water.

D2.ECO.3.3-5

GRADE 6

Math
POSITIVE AND NEGATIVE NUMBERS

Lesson 6: As you prepare for your fundraiser, be sure to include some expenses. Tally how much you raised by adding funds generated as positive numbers, and expenses as negative numbers. Notice that if you subtract a negative number—and expense—your fundraising total goes up!

CCSS.MATH.CONTENT.6.NS.C.5

English Language Arts
CRAFT AND STRUCTURE

Lesson 3: As students present their puppet plays, have the audience record the one sentence that most neatly encapsulates the main idea of each play, then discuss various class answers to move toward a consensus.

CCSS.ELA-LITERACY.RI.6.5

Life Science
PATTERNS OF ORGANISM INTERACTION

Lesson 4: As students consider potential loan recipients, have them reflect on the way in which their economic success may be beneficial or detrimental to the local ecosystem.

NGSS MS-LS2-2

Civics
ROLES OF ORGANIZATIONS

Lesson 4: While considering potential loan recipients, examine the ways in which the political structures in which they live have contributed to or detracted from their economic opportunities.

NCSS D2.Civ.6.6-8

Earth and Space Science
DISTRIBUTION OF RESOURCES

Lesson 1: As students reflect on Earth's natural resources, explore the ways in which past and current geoscientific processes have contributed to the distribution of these resources.

NGSS MS-ESS3-1

History
HISTORICAL CAUSES AND EFFECTS

Lesson 5: After selecting a loan recipient, examine multiple historical events that have had an impact on this individual's life, and examine both the causes and the effects of these events for both individuals and society.

NCSS D2.His.14.6-8

Physical Science
SYNTHETIC MATERIALS

Lesson 1: While learning about capital goods and natural resources, explore the nature of synthetic materials, as well as their impact on society.

NGSS MS-PS-1-3

Economics
TYPES OF MARKETS

Lesson 1: Expand your study of key economic terms to include an exploration of the role of capital goods and natural resources in product, labor, and financial markets.

NCSS D2.Eco.3.6-8

GRADE 7

Math
POSITIVE AND NEGATIVE NUMBERS

Lesson 6: As you prepare for your fundraiser, be sure to include some expenses. Tally how much you raised by adding funds generated as positive numbers, and expenses as negative numbers. Model your fundraiser expenses on a number line. Notice that if you subtract a negative number—and expense—your fundraising total goes up!

CCSS.MATH.CONTENT.7.NS.A.1

English Language Arts
CRAFT AND STRUCTURE

Lesson 3: As students present their puppet plays, have the audience record the one phrase that most powerfully conveys the main idea of each play. Then discuss various class answers to move toward a consensus.

CCSS.ELA-LITERACY.RI.7.4

Life Science
PATTERNS OF ORGANISM INTERACTION

Lesson 4: As students consider potential loan recipients, reflect on the way in which their economic success may be beneficial or detrimental to the local ecosystem.

NGSS MS-LS2-2

Civics
ROLES OF ORGANIZATIONS

Lesson 4: While considering potential loan recipients, examine the ways in which the political structures in which they live have contributed to or detracted from their economic opportunities.

NCSS D2.Civ.6.6-8

Earth and Space Science
DISTRIBUTION OF RESOURCES

Lesson 1: As students reflect on Earth's natural resources, explore the ways in which past and current geoscientific processes have contributed to the distribution of these resources.

NGSS MS-ESS3-1

History
HISTORICAL CAUSES AND EFFECTS

Lesson 5: After selecting a loan recipient, examine multiple historical events that have had an impact on this individual's life, and examine both the causes and the effects of these events for both individuals and society.

NCSS D2.His.14.6-8

Physical Science
SYNTHETIC MATERIALS

Lesson 1: While learning about capital goods and natural resources, explore the nature of synthetic materials, as well as their impact on society.

NGSS MS-PS-1-3

Economics
TYPES OF MARKETS

Lesson 1: Expand your study of key economic terms to include an exploration of the role of capital goods and natural resources in product, labor, and financial markets.

NCSS D2.Eco.3.6-8

GRADE 8

Math
POWERS OF TEN

Lesson 4: Examine the crowd-funding power of KIVA using scientific notation. In 2019, KIVA facilitated more than 1.6 million loans worth a total of 1.33 billion dollars. Have students express these figures using scientific notation and calculate the average loan amount.

CCSS.MATH.CONTENT.8.EE.A.4

English Language Arts
WORD CHOICE AND TONE

Lesson 3: As students present their puppet plays, have the audience record words and phrases that most powerfully convey tone. Then discuss how different word choices could have produced different tones.

CCSS.ELA-LITERACY.RI.8.4

Life Science
PATTERNS OF ORGANISM INTERACTION

Lesson 4: As students consider potential loan recipients, reflect on the way in which their economic success may be beneficial or detrimental to the local ecosystem.

NGSS MS-LS2-2

Civics
ROLES OF ORGANIZATIONS

Lesson 4: While considering potential loan recipients, examine the ways in which the political structures in which they live have contributed to or detracted from their economic opportunities.

NCSS D2.Civ.6.6-8

Earth and Space Science
DISTRIBUTION OF RESOURCES

Lesson 1: As students reflect on Earth's natural resources, explore the ways in which past and current geoscientific processes have contributed to the distribution of these resources.

NGSS MS-ESS3-1

History
HISTORICAL CAUSES AND EFFECTS

Lesson 5: After selecting a loan recipient, examine multiple historical events that have had an impact on this individual's life, and examine both the causes and the effects of these events for both individuals and society.

NCSS D2.His.14.6-8

Physical Science
SYNTHETIC MATERIALS

Lesson 1: While learning about capital goods and natural resources, explore the nature of synthetic materials, as well as their impact on society.

NGSS MS-PS-1-3

Economics
TYPES OF MARKETS

Lesson 1: Expand your study of key economic terms to include an exploration of the role of capital goods and natural resources in product, labor, and financial markets.

NCSS D2.Eco.3.6-8

Moments to Remember is correlated to Grade 5 standards but is easily adaptable across Grades 3-8. Use these cross-curricular content connections to align to your grade level standards and content goals.

GRADE 3

Math

ADDITION AND SUBTRACTION

Lesson 2: As students study timelines of modern American history, use different addition and subtraction strategies to discover how much time elapsed between different events. For example, how many different ways can students come up with to figure out how long it was from the end of World War II in 1945 to the start of the first Gulf War in 1991?

CCSS.MATH.CONTENT.3.NBT.A.2

English Language Arts

ILLUSTRATIONS

Lesson 5: While reading examples of incredible biographical texts, explore the ways in which the illustrations add power to the printed word. Discuss how you can include richer and more memorable visuals in the biographies of your senior friends.

CCSS.ELA-LITERACY.RL.3.7

Science

LIFE CYCLES

Lesson 1: As your class considers the themes of aging, compassion, and empathy, discuss with care and honesty the reality that all people will eventually die. Discuss this issue gently, but honestly.

NGSS 3-LS1-1

Social Studies

BENEFITS OF IMPROVED CAPITAL GOODS

Lesson 3: When interviewing senior friends, have students ask about ways in which their lives and careers were different because they did not have access to modern technology. After returning to class, discuss different ways in which technological advances have helped workers to become more productive.

NCSS D2.ECO.13.3-5

GRADE 4

Math

COMPARING DATES

Lesson 2: Use your study of American history to help students understand place value by comparing and ordering the dates of different historical events. For example, Chernobyl in 1986, the Martin Luther King Jr. assassination in 1968, *Plessy v. Ferguson* in 1896, and the driving of the golden spike in 1869.

CCSS.MATH.CONTENT.4.NBT.A.2

English Language Arts

THEME

Lesson 5: As students study the exemplar biographies, discuss the theme of each. Explore how the authors depict their themes and use this knowledge to include powerful themes in the biographies of their senior friends.

CCSS.ELA-LITERACY.RL.4.2

Science

SENSORY INFORMATION

Lesson 4: After meeting your senior friends, examine how some of their movements and actions seem different from those of younger individuals. Research the reasons why people generally process sensory information less fluently as we age, and research ways that scientists are helping to mitigate against this change in ability.

NGSS 4-LS1-2

Social Studies

DIFFERING POINTS OF VIEW

Lesson 8: As students revise their story, they may identify areas in which they viewed an event or an issue differently than their senior friend. Collect several examples of this and ask students, “What experiences do you think caused the senior and the student to view this experience differently?”

NCSS D2.CIV.10.3-5

GRADE 5

Math
NUMBER SENSE AND EQUIVALENT FRACTIONS

Lesson 7:
Have students create a "life timeline" of their senior friend. Convert important time periods into fractions of that person's life and compare to benchmark fractions.

CCSS.MATH.CONTENT.5.NF.A.2

English Language Arts
THEME

Lesson 1:
After reading *Wilfrid Gordon McDonald Partridge*, explore the idea of theme by connecting specific textual examples to a student-generated description of the book's central idea.

CCSS.ELA-LITERACY.RL.5.2

Science
PATTERNS OF THE NIGHT SKY

Lesson 2:
Drive home the idea of celestial patterns by finding a senior friend who was born under almost exactly the same night sky.

NGSS 5-ESS1-2

Social Studies
LIFE IN DIFFERENT ERAS

Lesson 5:
Have students consider similarities and differences between life today and life during the childhood of their senior friend.

NCSS D2.HIS.2.3-5

GRADE 6

Math
POSITIVE AND NEGATIVE NUMBERS

Lesson 2: Learn about positive and negative numbers by imagining doing this project in the very early years of the Common Era. For example, how old would a senior friend be if she was born in 35 BC if you did the project in AD 41? If another friend turned 40 in AD 27, in which year was he born?

CCSS.MATH.CONTENT.6.NS.C.5

English Language Arts
THEME

Lesson 5: As students study the exemplar biographies, discuss the theme of each; pay close attention to specific details and examine how they contribute to the theme. Explore how the authors depict their themes and use this knowledge to include powerful themes in the biographies of their senior friends.
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CCSS.ELA-LITERACY.RL.6.2

Life Science
BIOLOGY OF MEMORY

Lesson 1: While exploring aging, investigate the biological basis for memory. Examine current research on the cause of memory disorders, as well as the methods scientists are using in order to find cures for diseases like Alzheimer's and dementia.

NGSS MS-LS1-8

Economics
INTEREST RATES

Lesson 2: During the class investigation of different eras of American history, discuss fluctuation of interest rates and examine the ways in which that impacted the lives of individuals. For example, explore how the higher interest rates of the 1970s influenced how difficult it was to purchase a new home.

NCSS D2.ECO.10.6-8

Earth and Space Science
EFFECTS OF POPULATION GROWTH

Lesson 3: After meeting your senior friends, discuss the ways in which the human population has changed over the course of their lifetimes, as well as the way in which human resource consumption has changed. Extrapolate to examine what might happen to our resource consumption if these trends continue unabated, as well as ways people are working to mitigate against the potential damage that may result from overpopulation and excessive resource consumption.
NGSS MS-ESS3-4

Civics
POLICY CONSEQUENCES

Lesson 3: As students explore the lives of their senior friends, discuss how different public policies impacted their lives. For example, discuss how it felt to live through the Vietnam draft or the Watergate scandal.
NCSS D2.CIV.13.6-8

Physical Science
SYNTHETIC MATERIALS

Lesson 2: As students investigate modern American history, examine the way in which our use of synthetic materials has changed over time, as well as the ways in which this increase has impacted society for better and for worse.
NGSS MS-PS1-3

History
FACTORS INFLUENCING PERSPECTIVES

Lesson 3: During interviews with senior friends, have students analyze the factors which contributed to the development of their perspectives by exploring the question, "What in your life has made you see things that way?"
NCSS D2.HIS.4.6-8

GRADE 7

Math
POSITIVE AND NEGATIVE NUMBERS

Lesson 2: Have students explore the nature of negative numbers by examining the timeline as it crosses over from BC to AD.

CCSS.MATH.CONTENT.7.NS.A.1

English Language Arts
THEME

Lesson 5: As students read the exemplar biographies, discuss the theme of each; pay close attention to the way in which the depiction of the theme evolves over the course of the book. Explore how the authors depict their themes and use this knowledge to include powerful themes in the biographies of their senior friends.

CCSS.ELA-LITERACY.RL.7.2

Life Science
BIOLOGY OF MEMORY

Lesson 1: While exploring aging, investigate the biological basis for memory. Examine current research on the cause of memory disorders, as well as the methods scientists are using in order to find cures for diseases like Alzheimer's and dementia.

NGSS MS-LS1-8

Economics
INTEREST RATES

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NCSS D2.ECO.10.6-8

Earth and Space Science
EFFECTS OF POPULATION GROWTH

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Physical Science
SYNTHETIC MATERIALS

Lesson 2: As students investigate modern American history, examine the way in which our use of synthetic materials has changed over time, as well as the ways in which this increase has impacted society for better and for worse.
NGSS MS-PS1-3

History
FACTORS INFLUENCING PERSPECTIVES

Lesson 3: During interviews with senior friends, have students analyze the factors which contributed to the development of their perspectives by exploring the question, "What in your life has made you see things that way?"
NCSS D2.HIS.4.6-8

GRADE 8

Math
FUNCTIONS

Lesson 7: As students reflect on the lives of your senior friends, examine the relationship between their birth year and their age by creating a graph and constructing a line of best fit. What equation of the form y = mx + b most closely matches your data points?

CCSS.MATH.CONTENT.8.F.B.4

English Language Arts
THEME

Lesson 5: As students explore the exemplar biographies, discuss the theme of each; pay close attention to the way in which the theme interacts with the development of each of the primary characters. Discuss how the authors depict their themes and how you could learn from their example to include powerful themes in the biographies of your senior friends. Explore how the authors depict their themes and use this knowledge to include powerful themes in the biographies of their senior friends.

CCSS.ELA-LITERACY.RL.8.2

Life Science
BIOLOGY OF MEMORY

Lesson 1: While exploring aging, investigate the biological basis for memory. Examine current research on the cause of memory disorders, as well as the methods scientists are using in order to find cures for diseases like Alzheimer's and dementia.
NGSS MS-LS1-8

Economics
INTEREST RATES

Lesson 2: During the class investigation of different eras of American history, discuss fluctuation of interest rates and examine the ways in which that impacted the lives of individuals. For example, explore how the higher interest rates of the 1970s influenced how difficult it was to purchase a new home.
NCSS D2.ECO.10.6-8

Earth and Space Science
EFFECTS OF POPULATION GROWTH

Lesson 3: After meeting your senior friends, discuss the ways in which the human population has changed over the course of their lifetimes, as well as the way in which human resource consumption has changed. Extrapolate to examine what might happen to our resource consumption if these trends continue unabated, as well as ways people are working to mitigate against the potential damage that may result from overpopulation and excessive resource consumption.
NGSS MS-ESS3-4

Civics
POLICY CONSEQUENCES

Lesson 3: As students explore the lives of their senior friends, discuss how different public policies impacted their lives. For example, discuss how it felt to live through the Vietnam draft or the Watergate scandal.
NCSS D2.CIV.13.6-8

Physical Science
SYNTHETIC MATERIALS

Lesson 2: As students investigate modern American history, examine the way in which our use of synthetic materials has changed over time, as well as the ways in which this increase has impacted society for better and for worse.
NGSS MS-PS1-3

History
FACTORS INFLUENCING PERSPECTIVES

Lesson 3: During interviews with senior friends, have students analyze the factors which contributed to the development of their perspectives by exploring the question, "What in your life has made you see things that way?"
NCSS D2.HIS.4.6-8

Prevent the Spread is correlated to Grade 4 standards, but is easily adaptable across Grades 3-8. Use these cross-curricular content connections to align to your grade level standards and content goals.

GRADE 3

Math

MULTIPLYING WITH ARRAYS

Lesson 2: When you set up your science experiment, you will have different bacteria sources. Have students use arrays to model and calculate how many petri dishes would be needed to investigate one unsanitized surface and two different sanitizers. They should deduce that you would need 6 x (2+1) dishes! What if there were THREE sanitizers?

CCSS.MATH.CONTENT.3.OA.A.1

English Language Arts

ENGAGING WITH A SPEAKER

Lessons 2&6: Connecting with real-world experts is a great way to help students practice their speaking and listening skills. Discuss appropriate questions, as well as answer with appropriate elaboration and detail, and put your learning into practice by Skyping with a scientist or connecting with a writing professional.

CCSS.ELA-LITERACY.SL.3.3

Science

LIFE CYCLES

Lesson 4: As you study bacteria growth, explain that the growth in the area the bacteria cover is a result of their population growing. Draw a connection to the life cycles of other organisms more common to the experience of third graders to show that all living things are born, grow, reproduce, and die.

NGSS 3-LS1-1

Social Studies

GLOBAL IMPACTS

Lesson 3: Discuss how diseases can travel around the world due to human interconnectivity. Have students generate ideas of other problems with potential global impact.

NCSS D2.GEO.12.3-5

GRADE 4

Math

REAL-LIFE AREA

Lesson 4: Students need some way to quantify the growth of the different dishes of bacteria. Teach them to extend their understanding of area to deal with irregular shapes!

CCSS.MATH.CONTENT.4.MD.A.3

English Language Arts

PLANNING, REVISING, AND EDITING

Lesson 6: Students develop and strengthen writing as needed by planning, revising, and editing.

CCSS.ELA-LITERACY.W.4.5

Science

MULTIPLE SOLUTIONS

Lesson 4: Compare multiple solutions for ways to reduce the impact of natural Earth processes on humans.

NGSS 3-5 ETS 1-2

Social Studies

EVOLVING PERSPECTIVES OVER TIME

Lesson 3: As students learn about the history of human understanding of germs, discuss how perspectives changed with increased understanding by showing a short video from NPR entitled, A Short History of Humans and Germs . Examine other ways that improved scientific understandings have changed human behavior.

NCSS D2.His.5.3-5

GRADE 5

Math
COMPARING FRACTIONS

Lesson 4: As students calculate the area of the bacterial growth, have them approximate what fraction of the dishes are covered by each type of the bacteria; make sure they include some different denominators. Then, have them compare the fractions to find how much more or less different dishes have in comparison to each other.

CCSS.MATH.CONTENT.5.NF.A.1

English Language Arts
USING MULTIMEDIA COMPONENTS

Lesson 6: As students craft their Public Service Announcements, have them consider and incorporate appropriate multimedia elements to enhance their work.

CCSS.ELA-LITERACY.SL.5.5

Science
THE INVISIBLE WORLD

Lesson 4: Discuss how an individual bacterium is too small to be seen, but that a large number of them together become visible. Draw a connection to the fact that matter is made of particles too small to be seen.

NGSS 5-PS1-1

Social Studies
COMPARISONS WITH HISTORY

Lesson 5: Discuss the historical limitations of PSAs relative to our current abilities to spread useful information. Compare historical and contemporary means of changing society.

NCSS D2.HIS.14.3-5

GRADE 6

Math
DIVISION WITH FRACTIONS

Lesson 4: Have students approximate the fraction of each petri dish that is covered by bacteria. Then, have them visualize division with fractions by asking how many times a dish with less bacteria would have to repeat itself to cover a dish with more bacteria. Express as a problem involving division of fractions. For instance, if one dish is $\frac{1}{3}$ covered and another dish is $\frac{3}{4}$ covered, the smaller dish would need to double and then add $\frac{1}{4}$ of ITSELF to be equally covered. So $\frac{3}{4} \div \frac{1}{3} = 2\frac{1}{4}$.
CCSS.MATH.CONTENT.6.NS.A.1

English Language Arts
USING MULTIMEDIA COMPONENTS

Lesson 6: As students craft their Public Service Announcements, have them consider and incorporate appropriate multimedia elements to enhance the clarity of their work.

CCSS.ELA-LITERACY.SL.6.5

Life Science
FACTORS AFFECTING GROWTH

Lesson 4: Explore how the presence or absence of sanitizer acts as an environmental condition that either inhibits or permits for the successful reproduction of bacteria.
NGSS MS-LS1-5

Civics
CIVIC VIRTUES

Lesson 5: As students learn about Public Service Announcements, discuss civic virtues by debating our responsibilities to others with regard to public health.
NCSS D2.Civ.7.6-8

Earth and Space Science
ENERGY FLOW

Lesson 2: As you begin your bacteria investigation, discuss the roll of bacteria in the flow of energy on earth.
NGSS MS-ESS2-1

Geography
MAPS AND DISEASE

Lesson 2: Explore how epidemiologists use maps to explore the spread of disease and to identify potential causes. Research both historical and modern uses of maps in epidemiology.
NCSS D2.Geo.1.6-8

Physical Science
ATOMS, MOLECULES, AND CELLS

Lesson 2: When starting your investigation of bacteria, contextualize how bacteria, though small, are composed of much smaller molecules and atoms.
NGSS PS1-1

History
PERSPECTIVES ON DISEASE

Lesson 4: After your bacteria investigation, explore the way in which bacteria and viruses cause disease, and the way in which human's perspective on the origin of disease has evolved over time.
NCSS D2.His.5.6-8

GRADE 7

Math
AREA FORMULA FOR CIRCLES

Lesson 4: After students approximate the area of each dish that is covered in bacteria, have them approximate what fraction of the dish is covered by using the area formula for circles to calculate the total area of the dish.

CCSS.MATH.CONTENT.7.G.B.4

English Language Arts
USING MULTIMEDIA COMPONENTS

Lesson 6: As students craft their Public Service Announcements, have them consider and incorporate appropriate multimedia elements to enhance the clarity of their work and to emphasize salient points.

CCSS.ELA-LITERACY.SL.7.5

Life Science
FACTORS AFFECTING GROWTH

Lesson 4: Explore how the presence or absence of sanitizer acts as an environmental condition that either inhibits or permits for the successful reproduction of bacteria.

NGSS MS-LS1-5

Civics
CIVIC VIRTUES

Lesson 5: As students learn about Public Service Announcements, discuss civic virtues by debating our responsibilities to others with regard to public health.

NCSS D2.Civ.7.6-8

Earth and Space Science
ENERGY FLOW

Lesson 2: As you begin your bacteria investigation, discuss the roll of bacteria in the flow of energy on Earth.

NGSS MS-ESS2-1

Geography
MAPS AND DISEASE

Lesson 2: Explore how epidemiologists use maps to study the spread of disease and to identify potential causes. Research both historical and modern uses of maps in epidemiology.

NCSS D2.Geo.1.6-8

Physical Science
ATOMS, MOLECULES, AND CELLS

Lesson 2: When starting your investigation of bacteria, contextualize how bacteria, though small, are composed of much smaller molecules and atoms.

NGSS PS1-1

History
PERSPECTIVES ON DISEASE

Lesson 4: After your bacteria investigation, explore the way in which bacteria and viruses cause disease, and the way in which human perspective on the origin of disease has evolved over time.

NCSS D2.His.5.6-8

GRADE 8

Math
APPROXIMATING WITH IRRATIONAL NUMBERS

Lesson 4:
After students approximate the area of each dish that is covered in bacteria, have them approximate what fraction of the dish is covered by using the area formula for circles to calculate the total area of the dish.

CCSS.MATH.CONTENT.8.NS.A.2

English Language Arts
USING MULTIMEDIA COMPONENTS

Lesson 6:
As students craft their Public Service Announcements, have them consider and incorporate appropriate multimedia elements to enhance the clarity of their work, to emphasize salient points, and to add interest.

CCSS.ELA-LITERACY.SL.8.5

Life Science
FACTORS AFFECTING GROWTH

Lesson 4:
Explore how the presence or absence of sanitizer acts as an environmental condition that either inhibits or permits for the successful reproduction of bacteria.

NGSS MS-LS1-5

Civics
CIVIC VIRTUES

Lesson 5:
As students learn about Public Service Announcements, discuss civic virtues by debating our responsibilities to others with regard to public health.

NCSS D2.Civ.7.6-8

Earth and Space Science
ENERGY FLOW

Lesson 2:
As you begin your bacteria investigation, discuss the roll of bacteria in the flow of energy on Earth.

NGSS MS-ESS2-1

Geography
MAPS AND DISEASE

Lesson 2:
Explore how epidemiologists use maps to study the spread of disease and to identify potential causes. Research both historical and modern uses of maps in epidemiology.

NCSS D2.Geo.1.6-8

Physical Science
ATOMS, MOLECULES, AND CELLS

Lesson 2:
When starting your investigation of bacteria, contextualize how bacteria, though small, are composed of much smaller molecules and atoms.

NGSS PS1-1

History
PERSPECTIVES ON DISEASE

Lesson 4:
After your bacteria investigation, explore the way in which bacteria and viruses cause disease, and the way in which human perspective on the origin of disease has evolved over time.

NCSS D2.His.5.6-8

State of Sustainability is correlated to Grade 4 standards but is easily adaptable across Grades 3-8. Use these cross-curricular content connections to align to your grade level standards and content goals.

GRADE 3

Math

TWO-STEP WORD PROBLEMS

Lesson 1:
As students play *Fish On!*, describe the scenarios as two-step word problems. For example, ask students how many fish would be in the pond if you caught six fish, then each pair of remaining fish had a baby. Have students explore the mathematical equations that would represent these concrete situations.
CCSS.MATH.CONTENT.3.OA.D.8

English Language Arts

INFORMATIONAL TEXTS

Lesson 6:
As students write their pages of your class state book, have them focus on clearly conveying ideas by grouping related information together appropriately.
CCSS.ELA-LITERACY.W.3.2

Science

ANIMAL ADAPTATIONS

Lesson 4:
As you research your state, have students pay close attention to the ways in which animals have adapted to your state's environment, and explore how modifications to this environment could adversely affect these animals' abilities to survive.
NGSS 3-LS4-3

Social Studies

PUBLIC POLICY

Lesson 3:
After learning the UN Sustainable Development Goals, have a discussion on how policies are developed to address public problems. Pose the question, "Are there policies that we could develop that would significantly help reach these UN goals?" Have students discuss some policies that could be put in place to address the UN Sustainable Development Goals.
ncss.D2.CIV.13.3-5

GRADE 4

Math
NUMBER PATTERNS

Lesson 1:
As you play the "Fish On!" Card Game, explore number patterns by examining what happens to the number of fish as each generation passes.
CCSS.MATH.CONTENT.4.OA.C.5

English Language Arts
INFORMATIONAL TEXTS

Lesson 2:
Use your exploration of *The Lorax* to investigate the theme of literary works.
CCSS.ELA-LITERACY.RL.4.2

Science
ENVIRONMENTAL IMPACT

Lesson 1:
When discussing sustainable development in your state, generate and compare multiple ways to reduce the environmental impact of human decisions.
NGSS 4-ESS3-2

Social Studies
TAKING INFORMED ACTION

Lesson 4:
Students discuss and debate different methods of addressing issues involving sustainable development.
NCSS D2.Civ.7.3-5

GRADE 5

Math
MATHEMATICAL EXPRESSIONS

Lesson 1:
As students play *Fish On!*, have them draw connections between the situations in the game and numerical expressions. For instance, have students explain how the expression (12-6) ÷ 2 describes the number of babies that the first generation of fish would have if you caught six fish per day.
CCSS.MATH.CONTENT.5.OA.A.2

English Language Arts
INFORMATIONAL TEXTS

Lesson 6:
As students write their pages of your class state book, have them focus on developing the topic with relevant facts, definitions, concrete details, and quotations.
CCSS.ELA-LITERACY.W.5.2.A

Science
ENVIRONMENTAL PROTECTION

Lesson 4:
As you research your state, have students focus on ways in which individual communities use science ideas to protect Earth's resources and the environment.
NGSS 5-ESS3-1

Social Studies
PUBLIC POLICY

Lesson 3:
After learning the UN Sustainable Development Goals, have a discussion on how policies are developed to address public problems. Pose the question, "Are there policies that we could develop that would significantly help reach these UN goals?" Have students discuss some policies that could be put in place to address the UN Sustainable Development Goals.
NCSS.D2.CIV.13.3-5

GRADE 6

Math
EXPONENTS

Lesson 1:
Explore the relationship between population and exponential growth by examining a situation in which ZERO fish in *Fish On!* are ever caught, and have TWO babies a day instead of one. Demonstrate how the equation $6 * 2^x$ describes the number of fish that would exist on day x.
CCSS.MATH.CONTENT.6.EE.A.1

English Language Arts
INFORMATIONAL TEXTS

Lesson 6:
As students write their pages of your class state book, have them focus on organizing ideas using strategies such as definition, classification, compare/contrast, and cause/effect. Include an emphasis on formatting, graphics, and multimedia to enhance reader understanding.
CCSS.ELA-LITERACY.W.6.2.A

Life Science
ANIMAL ADAPTATIONS

Lesson 1:
Extend your *Fish On!* investigation to create a model for exploring natural selection. Have some fish be camouflaged and other fish lack camouflage. In each subsequent generation, catch only fish who lack camouflage. Have baby fish demonstrate camouflage if BOTH parents are camouflaged. Explore how the ratio of camouflaged to uncamouflaged fish changes, given different parameters.
NGSS MS-LS4-6

Economics
EXTERNALITIES

Lesson 4:
While students explore sustainability in your state, examine the effect of economic incentives on the decisions of individuals and groups. Discuss ways in which our society mitigates the impact that decisions have on people and groups not involved directly in the decision-making process.
NCSS D2.ECO.2.6-8

Earth and Space Science
MINIMIZING ENVIRONMENTAL IMPACT

Lesson 4:
As your students explore ways to improve sustainability in your state, have them put their ideas to the test by designing and conducting an investigation into how well a solution they are considering actually reduces environmental harm. For instance, have students conduct a test on the efficacy of replacing old appliances with energy-efficient ones.
NGSS MS-ESS3-3

Civics
BALANCING INTERESTS

Lesson 6:
As students create their state book pages, have them consider reasons why individuals or groups might be reluctant to move toward greater sustainability. Examine the relevance of these interests and perspectives and the way in which they interact with civic virtues, and how we resolve these conflicts while adhering to democratic principles.
NCSS D2.Civ.10.6-8

Physical Science
INSULATION

Lesson 4:
Examine the way in which energy efficiency contributes to environmental sustainability by designing and testing a mechanism of reducing thermal energy transfer in a given situation. For example, explore ways to reduce heating costs by improving the building insulation.
NGSS MS-PS3-3

Geography
SUSTAINABILITY AND CONFLICT

Lesson 7:
As students broaden their understanding of sustainability in your state, have them explore ways in which human-induced environmental change have contributed to conflicts throughout history, and explore the ways in which additional environmental degradation could exacerbate future conflicts.
NCSS D2.Geo.9.6-8

GRADE 7

Math
VARIABLES IN REAL-WORLD CONTEXTS

Lesson 1:
Have students use variables to help them understand how changing the number of fish you catch each day will change the way the game unfolds. For example, 12 – x + (12 – x) ÷ 2 = y could describe the number of fish, y, who would be left on Day 2 if you decided to catch x fish per day, so long as x is an even number.
CCSS.MATH.CONTENT.7.EE.B.4

English Language Arts
INFORMATIONAL TEXTS

Lesson 6:
As students write their pages of your class state book, have them focus on organizing ideas using strategies such as definition, classification, compare/contrast, and cause/effect. Include an emphasis on formatting, graphics, and multimedia to enhance reader understanding.
CCSS.ELA-LITERACY.W.7.2.A

Life Science
ANIMAL ADAPTATIONS

Lesson 1:
Extend your *Fish On!* investigation to create a model for exploring natural selection. Have some fish be camouflaged and other fish lack camouflage. In each subsequent generation, catch only fish who lack camouflage. Have baby fish demonstrate camouflage if BOTH parents are camouflaged. Explore how the ratio of camouflaged to uncamouflaged fish changes, given different parameters.
NGSS MS-LS4-6

Economics
EXTERNALITIES

Lesson 4:
While students explore sustainability in your state, examine the effect of economic incentives on the decisions of individuals and groups. Discuss ways in which our society mitigates the impact that decisions have on people and groups not involved directly in the decision-making process.
NCSS D2.ECO.2.6-8

Earth and Space Science
MINIMIZING ENVIRONMENTAL IMPACT

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As your students explore ways to improve sustainability in your state, have them put their ideas to the test by designing and conducting an investigation into how well a solution they are considering actually reduces environmental harm. For instance, have students conduct a test on the efficacy of replacing old appliances with energy-efficient ones.
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As students broaden their understanding of sustainability in your state, have them explore ways in which human-induced environmental change have contributed to conflicts throughout history, and explore the ways in which additional environmental degradation could exacerbate future conflicts.
NCSS D2.Geo.9.6-8

GRADE 8

Math
FUNCTIONS

Lesson 1:
Explore functions that describe the growth of the fish population in different scenarios. Have students create graphs depicting the change in fish population over time; explore how the graph is a function because each input corresponds to exactly one output.
CCSS.MATH.CONTENT.8.F.A.1

English Language Arts
INFORMATIONAL TEXTS

Lesson 6:
As students write their pages of your class state book, have them focus on organizing ideas using strategies such as definition, classification, compare/contrast, and cause/effect. Include an emphasis on formatting, graphics, and multimedia to enhance reader understanding.
CCSS.ELA-LITERACY.W.8.2.A

Life Science
ANIMAL ADAPTATIONS

Lesson 1:
Extend your *Fish On!* investigation to create a model for exploring natural selection. Have some fish be camouflaged and other fish lack camouflage. In each subsequent generation, catch only fish who lack camouflage. Have baby fish demonstrate camouflage if BOTH parents are camouflaged. Explore how the ratio of camouflaged to uncamouflaged fish changes, given different parameters.
NGSS MS-LS4-6

Economics
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NCSS D2.ECO.2.6-8

Earth and Space Science
MINIMIZING ENVIRONMENTAL IMPACT

Lesson 4:
As your students explore ways to improve sustainability in your state, have them put their ideas to the test by designing and conducting an investigation into how well a solution they are considering actually reduces environmental harm. For instance, have students conduct a test on the efficacy of replacing old appliances with energy-efficient ones.
NGSS MS-ESS3-3

Civics
BALANCING INTERESTS

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As students create their state book pages, have them consider reasons why individuals or groups might be reluctant to move toward greater sustainability. Examine the relevance of these interests and perspectives and the way in which they interact with civic virtues, and how we resolve these conflicts while adhering to democratic principles.
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NGSS MS-PS3-3

Geography
SUSTAINABILITY AND CONFLICT

Lesson 7:
As students broaden their understanding of sustainability in your state, have them explore ways in which human-induced environmental change have contributed to conflicts throughout history, and explore the ways in which additional environmental degradation could exacerbate future conflicts.
NCSS D2.Geo.9.6-8

Take a Stand is correlated to Grade 4 standards but is easily adaptable across Grades 3-8. Use these cross-curricular content connections to align to your grade level standards and content goals.

GRADE 3

Math

TIME INTERVALS

Lesson 7: As students revise their podcasts, have them use the timestamp feature to calculate the length of different time segments. If a particular segment begins at 1:45 and ends at 3:15, students can use a variety of strategies to conclude that it is 1:30 long.

CCSS.MATH.CONTENT.3.MD.A.1

English Language Arts

PRESENTATIONS

Lesson 5: As students plan their podcasts, explore how to report on their topic with appropriate facts and relevant, descriptive details. Also, practice speaking clearly at an understandable pace and volume.

CCSS.ELA-LITERACY.SL.3.4

Science

LIFE CYCLES

Lesson 8: All organisms have life cycles. Do ideas? Draw a connection between the way plants and animals are born, grow, reproduce, and die, and the way that ideas do. What do they have in common? What do they have that is different?

NGSS 3-LS1-1

Social Studies

CHANGE IN DIFFERENT CONTEXTS

Lesson 4: After the debate, explain how it is often easier to make changes in small settings, such as a classroom, than in large settings, like a nation. Discuss what procedures are used for making changes in different contexts, and why it may be easier to change a classroom than a country.

NCSS D2.CIV.3.3-5

GRADE 4

Math
DECIMAL NOTATION

Lesson 7: As your students edit their podcasts, help them understand the relative value of decimals by drawing a connection to audio timestamps.

CCSS.MATH.CONTENT.4.NF.C.7

English Language Arts
REASONS AND EVIDENCE

Lesson 4: Dive into the concepts of reason and evidence in an authentic way by having students debate the issues on which they will eventually take a stand.

CSS.ELA-LITERACY.RI.4.8

Science
INFORMATION PROCESSING

Lesson 2: Is the dress blue or white? Use our most puzzling illusions to help students understand how the brain works to make sense of the world around us.

NGSS 4-LS1-2

Social Studies
CORE CIVIC VIRTUES

Lesson 1: Explain how civility and respectful discourse are core virtues that are necessary for a well-functioning democracy. Discuss problems with civility in current public discourse, and brainstorm potential causes and solutions.

NCSS D2.HIS.5.3-5

GRADE 5

Math
COMPARING DECIMALS

Lesson 7: As students edit their podcasts, help students understand how to compare decimals by using the timeline in your video editing software. Have students specify the timestamp, to the thousandth, of four different words from a sentence in their podcast. Write down these times and compare the value of the decimals.

CCSS.MATH.CONTENT.5.NBT.A.3

English Language Arts
PRESENTATIONS

Lesson 5: As students plan their podcasts, explore how to sequence ideas in the most logical and effective fashion. Also, work to incorporate relevant facts and appropriate details to support a theme.

CCSS.ELA-LITERACY.SL.5.4

Science
PROTECTING OUR RESOURCES

Lesson 5: Are any of your students interested in environmental issues? Use their podcast to explore different ways that communities use scientific ideas to protect the Earth's resources!

NGSS 5-ESS3-1

Social Studies
RULES, LAWS, AND THE CONSTITUTION

Lesson 5: As you plan your podcast, ask what sort of change your students would like to make in the world. Do they hope to change a rule or a law—or do they hope to change people's minds? Make sure they have a clear understanding of what sort of action is necessary to create the change they seek.

NCSS D2.CIV.3.3-5

GRADE 6

Math
EXPRESSIONS WITH EXPONENTS

CCSS.MATH.CONTENT.6.EE.A.1

English Language Arts
PRESENTATIONS

Lesson 5: As students plan their podcasts, explore how to sequence ideas in the most logical and effective fashion. Work to incorporate relevant facts and appropriate details to support a theme and to use appropriate volume and clear pronunciation.

CCSS.ELA-LITERACY.SL.6.4

Life Science
BENEFITS OF DIVERSITY

Lesson 2: As you explore how different perspectives can help communities to see issues more deeply and clearly, draw a connection between the benefit of diversity in the world of ideas and the benefits of biodiversity.

NGSS MS-LS2-5

Economics
Costs and Benefits

Lesson 3: A cost-benefit analysis is a great way to see both sides of an issue. As your students prepare for their debate, have them identify some costs and benefits that would result if their positions were widely adopted. Help them explore how wise decisions are the ones which maximize the benefits while minimizing the costs, and that people can disagree about the relative value of the different costs and benefits.

NCSS D2.Eco.2.6-8

Earth and Space Science
ENVIRONMENTAL IMPACTS

Lesson 8: As you present your podcasts, explore how technological media can help ideas and information spread in a far more efficient way than could be done prior to the advent of electronic media. Discuss the benefits and costs of cheap information transfer.

NGSS MS-ESS3-3

Geography
PERSPECTIVES AROUND THE WORLD

Lesson 5: As students plan their podcasts, have them explore the ways in which people from different areas view their issue differently. For instance, people who live in wooded areas might fight more vigorously to defend against deforestation because they value trees more highly. Explore how people can resolve issues when two sides have different value structures.

NCSS D2.Geo.6.6-8

Physical Science
WAVES OF ENERGY

Lesson 5: Explore the ways in which information has been transmitted throughout history, paying particular attention to the ways in which digitized signals are a more reliable way to encode and transmit information than analog signals.

NGSS MS-PS4-3

Civics
APPLYING CIVIC VIRTUES

Lesson 8: As students demonstrate the ability to stand up for what they believe in without becoming intolerant or belligerent, explore the example they are setting for how all people can apply civic virtues in school and community settings.

NCSS D2.Civ.7.6-8

GRADE 7

Math
SAMPLE POPULATIONS

Lesson 8: As you share your podcasts with parents and community members, take a survey about their impressions. Discuss how this survey could be used to draw conclusions about the general population, but that the results might not match up because the sample is biased. Use this to discuss the importance of random sampling and its power to support valid inferences.

CCSS.MATH.CONTENT.7.SP.A.1

English Language Arts
PRESENTATIONS

Lesson 5: As students plan their podcasts, explore how to sequence ideas in the most logical and effective fashion. Work to incorporate relevant facts and appropriate details to support a theme and to use appropriate volume and clear pronunciation.

CCSS.ELA-LITERACY.SL.7.4

Life Science
BENEFITS OF DIVERSITY

Lesson 2: As you explore how different perspectives can help communities to see issues more deeply and clearly, draw a connection between the benefit of diversity in the world of ideas and the benefits of biodiversity.

NGSS MS-LS2-5

Economics
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NCSS D2.Eco.2.6-8

Earth and Space Science
ENVIRONMENTAL IMPACTS

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NCSS D2.Geo.6.6-8

Physical Science
WAVES OF ENERGY

Lesson 5: Explore the ways in which information has been transmitted throughout history, paying particular attention to the ways in which digitized signals are a more reliable way to encode and transmit information than analog signals.

NGSS MS-PS4-3

Civics
APPLYING CIVIC VIRTUES

Lesson 8: As students demonstrate the ability to stand up for what they believe in without becoming intolerant or belligerent, explore the example they are setting for how all people can apply civic virtues in school and community settings.

NCSS D2.Civ.7.6-8

GRADE 8

Math
COMPARING FUCTIONS

Lesson 6: Discuss how different ways of sharing the podcast could result in different numbers of users engaging with it. Explore how one person telling ten people each day would result in 10x people knowing about it each day, where x is the number of days. If each person who hears the podcast tells two others, however, the number of people who have heard about the podcast, cumulatively, would be $2^x - 1$. Examine and compare the shape of the two curves and discover the power of exponential growth.

CCSS.MATH.CONTENT.8.F.A.2

English Language Arts
PRESENTATIONS

Lesson 5: As students plan their podcasts, explore how to sequence ideas in the most logical and effective fashion. Work to incorporate relevant facts and appropriate details to support a theme and to use appropriate volume and clear pronunciation.

CCSS.ELA-LITERACY.SL.8.4

Life Science
BENEFITS OF DIVERSITY

Lesson 2: As you explore how different perspectives can help communities to see issues more deeply and clearly, draw a connection between the benefit of diversity in the world of ideas and the benefits of biodiversity.

NGSS MS-LS2-5

Economics
Costs and Benefits

Lesson 3: A cost-benefit analysis is a great way to see both sides of an issue. As your students prepare for their debate, have them identify some costs and benefits that would result if their positions were widely adopted. Help them explore how wise decisions are the ones which maximize the benefits while minimizing the costs, and that people can disagree about the relative value of the different costs and benefits.

NCSS D2.Eco.2.6-8

Earth and Space Science
ENVIRONMENTAL IMPACTS

Lesson 8: As you present your podcasts, explore how technological media can help ideas and information spread in a far more efficient way than could be done prior to the advent of electronic media. Discuss the benefits and costs of cheap information transfer.

NGSS MS-ESS3-3

Geography
PERSPECTIVES AROUND THE WORLD

Lesson 5: As students plan their podcasts, have them explore the ways in which people from different areas view their issue differently. For instance, people who live in wooded areas might fight more vigorously to defend against deforestation because they value trees more highly. Explore how people can resolve issues when two sides have different value structures.

NCSS D2.Geo.6.6-8

Physical Science
WAVES OF ENERGY

Lesson 5: Explore the ways in which information has been transmitted throughout history, paying particular attention to the ways in which digitized signals are a more reliable way to encode and transmit information than analog signals.

NGSS MS-PS4-3

Civics
APPLYING CIVIC VIRTUES

Lesson 8: As students demonstrate the ability to stand up for what they believe in without becoming intolerant or belligerent, explore the example they are setting for how all people can apply civic virtues in school and community settings.

NCSS D2.Civ.7.6-8

The Dirty Truth is correlated to Grade 5 standards but is easily adaptable across Grades 3-8. Use these cross-curricular content connections to align to your grade level standards and content goals.

GRADE 3

Math

REPRESENT AND INTERPRET DATA

Lesson 7: Have students draw a scaled bar graph to represent their radish height data (i.e. each square represents 2 inches).

CCSS.MATH.CONTENT.3.MD.B.3

English Language Arts

PRESENTATION AND KNOWLEDGE OF IDEAS

Lesson 8: Have students create a commercial using their research and investigation results to convince their audience to support Earth's resources or space exploration.

CCSS.ELA-LITERACY.SL.3.4

Science

CHARACTERISTICS AND SURVIVAL

Lesson 4: Students research the characteristics and needs of radish plants and investigate how they can provide the optimal conditions for growth in both Earth's soil and Martian regolith.

NGSS 3-LS4-3

Social Studies

CONSTRUCTING PUBLIC POLICIES

Lesson 1: When discussing the problems facing planet Earth, explore how societies go about shaping public policy. Explain how representatives determine regulations, laws, and budgets that play a role in protecting the environment, and how they weigh the costs of these decisions.

NCSS D2.CIV.13.3-5

GRADE 4

Math
MULTIPLYING WITH REAL-WORLD FRACTIONS

Lesson 6: As students make observations of their plant growth, have them apply their knowledge of fractions by asking them how tall different plants would be if they grew to three, four, or five times their current heights.

CCSS.MATH.CONTENT.4.NF.B.3

English Language Arts
SCIENTIFIC TEXTS

Lesson 2: As students gain more interest in the idea of life on Mars, extend their learning by having them read an article on the topic of life on Mars. Use these articles as possible sources: Finding Living Martians Just Got a Bit More Believable or Is There Life on Mars? Have them explain the ideas of the article through journal writing.

CCSS.ELA-LITERACY.RI.4.1

Science
STRUCTURE AND FUNCTION

Lesson 7: After students grow their radish plants, have them identify the structures of the plant that support survival, growth, and reproduction. Have them compare these structures with another plant of their choice.

NGSS 4-LS1-1

Social Studies
VARYING ENVIRONMENTAL CONDITIONS

Lesson 2: As you examine the planet Mars, explain that some portions of Mars, near the equator, can reach a pleasant 70 degrees. Near the poles, it can be almost 200 degrees below zero. Discuss what factors besides latitude contribute to temperature on Earth. Even on Mars, geographic features influence environmental characteristics!

NCSS D2.GEO.10.3-5

GRADE 5

Math
POWERS OF TEN

Lesson 2: As your students study the distances between planets, help them understand the power of the powers of ten.

CCSS.MATH.CONTENT.5.NBT.A.2

English Language Arts
ANALYZING ARTICLES

Lesson 2: Explore different perspectives on Mars by reading, analyzing, and comparing two different articles.

CCSS.ELA-LITERACY.RI.5.6

Science
INTERDEPENDENT RELATIONSHIPS IN ECOSYSTEMS

Lesson 4: Expand student understanding of the richness of ecosystems by exploring the fungi, bacteria, and invertebrates that help make soil fertile.

NGSS 5-LS2-1

Social Studies
GOVERNMENT FUNDING

Lesson 5: How does the government fund its programs? Explore and discuss the three ways in which the government pays for new goods and services to provide: taxes, cutting funds from other areas, and borrowing.

NCSS D2.ECO.12.3-5

GRADE 6

Math
POSITIVE AND NEGATIVE NUMBERS

Lesson 2: As students learn about Mars, have them broaden their exploration and identify the high and low temperatures on different planets and place them in order on a line graph while explaining the meaning of 0.

CCSS.MATH.CONTENT.6.NS.C.5

English Language Arts
SUPPORT CLAIMS WITH EVIDENCE

Lesson 7: Have students construct claims from their radish investigation and support their claims through evidence (analyzed data) and reasoning.

CCSS.ELA-LITERACY.W.6.1

Life Science
ECOSYSTEMS

Lesson 5: As students are researching the best fertilizers to use for their soil, have them expand their research to food webs. Have them develop a model of a food web in their environment and a "model" of a food web on Mars. Then have them compare and contrast components (living, non-living, energy) of each.

NGSS MS-LS2-3

Civics
ANALYZE PUBLIC POLICIES

Lesson 1: When discussing the problems facing planet Earth, analyze the purposes, implementation, and public policies related to environmental issues.

NCSS D2.CIV.13.6-8

Earth and Space Science
GRAVITY AND MOTION

Lesson 2: Discuss how Mars, Earth, and other planets stay in elliptical orbits around the sun. By understanding Mars' orbit, its motion in relation to Earth, scientists can determine optimal times to travel to the Red Planet.

NGSS MS-ESS1-2

Geography
LOCATION AND ENVIRONMENT

Lesson 1: Use maps, satellite images, photographs and other resources to compare 3 locations (above, below, and on the equator) on Earth with 3 similar locations on Mars. Discuss how location affects environmental characteristics.

NCSS D2.GEO.2.6-8

Physical Science
GRAVITY AND MASS

Lesson 2: Discuss how mass remains constant as weight varies due to gravitational attraction. Have students discover how gravitational forces are dependent on mass by determining their weight on Mars and on other planets in our solar system.

NGSS MS-PS2-4

History
EVOLUTION OF COMMERCIALS

Lesson 5: As students research the best practices for creating their commercials, discuss how commercials have changed over time. Topics may include modalities, perspectives, targeted demographics, laws (FCC), etc.

NCSS D2.HIS.4.6-8

GRADE 7

Math
RATIONAL NUMBERS

Lesson 2: As students learn about Mars, have them broaden their exploration and identify the high and low temperatures on different planets and calculate the range of temperatures for each planet. Have them graph this range on a number line.

CCSS.MATH.CONTENT.7.NS.A.1

English Language Arts
CONSTRUCT CLAIMS WITH EVIDENCE

Lesson 7: Have students construct claims from their radish investigation and support their claims through evidence (analyzed data) and reasoning.

CCSS.ELA-LITERACY.W.7.1

Life Science
ECOSYSTEMS

Lesson 5: As students are researching the best fertilizers to use for their soil, have them expand their research to food webs. Have them develop a model of a food web in their environment and a "model" of a food web on Mars. Have them compare and contrast components (living, non-living, energy) of each.

NGSS MS-LS2-3

Civics
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Lesson 1: When discussing the problems facing planet Earth, analyze the purposes, implementation, and public policies related to environmental issues.

NCSS D2.CIV.13.6-8

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GRAVITY AND MOTION

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Lesson 1: Use maps, satellite images, photographs and other resources to compare 3 locations (above, below, and on the equator) on Earth with 3 similar locations on Mars. Discuss how location affects environmental characteristics.

NCSS D2.GEO.2.6-8

Physical Science
GRAVITY AND MASS

Lesson 2: Discuss how mass remains constant as weight varies due to gravitational attraction. Have students discover how gravitational forces are dependent on mass by determining their weight on Mars and on other planets in our solar system.

NGSS MS-PS2-4

History
EVOLUTION OF COMMERCIALS

Lesson 5: As students research the best practices for creating their commercials, discuss how media has changed over time. Topics may include modalities, perspectives, targeted demographics, laws (FCC), etc.

NCSS D2.HIS.4.6-8

GRADE 8

Math
BIVARIATE DATA

Lesson 7: Create a class data set from Team Blue and Team Red results and have each group construct a scatter plot and describe patterns (clustering, outliers, linear/nonlinear association).

CCSS.MATH.CONTENT.8.SP.A.1

English Language Arts
CONSTRUCT CLAIMS FROM EVIDENCE

Lesson 7: Have students construct claims from their radish investigation and support their claims through evidence (analyzed data) and reasoning.

CCSS.ELA-LITERACY.W.8.1

Life Science
ECOSYSTEMS

Lesson 5: As students are researching the best fertilizers to use for their soil, have them expand their research to food webs. Have them develop a model of a food web in their environment and a "model" of a food web on Mars. Then have them compare and contrast components (living, non-living, energy) of each.

NGSS MS-LS2-3

Civics
ANALYZE PUBLIC POLICIES

Lesson 1: When discussing the problems facing planet Earth, analyze the purposes, implementation, and public policies related to environmental issues.

NCSS D2.CIV.13.6-8

Earth and Space Science
GRAVITY AND MOTION

Lesson 2: Discuss how Mars, Earth, and other planets stay in elliptical orbits around the sun. By understanding Mars' orbit, its motion in relation to Earth, scientists can determine optimal times to travel to the Red Planet.

NGSS MS-ESS1-2

Geography
LOCATION AND ENVIRONMENT

Lesson 1: Use maps, satellite images, photographs and other resources to compare 3 locations (above, below, and on the equator) on Earth with 3 similar locations on Mars. Discuss how location affects environmental characteristics.

NCSS D2.GEO.2.6-8

Physical Science
GRAVITY AND MASS

Lesson 2: Discuss how mass remains constant as weight varies due to gravitational attraction. Have students discover how gravitational forces are dependent on mass by determining their weight on Mars and on other planets in our solar system.

NGSS MS-PS2-4

History
EVOLUTION OF COMMERCIALS

Lesson 5: As students research the best practices for creating their commercials, discuss how media has changed over time. Topics may include modalities, perspectives, targeted demographics, laws (FCC), etc.

NCSS D2.HIS.4.6-8

What's in Your Water is correlated to Grade 4 standards but is easily adaptable across Grades 3-8. Use these cross-curricular content connections to align to your grade level standards and content goals.

GRADE 3

Math
FRACTIONS

Lesson 5: Use the story of Cheru and Kamama's walk to explore fractions. Have students record the length of Cheru and Kamama's walks as fractions of a kilometer.

CCSS.MATH.CONTENT.3.NF.A.1

English Language Arts
OPINION WRITING

Lesson 6: Before students vote on different fundraiser plans, have them write a three-sentence supporting paragraph to persuade people to support their plan. Have them state their opinion in their first sentence, then write two sentences giving their best supporting reasons.

CCSS.ELA-LITERACY.W.3.1

Science
FLOOD PREVENTION

Lesson 3: As students learn about watersheds, discuss how water, although necessary for survival, can pose risks to living things through flooding. Have students research, design, and test a solution to prevent flooding.

NGSS 3-ESS3-1

Social Studies
BENEFITS AND COSTS OF INDIVIDUAL DECISIONS

Lesson 4: Before visiting your local body of water, discuss the sources of some possible contaminants students may discover. Explain that items we purchase and use can make our lives more enjoyable or convenient. However, sometimes there are environmental tradeoffs. Discuss as a class how to evaluate when the benefits of an item outweigh its costs.

D2.ECO.1.3-5

GRADE 4

Math
UNITS OF MEASURE

Lesson 5: After viewing stories about children who must walk long distances for water, help students understand the distances traveled by converting between metric units.

CCSS.MATH.CONTENT.4.MD.A.1

English Language Arts
VISUAL AND ORAL INFORMATION

Lesson 5: As students read and watch the stories of the different water gathering experiences of two children, discuss how the text and video work together to create a more complete picture of the situation.

CCSS.ELA-LITERACY.RI.4.7

Science
WATER AND EROSION

Lesson 4: As students sample their water, explore the way in which water affects the land around it.

NGSS 4-ESS2-1

Social Studies
FREEDOMS AND RESPONSIBILITIES

Lesson 1: How can we balance our liberties with our responsibilities to others? Examine how the issue of water pollution can help students reflect on the balance between freedoms and responsibilities.

D2.Civ.4.3-5

GRADE 5

Math
MEASUREMENT CONVERSION

Lesson 5: After viewing Cheru and Kamama's stories, have students convert the distances traveled by converting between metric units. Use the conversions to solve multi-step problems.

CCSS.MATH.CONTENT.5.MD.A.1

English Language Arts
OPINION WRITING

Lesson 6: Before students vote on different fundraiser plans, have them write an opinion piece to persuade listeners to support their plan. Have them state their opinion in their first sentence, followed by logically ordered reasons that are supported by facts and details.

CCSS.ELA-LITERACY.W.5.1

Science
MATTER

Lesson 2: As students learn about watersheds, broaden their understanding of water by exploring how the water we drink and swim in contains matter that is too small to be seen (salts, dissolved gases, etc,).

NGSS 5-PS1-1

Social Studies
MAPS AND THE ENVIRONMENT

Lesson 4: After conducting your water sample analysis, have students explore the USGS Water-Quality Changes map. Ask students to suggest and discuss possible relationships between places and the quality of their water.

D2.GEO.2.3-5

GRADE 6

Math
SUMMARIZE NUMERICAL DATA SETS

Lesson 4: Using the class data set, have students plot the contaminants on a number line (dot plots, box plots, histograms) and qualitatively summarize their findings by identifying the median and mean for each contaminant.

CCSS.MATH.CONTENT.6.SP.B.4

English Language Arts
COLLABORATION

Lesson 6: When students work together to construct their fundraising plan, discuss the characteristics and norms of effective collaboration (personal responsibility, defined roles, respectful discourse, etc.).

CCSS.ELA-LITERACY.SL.6.1

Life Science
ECOSYSTEMS

Lesson 5: Have students research and share out other water issues (i.e. Garbage Islands, ocean acidification, dead zones) that affect organisms and populations of organisms in an ecosystem.

NGSS MS-LS2-1

Economics
ECONOMIC DECISIONS

Lesson 4: Before visiting your local body of water, discuss the sources of some possible contaminants students may discover. Explain that items we purchase and use can make our lives more enjoyable or convenient. However, sometimes there are environmental and societal tradeoffs. Discuss as a class how to evaluate when the benefits of an item outweigh its costs.

D2.ECO.1.6-8

Earth and Space Science
MINIMIZING HUMAN IMPACT

Lesson 3: As students learn about watersheds, discuss how usable water makes up a very small portion of our hydrosphere and human water usage impacts that amount. Have students explore various ways water is used by humans and design possible solutions to minimize human impact.

NGSS MS-ESS3-3

Geography
CONSTRUCTING MAPS

Lesson 5: Have students construct maps of local, national, and international bodies of water representing environmental and cultural characteristics.

D2.GEO.1.6-8

Physical Science
THERMAL ENERGY

Lesson 5: One way to clean unsafe water is to boil it. Challenge students to use their understanding of thermal energy to design, build, and test a solar water heater to maximize thermal energy transfer.

NGSS MS-PS3-3

History
CHANGING PERSPECTIVES

Lesson 4: As students analyze and reflect on their water testing results, discuss how new information changes perspectives. Explore human perception of water and how activities surrounding water usage and pollution have changed over time (i.e. plastic straws to metal straws).

D2.HIS.5.6-8

GRADE 7

Math
AREA AND CIRCUMFERENCE OF A CIRCLE

Lesson 4: Before students collect their water samples, have them identify the circular area they are going to collect their water from. Then, have them measure the radius and calculate the circumference and area of the circle.

CCSS.MATH.CONTENT.7.G.B.4

English Language Arts
VISUAL DISPLAY

Lesson 2: As students create their rap to be shared at their fundraiser, challenge them to incorporate visual appeal and multimedia into their performance, whether recorded or live.

CCSS.ELA-LITERACY.SL.7.5

Life Science
ECOSYSTEMS

Lesson 5: Have students research and share out other water issues (i.e. Garbage Islands, ocean acidification, dead zones) that affect organisms and populations of organisms in an ecosystem.

NGSS MS-LS2-1

Economics
ECONOMIC DECISIONS

Lesson 4: Before visiting your local body of water, discuss the sources of some possible contaminants students may discover. Explain that items we purchase and use can make our lives more enjoyable or convenient. However, sometimes there are environmental and societal tradeoffs. Discuss as a class how to evaluate when the benefits of an item outweigh its costs.

D2.ECO.1.6-8

Earth and Space Science
MINIMIZING HUMAN IMPACT

Lesson 3: As students learn about watersheds, discuss how usable water makes up a very small portion of our hydrosphere and human water usage impacts that amount. Have students explore various ways water is used by humans and design possible solutions to minimize human impact.

NGSS MS-ESS3-3

Geography
CONSTRUCTING MAPS

Lesson 5: Have students construct maps of local, national, and international bodies of water representing environmental and cultural characteristics.

D2.GEO.1.6-8

Physical Science
THERMAL ENERGY

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NGSS MS-PS3-3

History
CHANGING PERSPECTIVES

Lesson 4: As students analyze and reflect on their water testing results, discuss how new information changes perspectives. Explore human perception of water and how activities surrounding water usage and pollution have changed over time (i.e. plastic straws to metal straws).

D2.HIS.5.6-8

GRADE 8

Math
FUNCTIONS AND RELATIONSHIPS

Lesson 4: Have students sample water at various locations at a water source (upstream v. downstream) and construct a function to model the relationship between location and the contaminants present.

CCSS.MATH.CONTENT.8.F.B.4

English Language Arts
VISUAL DISPLAY

Lesson 2: As students create their rap to be shared at their fundraiser, challenge them to incorporate visual appeal and multimedia into their performance, whether recorded or live.

CCSS.ELA-LITERACY.SL.8.5

Life Science
ECOSYSTEMS

Lesson 5: Have students research and share out other water issues (i.e. Garbage Islands, ocean acidification, dead zones) that affect organisms and populations of organisms in an ecosystem.

NGSS MS-LS2-1

Economics
ECONOMIC DECISIONS

Lesson 4: Before visiting your local body of water, discuss the sources of some possible contaminants students may discover. Explain that items we purchase and use can make our lives more enjoyable or convenient. However, sometimes there are environmental and societal tradeoffs. Discuss as a class how to evaluate when the benefits of an item outweigh its costs.

D2.ECO.1.6-8

Earth and Space Science
MINIMIZING HUMAN IMPACT

Lesson 3: As students learn about watersheds, discuss how usable water makes up a very small portion of our hydrosphere and human water usage impacts that amount. Have students explore various ways water is used by humans and design possible solutions to minimize human impact.

NGSS MS-ESS3-3

Geography
CONSTRUCTING MAPS

Lesson 5: Have students construct maps of local, national, and international bodies of water representing environmental and cultural characteristics.

D2.GEO.1.6-8

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D2.HIS.5.6-8