Christina School District Assignment Board

Student's First & Last Name_____ Student ID/Lunch # _____ School _____ Grade_____

Grade Level: 6th

Week of May 18th, 2020

	Day 1	Day 2	Day 3	Day 4	Day 5
ELA	This week's focus is to build upon your prior knowledge, giving you experience in reading real-world informational texts, note-taking, critical thinking, and metacognitive skills. ---------- Review the chart on writer's moves. Put a check next to all of the ones that you remember from ELA class and that you understand. ---------- Read the following statements and respond in a sentence or two. Do you agree, disagree? Explain. · "Life has a sense of humor; it hides its best treasures in unexpected places." · There is frequently more to be learned from the unexpected than the expected."	Read the article **"Your Poop Could Be a Literal Goldmine."** Complete steps 1-5	Answer the questions 1-10.	Complete the **Analyzing Writer's Craft.**	Write a 1-2 paragraph response to the article. Utilize 1-2 of the writer's techniques in your response OR Choose one of the quotes from Day 1 and explain in a paragraph how it connects to the main idea of the article.

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Math	**6**	*Fraction Division as Ratios* *A*nswer "Which One Doesn't Belong?" and justify your choice. (attached) Read Math Notes: Fraction Division, Part 2. Complete 7-69. (attached)	Complete 7-70 and 7-71. (attached) Refer to Math Notes if needed.	Complete 7-72, 7-74, and 7-75. (attached) Refer to Math Notes if needed.	Complete Fraction Division Practice Problem Worksheet #1-3. (attached) Refer to Math Notes if needed.	Journal Entry: Record all of the strategies you know for dividing a fraction by a fraction, such as for the problem $\frac{4}{5} \div \frac{2}{3}$. Create a situation for the problem, then solve it in at least three different ways. Title this entry "Fraction Division" and label it with today's date.
	6+	*Multiplication as Repeated Subtraction* Answer "Which One Doesn't Belong?" and justify your choice. (attached) Without a calculator, complete 3-51, 3-52, 3-53, and 3-54. (attached)	Without a calculator, complete 3-55, 3-56, 3-57, 3-59, and 3-60. (attached)	Read notes and examples on page 35. (attached) Without a calculator, complete p. 35 #1-20. (attached)	Complete "Mistake Central" Activity. (attached) Journal Entry: Describe what you understand about the product of two negative numbers and the product of a negative number and a positive number. Also describe how this is related to division with negatives. Give several examples. Title this entry "Multiplying and Dividing with Negative Numbers" and label it with today's date.	Complete Puzzle Investigator Problem (PIP) 7 - Squares Galore (attached)
Science		**Weathering and Erosion:** Brainstorm and write your best answers to the following: a) What types of events cause Earth's surface to change?	**Overview: Erosion and Weathering (part 1):** Read the article. In YELLOW, highlight or underline details about erosion. In GREEN,	**Overview: Erosion and Weathering (part 2):** Reread the article as necessary. Write your best answers to the following:	**Do We Treat Our Soil Like Dirt? The Effects of Soil Erosion (part 1):** Read the article. In YELLOW, highlight or underline ways that	**Do We Treat Our Soil Like Dirt? The Effects of Soil Erosion (part 2):** Reread the article as necessary. Write your best answers to the

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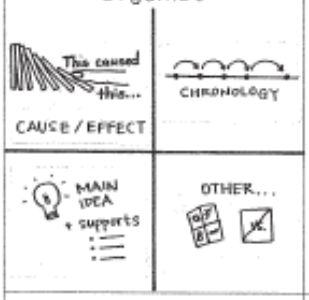
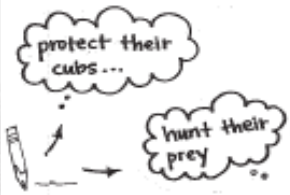
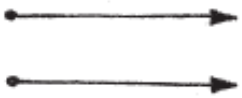
	b) How do these events change Earth's surface?	highlight or underline details about weathering. In RED, highlight or underline how the two processes relate to one another. **[SAVE article for next week]**	a) Name and describe some geologic formations that were formed by weathering and erosion. b) Measuring the amount of soil or sand removed from an area over time determines the rate of erosion. Scientists determine that location A along a riverbank loses 20,000 kg of soil per year. How many kg of soil would be lost in 4 years? c) Many times in nature, the same process that causes weathering will also cause erosion. Give an example from the article that describes a cause of weathering only. d) Name 3 sources of energy for the process of erosion.	humans damage soil. In GREEN, highlight or underline how human activity damages soil. In RED, highlight or underline solutions to these problems. **[SAVE article for next week]**	following: a) Areas that have steep slopes are at risk of soil erosion. What is a method from the article that could be used to decrease erosion? b) Describe 3 choices that are causes of soil damage. c) A student makes the claim that the management of the soil is necessary for the survival of the world's population. Provide a piece of evidence from the article that supports the student's claim. d) Oklahoma and Kansas were devastated by the Dust Bowl of the1930s. Write down 5 events (total) in order that happened before, during and after the Dust Bowl.
Social Studies	Complete Part 2, Cartoon 1 from the document titled, "Cartoons: Needs vs. Wants"	Complete Part 2, Cartoon 2 from the document titled, "Cartoons: Needs vs. Wants"	Complete Part 2, Cartoon 3 from the document titled, "Cartoons: Needs vs. Wants"	Complete Part 2, Cartoon 4 from the document titled, "Cartoons: Needs vs. Wants"	Complete Part 3 from the document titled, "Cartoons: Needs vs. Wants"

Writers of Informational Texts Use Techniques Such As:

Organize 	Make a comparison 	Raise questions (and sometimes answer them) 
Give an example/anecdote 	Address the reader directly 	Quote an authority 
Provide a surprising fact or statistic 	Choose words/phrases that lead the reader to think one way or another 	Repeat Use parallelism 
Use text features and/or provide a visual 	Define key terms and use technical vocabulary 	Incorporate humor 

Instructions:

Step 1: Number the paragraphs
Step 2: Skim the article using these symbols as you read:
(+) agree, (-) disagree, (*) important, (!) surprising, (?) wondering
Step 3: Read the article now carefully and make notes in the margin. Try to mark each paragraph with an important note, idea or question.
Step 4: Answer the following.

1. What surprised you as you read?
2. What did the author think you already knew?
3. What challenged, changed or confirmed what you knew?

Step 5: Write a 1-2 sentence summary of the article.

Your Poop Could Be a Literal Goldmine of Precious Metals

The Washington Post 2015

You have no idea what you're flushing away.

You may know that you can earn $13,000 a year selling your own feces, but now it seems that the U.S. government stands to make bank on your solid waste, as well. According to new research presented at the national meeting of the American Chemical Society, the itty-bitty particles of gold, lead, copper and other valuable metals found in biosolids (which you probably just call poop) could be worth "mining."

Put your tiny pick-ax away and flush the toilet: It's not that simple.

Led by Kathleen Smith of the U.S. Geological Survey, the team of researchers initially set out to find better ways of extracting foreign particles from human waste. They weren't looking to mine that silver and gold, but rather to toss it out. Once human waste is treated, about half of it (3.5 million tons, in the United States) is used to fertilize farms and forests across the country. The primary goal is to get metals — which get into our waste by way of their presence in cleaning agents, beauty and hygiene products, and clothing — out of this fertilizer end-product to keep them from impeding its usefulness.
But by thinking like miners, Smith said, wastewater treaters could get two poop byproducts for their trouble: fertilizer and reusable metals. In fact, a recent study estimated that a city of 1 million people might produce $13 million worth of these biosolid metals every year.

Smith and her team are still figuring out the best methods for extracting these metals, but they've had a lot of luck using the same chemicals used to leach tiny particles of metal from rock. Indeed, Smith told

the ACS, a lot of human waste seems to have high enough concentrations of leachable metals that it would be considered commercially viable to mine it — if it was rock, that is.

Since biosolid metal extraction would require new procedures and facilities, it's obviously not a given that anyone will decide to go spelunking for cellphone-building alloys in human poop. But Smithland her team say the feasibility of the process should be considered on a case-by-case basis and could end up providing a valuable income boost to local economies.

Comprehension questions – answers may be in phrases.

1. What three main product categories contaminate human waste with precious metals?

   _____

   _____

2. What two byproducts does the author believe wastewater treaters could mine?

   _____

   _____

3. Define **spelunking** as used in the article.

   _____

   _____

4. What does the acronym **ACS** mean?

   _____

   _____

5. Define **impeding** as used in the text.

   _____

   _____

Short Written Response - Answer each question in one or more complete sentences.

6. Explain what the author means when stating “by thinking like miners.”

   _____

   _____

7. What was the original purpose of this research study?

   _____

   _____

8. Why does the author use the word “literal” in the title of the news article?

   _____

   _____

9. What are your thoughts about selling your bodily waste? Explain.

   _____

   _____

10. Pick a word/line/passage from the article and respond to it in 2-3 sentences.

    _____

    _____

Analyzing Writer’s Craft

Re-read the article a final time looking specifically for writer’s craft.

Make notes about the kinds of ideas covered in the text, the type of evidence the writer uses to support his ideas, how the piece is organized and presented, and how the writer uses language/words to add layers of meaning. Refer back to the writer’s craft sheet from day 1 to help you.

After you identify some of the techniques choose one of focus.

- Quote the example from the text.
- Identify where in the text the author uses the technique.
- How does the use of this technique support the main idea and impact the reader?
- Explain in a paragraph.

Math 6 – Week of May 18th

Fraction Division with Ratios

Which One Doesn't Belong? Why?

400%	16 to 4
$\frac{20}{5}$	1:4

METHODS AND MEANINGS

MATH NOTES

Fraction Division, Part 2

Method 3: Using a Super Giant One

To divide by a fraction using a Super Giant One, write the two numbers (dividend and divisor) as a complex fraction with the dividend as the numerator and the divisor as the denominator. Use the reciprocal of the complex fraction's denominator to create a Super Giant One. Then simplify as shown in the following examples.

$$6 \div \frac{3}{4} = \frac{\frac{6}{1}}{\frac{3}{4}} \cdot \boxed{1}\ \frac{\frac{6}{1} \cdot \frac{4}{3}}{1} = \frac{6}{1} \cdot \frac{4}{3} = \frac{24}{3} = 8$$

$$\frac{3}{4} \div \frac{2}{5} \quad \frac{\frac{3}{4}}{\frac{2}{5}} \cdot \boxed{1}\ \frac{\frac{3}{4} \cdot \frac{5}{2}}{1} = \frac{3}{4} \cdot \frac{5}{2} = \frac{15}{8} = 1\frac{7}{8}$$

Method 4: Using the Invert and Multiply Method

Notice that the result of multiplying by the Super Giant One in the above examples is that the denominator of the complex fraction is always 1. The resulting numerator is the product of the first fraction (dividend) and the reciprocal of the second fraction (divisor).

To use the "Invert and Multiply" method, multiply the first fraction (dividend) by the reciprocal (multiplicative inverse) of the second fraction (divisor). If the first number is an integer, write it as a fraction over 1.

Here is the second problem from the examples above solved with the Invert and Multiply method:

$$\frac{3}{4} \div \frac{2}{5} = \frac{3}{4} \cdot \frac{5}{2} = \frac{15}{8} = 1\frac{7}{8}$$

7-69 Comparing the amount of paint needed to the portion of the fence painted in Lesson 7.2.2 reminded Graham of ratios. *"Look,"* Graham said, *"We can write this division problem as a ratio comparing the amount of paint being used in gallons to the portion of the fence that is painted. Then we just need to find an equivalent ratio for the whole fence."* He wrote the following equation on his paper.

$$\frac{\frac{3}{4} \text{ gallon}}{\frac{2}{5} \text{ of the fence}} = \frac{\sqrt{7} \text{ gallon } (s)}{1 \text{ whole fence}}$$

Set up equivalent ratios for the following division problems.

- First, write an equivalent ratio equation.
- Then, estimate what each answer would be. Do not calculate an exact answer.

a. One serving of rice is 3/4-cup. How many servings are there in 12 cups of rice?
b. How much will each person get if 6 people divide 0.75 pound of gold equally between them?
c. Danika is baking a cake. She has only 3/4 cup of sugar and knows this is only enough for 2/3 of the recipe. How much sugar does the recipe call for?
d. Bob, a jeweler, has 7/8 ounces of silver. He needs 2/5 of an ounce for each pendant. How many pendants can he make?
e. Emilie is working at the deli counter and has 4.368 pounds of potato salad to put into tubs. Each tub holds 0.78 pound. How many tubs of potato salad can she make?

7-70 Matt has written the following equivalent ratio for part (c) of problem 7-69. He remembers that he used Super Giant Ones to find missing numbers for equivalent ratios, so he tries to use one here. He adds a Super Giant One to his ratio as shown below.

Matt's equivalent ratios: $\frac{\frac{3}{4} \text{ cup of sugar}}{\frac{2}{3} \text{ recipe}} \cdot \boxed{} = \frac{\boxed{?} \text{ cups of sugar}}{1 \text{ whole recipe}}$

Now Matt needs help. Help him figure out what numbers should go inside the Super Giant One. Then use the Super Giant One to find the missing measures of sugar. Be prepared to explain your reasoning to the class.

7-71 Go back to problem and work out the equations that you set up for parts (a) through (e). Use any of the division strategies you have learned. Be sure to show your work.

7-72 Find the following quotients using whatever strategy makes most sense to you.

a. $\frac{4}{5} \div \frac{5}{6}$

b. $\frac{5}{12} \div \frac{1}{6}$

c. $\frac{7}{8} \div \frac{2}{3}$

7-74 Simplify each of the following expressions by using one of the strategies in the Math Notes box for this lesson.

a. $\frac{2}{3} \div \frac{3}{5}$

b. $\frac{5}{6} \div \frac{1}{12}$

c. $3\frac{1}{8} \div 2\frac{1}{2}$

7-75 Jamie has 9 gallons of paint that she needs to pour into containers that hold 0.75 gallon. How many containers will she need?

Fraction Division Practice Problems Worksheet

1. A group of friends is sharing $2\frac{1}{2}$ pounds of berries.

    a. If each friend received $\frac{5}{4}$ of a pound of berries, how many friends are sharing the berries?

    b. If 5 friends are sharing the berries, how many pounds of berries does each friend receive?

2. $\frac{2}{5}$ kilogram of soil fills $\frac{1}{3}$ of a container. Can 1 kilogram of soil fit in the container? Explain or show your reasoning.

3. After raining for $\frac{3}{4}$ of an hour, a rain gauge is $\frac{2}{5}$ filled. If it continues to rain at that rate for 15 more minutes, what fraction of the rain gauge will be filled?

    a. To help answer this question, Diego wrote the division equation $\frac{3}{4} \div \frac{2}{5} = ?$. Explain why this equation does *not* represent the situation.

    b. Write a multiplication equation and a division equation that does represent

Math 6+ – Week of May 18th

Multiplication as Repeated Subtraction

Which One Doesn't Belong? Why?

multiply	divide
subtract	solve

3-51 For each expression below, predict what you know about the result without actually calculating it. Can you tell if the result will be positive or negative? Can you tell if it will be larger or smaller than the number you started with? Explain your ideas.

a. $-1-(-6.5)$ b. $2.2-(-2.2)$ c. $12\frac{1}{2}-22\frac{1}{2}$

d. $-100-(-98)$ e. $-10-(-2)-(-2)-(-2)$

3-52. Now draw (or describe) a diagram for each of the expressions in problem 3-51 and calculate the number that each of them represents.

3-53 Troy and Twana are working with the expression $-10-(-2)-(-2)-(-2)$ from part (e) of problem 3-51.

a. Help them find a shorter way to write this expression.
b. Imagine that their expression does not include the -10. How could they write the new expression? What number would this new expression represent? If you were to describe what this expression represents using + and − tiles, what would you say?

3-54 How could you evaluate the product $-7(-11)$? Prepare a brief summary explaining why your result must be correct.

3-55 Create a small poster that shows what it means to multiply a negative number by another negative number or to multiply a negative number by a positive number. To demonstrate your ideas, include:

- Examples (from the list below or create your own).
- Pictures or diagrams.
- Any words necessary to explain your thinking.
- Numerical sentences to represent each of your examples.

4(−3)	2(-7)
−4(−3)	-2(-7)
−4(3)	-2(7)

3-56 Marcy asked Dario, "*Why is* (−1) (−1) = 1*?*" Dario helped her by writing the steps at the right. Copy, complete, and give a reason for each of Dario's steps to explain to Marcy why (−1) (−1) = 1.

$$(-1)(0) = 0$$
$$(-1)(-1+1) = 0$$
$$(-1)(-1) + (-1)(1) = 0$$
$$\_\_\_\_ + (-1) = 0$$

3-57 What does −18÷9 equal? How do you know? Explain why your answer makes sense. Then complete the division problems below.

a. 45 ÷ (−3)

b. −32 ÷ (−8)

c. −54 ÷ 6

3-59 Copy and simplify each expression below.

a. 6 + (−18)

b. 12 ½ + (−25)

c. −9 + (−9)

d. −12.2 + 6.1 + 15.8

3-60 Find each of the following products or quotients without using a calculator. Draw a diagram or use words to explain how you know your product makes sense.

a. 6(−3)	d. -8(0)
b. −6(3)	e, -20 / 5
c. −8(−3)	f. -36 / (-9)

MULTIPLICATION AND DIVISION OF INTEGERS

Multiply and divide integers two at a time. If the signs are the same, their product will be positive. If the signs are different, their product will be negative.

Follow the same rules for fractions and decimals.

Remember to apply the correct order of operations when you are working with more than one operation.

For additional information, see the Math Notes box in Lesson 3.2.4 of the *Core Connections, Course 2* text.

Examples

a. $2 \cdot 3 = 6$ or $3 \cdot 2 = 6$

b. $-2 \cdot (-3) = 6$ or $(+2) \cdot (+3) = 6$

c. $2 \div 3 = \frac{2}{3}$ or $3 \div 2 = \frac{3}{2}$

d. $(-2) \div (-3) = \frac{2}{3}$ or $(-3) \div (-2) = \frac{3}{2}$

e. $(-2) \cdot 3 = -6$ or $3 \cdot (-2) = -6$

f. $(-2) \div 3 = -\frac{2}{3}$ or $3 \div (-2) = -\frac{3}{2}$

g. $9 \cdot (-7) = -63$ or $-7 \cdot 9 = -63$

h. $-63 \div 9 = -7$ or $9 \div (-63) = -\frac{1}{7}$

Problems

Use the rules above to find each product or quotient.

1. $(-4)(2)$
2. $(-3)(4)$
3. $(-12)(5)$
4. $(-21)(8)$
5. $(4)(-9)$
6. $(13)(-8)$
7. $(45)(-3)$
8. $(105)(-7)$
9. $(-7)(-6)$
10. $(-7)(-9)$
11. $(-22)(-8)$
12. $(-127)(-4)$
13. $(-8)(-4)(2)$
14. $(-3)(-3)(-3)$
15. $(-5)(-2)(8)(4)$
16. $(-5)(-4)(-6)(-3)$
17. $(-2)(-5)(4)(8)$
18. $(-2)(-5)(-4)(-8)$
19. $(-2)(-5)(4)(-8)$
20. $2(-5)(4)(-8)$

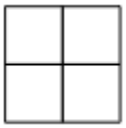
Mistake Central:

The multiplication table below contains 42 mistakes. Shade in each box that contains a mistake. You will end up with a famous farming expression.

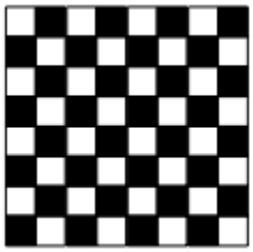
X	2	-4	-9	6	3	8	-1	4	-8	-2	-6	7	-5	9	-7
-3	6	-12	-27	-18	9	-24	-3	12	-24	6	-18	-21	-15	27	-21
9	-18	-36	-81	54	-27	72	9	36	-72	-18	54	63	45	81	63
-6	12	-24	54	-36	18	-48	-6	24	48	12	-36	-42	-30	-54	-42
5	-10	-20	-45	30	-15	40	5	20	-40	-10	30	35	25	45	35
-7	14	-28	-63	-42	21	-56	-7	28	-56	14	-42	-49	-35	63	-49

PUZZLE INVESTIGATOR PROBLEM (PIP) 7 – SQUARES GALORE

How many squares do you see at right? Can you identify more than 4 squares? How can we know when we have found all the squares? The puzzles below will help you investigate these questions.



a. How many squares can you find on an 8 × 8 checkerboard, like the one shown at right? (By the way, there are more than 65 squares.) Organize your work so that you can find patterns that help you to determine how many 1 × 1 squares, 2 × 2 squares, and so on, that you can find.



b. Use your patterns from part (a) to figure out how many squares would be in a design made with square tiles if it is 30 tiles wide and 30 tiles long. Can you do this without drawing a diagram?

c. Is there a square made up of square tiles (like the checkerboard) that has only 75 squares overall? What about one that has 120 squares overall? If it is possible, show the square design and explain how you found it. If it is not possible, explain why that design cannot exist.

Overview: Erosion and weathering

By National Geographic, adapted by Newsela staff on 10.23.19
Word Count **620**
Level **930L**

Image 1. Wind erosion makes these layered sandstone hills swirl in the Paria Canyon-Vermilion Cliffs Wilderness Area, which straddles the Utah-Arizona border. Photo by: ullstein bild via Getty Images

Weathering and erosion are two important geological processes. They are responsible for carving and shaping Earth's rock. Together, they chisel and polish the stone into ever-evolving works of art and then wash the remains into the sea.

The two processes are related to each other, but they are not dependent on one another. Weathering breaks down the rocks, while erosion transports the fragments away.

Marvels Of Nature

Working together, weathering and erosion create and reveal marvels of nature. These processes are responsible for the boulders high in the mountains. They are also the creators of sandstone arches in the desert and polished cliffs that face the sea.

Water is nature's most adaptable tool, and it works in many different ways. On a cold, rainy day, for example, rain will pool in cracks in the stone. Then, at night, when the temperature drops, the water will expand as it turns to ice. The growth of the ice acts like a sledgehammer to a wedge; it

causes the rock to split. The next day, under the beating sun, the ice melts and trickles the cracked fragments away.

Rock itself expands when hot and shrinks when cold. Repeated swings in temperature can weaken the rock and eventually cause it to break apart. These changes in temperature are what slowly turn stones in the dry desert into sand. Likewise, constant cycles from wet to dry will crumble clay.

Rocks Turn To Smooth Stone

Bits of sand are picked up and carried off by the wind. The gusts forcefully fling the grains into the sides of nearby rocks. This sandblasting leaves behind smooth and polished stone. On the seashore, the action of waves chips away at cliffs and tumbles the fragments back and forth into fine sand.

Plants and animals also take a heavy toll on Earth's rocks. Lichens and mosses take root in small cracks and crevices. As the plants grow, so do the cracks, eventually splitting the rock into pieces. Animals scurry across the surface and burrow underground. As they do, they trample, crush and plow rocks. Plants and animals also produce acids that mix with rainwater, a combination that eats away at rocks.

Rainwater, Snow And Ice

Rainwater also mixes with chemicals as it falls from the sky. This forms an acidic mixture known as acid rain, which can dissolve rock. For example, acid rain dissolves limestone to form karst, a type of terrain filled with deep crevices. Dissolved limestone can result in underground streams and caves. These are common in the southeastern part of Mexico known as the Yucatán Peninsula. There, these underground bodies of water are known as cenotes.

Back up on the mountains, snow and ice build up into glaciers. These huge masses of ice weigh down on the rocks beneath them, and the force of gravity slowly pushes the rocks downhill. Together with advancing ice, the rocks carve out a path as the glacier slumps down the mountain. When the glacier begins to melt, it deposits its cargo of soil and rock. The water carries the rocky fragments toward the sea. Rivers deposit millions of tons of small rock fragments into the oceans every year.

Without the erosive forces of water, wind and ice, rock debris would simply pile up where it forms. We would not be able to see nature's weathered sculptures. Erosion is a natural process. However, harmful practices such as deforestation and overgrazing can cause it to speed up dangerously. Rapid erosion strips the land of soils needed for food to grow.

Do we treat our soil like dirt? The effects of soil erosion

By Dennis Dimick, National Geographic, adapted by Newsela staff on 05.01.19
Word Count **741**
Level **950L**

Image 1. Mass soil erosion outside of Kisumu, Kenya, October 26, 2005. The breeding of goats contributed to the erosion of this region. The goats eat right down to the roots. As a result, there is little to bind the soil together in times of heavy rain. Photo by Brent Stirton/Getty Images

The question above was the headline of a National Geographic article about soils in 1984. It suggests how little attention we continue to pay to how we grow what we eat.

We pay a great deal of attention to our food. We want to know where it came from, who grew it and whether it is "conventional" or "organic." But we give hardly a passing thought to the ground our food grows in.

Soil could use some more attention and respect. After all, it is the thin skin of our Earth where we plant and grow crops like wheat, rice and corn. Soil is the key element that makes it possible to feed Earth's more than 7 billion people.

Our Actions Cause Damage

Humanity continues to neglect the land we use for food production. One-third of the world's soil has already been damaged by water and wind erosion. Deforestation, loss of nutrients and pollution are also doing damage. We also pave over some of the most productive farmland to build our cities.

By our own actions, we are losing soil faster than nature can create it. The United Nations said that unless we protect what remains, the global amount of good land will continue to fall. By 2050, the amount of farmland per person will be only a quarter of what it was in 1960. To change that trend, we must improve how we use and conserve our land.

The future truly rests on the soil beneath our feet. However, history is littered with the remains of civilizations that ignored, exploited and overused their soil.

In the late 1930s, soil scientist W.C. Lowdermilk went on a research mission. He traveled across Europe, North Africa and the Near East to investigate why past civilizations failed or survived. Specifically, he was looking at the effect of agricultural practices over the past 7,000 years. He visited lands that had been cultivated for centuries to understand the link between soil erosion and the fate of civilizations.

Changes Must Happen Soon

Lowdermilk's goal was to help avoid a repeat of the Dust Bowl. The Dust Bowl was a soil erosion disaster that hit the southern Great Plains of the United States in the 1930s. It was caused by the "Great Plow-Up" of removing grasslands to grow wheat every year. The loose earth was turned into dust by a decade-long drought. Then huge dust storms blew the soil as far east as Washington, D.C. Thousands of people in Oklahoma, Kansas and nearby states were forced from their land.

Lowdermilk's 18-month journey explored toppled empires and vanished civilizations. He found that soil losses from erosion had contributed to their collapse. Other factors included deforestation, overgrazing, and conflicts between crop farmers and herdsmen. In contrast, he also found that careful stewardship of soil has allowed other societies to flourish for centuries. These practices have included land terracing, crop rotation and tree planting.

A 2015 study called "Soil and Human Security in the 21st Century" was published in the magazine Science. It noted that recent increases in research on soils and soil health are encouraging. However, the report also warned that soil conservation must increase significantly. People need to do more to reduce erosion and improve soil nutrients. These changes must happen soon, the study concludes.

"These are challenging goals that will be difficult to achieve," the study said. It will require global approaches, like those trying to contend with climate change.

Scientists And Farmers Take The Lead

The future of our food is at risk if we don't increase our efforts to conserve our soils. Today's societies could face similar fates as the lost civilizations that Lowdermilk studied more than 75 years ago. The world's population is likely to rise past 9 billion by 2050. More food will be needed, requiring even more production from our soils.

Wisely, governments and communities are ramping up education campaigns about the need to care for soil. Environmental scientists and farmers are leading the way. They are urging us all to recognize the vital role that healthy soil plays in growing what we eat.

It's about time. Here's to soil.

Dennis Dimick grew up on a farm in Oregon and studied agriculture in college. He is National Geographic's executive editor for the environment.

Benchmark Standard	Economics 1a: Students will analyze how changes in supply and demand interact in competitive markets to determine or change the price of goods and services.
Grade Band	6-8
Vocabulary	Needs; wants

~This is a Next Gen Personal Finance lesson – modified by CSD for use at home~

CARTOONS: Needs vs. Wants

One of the foundations of creating a realistic budget that you can stick to is identifying what you truly need and want. While this might sound simple, it can be difficult at times to recognize the difference when you're considering a purchase.

In this activity, you will analyze each of the cartoons below and decide on how that cartoon depicts the struggle of identifying what is a need versus a want.

Part I: Identify Needs and Wants

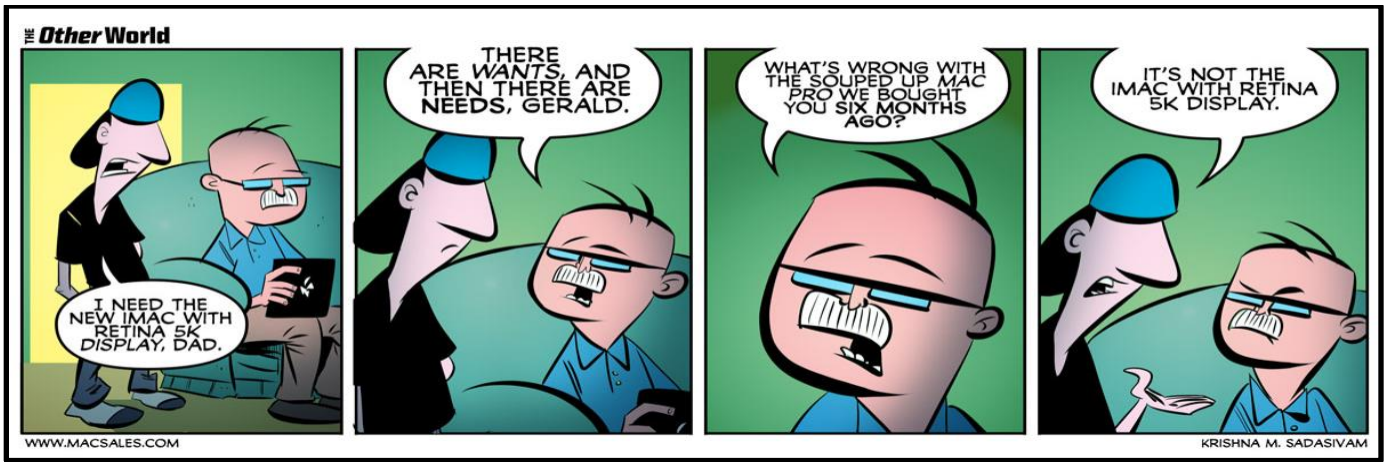
Needs: are expenses that are necessary to meet our day to day needs such as food, shelter, and other financial obligations.

Wants: are expenses that are not necessary to meet our day to day needs. These items are mostly based off of wants and desires.

⚠ Be careful on how you view "needs".

- You need food, but do you need a 10oz filet mignon?
- You need clothing, but do you need brand names or designer labels?
- You need shelter, but do you need a mansion?
- You need transportation, but do you need a Corvette?

Cartoon 1



Cartoon 2

Cartoon 3

Cartoon 4

Part II: Analyze the Cartoons

Use what you know about needs vs. wants to analyze each cartoon and answer the questions below. (There are 4 Cartoons; therefore, each question (A-D) will be answered four different times).

1. In one or two paragraphs, write an analysis of the cartoon you chose and the message it conveys about needs vs. wants. Make sure each question below is answered in your paragraphs.
    A. What message does this cartoon deliver about the struggle of identifying needs vs. wants?
    B. How does this cartoon portray that message?
    C. Did you find this cartoon persuasive? Why or why not?
    D. What other techniques could the cartoonist have used to make this cartoon more persuasive?

Part III: Question to Ponder:

2. How do you think "needs" and "wants" influence the prices of goods and services? Explain and support your answer.