KCS @ home

Fourth Grade
Math

Week of May 11, 2020
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4th Grade Math Week 6

Read this problem involving fractions and decimals. Then look at Luna's solution to this problem.

Sand Jars

Luna made these notes after she made a sand art design in a 2-cup jar.

- I used a glass jar that holds 2 cups.
- I used less than 1 cup of yellow sand.
- I filled less than 0.4 of the jar with pink sand.
- I filled more than 0.2 of the jar with purple sand.

Luna wants to write specific instructions for making the same kind of design that would work for a jar of any size.

- Find fractions or decimals to tell exactly what part of each jar to fill with pink, purple, and yellow sand.
- Write instructions using those numbers.

Look at Luna's solution on the next page. There are many ways to solve the problem.
How could you write all of the amounts as decimals?
How can you tell that a different solution is possible?

Luna's Solution

Hi, I'm Luna. Here's how I solved this problem.

▶ **I already know** the decimals for what fraction of the jar to fill with purple and pink. **I need to find** what fraction of the jar should be yellow.

▶ **The whole jar was 2 cups and yellow was less than 1 cup.**
1 cup is half of the jar.
Less than 1 cup means less than $\frac{1}{2}$ of the jar is yellow.

▶ **I can list all the information with fractions.**
pink: less than 0.4, so less than $\frac{4}{10}$ of the jar.
purple: more than 0.2, so more than $\frac{2}{10}$ of the jar.
yellow: less than $\frac{1}{2}$, so less than $\frac{5}{10}$ of the jar.

I had to choose either fractions or decimals. I chose fractions because I like them!

▶ **I can make a diagram with 10 equal parts.**
Then color it to find 3 fractions that are the right size and total $\frac{10}{10}$.

pink: $\frac{3}{10} < \frac{4}{10}$
purple: $\frac{3}{10} > \frac{2}{10}$
yellow: $\frac{4}{10} < \frac{5}{10}$

I drew a diagram to show all the parts and organize my thinking.

▶ **I can write an equation to show the sum is equivalent to 1.**
$\frac{3}{10} + \frac{3}{10} + \frac{4}{10} = \frac{10}{10}$

$\frac{10}{10} = 1$, so my fractions work.

▶ **So, here are instructions for any size jar.**
Fill any jar $\frac{3}{10}$ with pink sand, $\frac{3}{10}$ with purple sand and $\frac{4}{10}$ with yellow sand.

Read the problem. Write a solution on a separate sheet of paper. Remember, there are lots of ways to solve a problem!

Coin Purses

Luna wants to make and sell small coin purses with gold braid around the perimeter. She will show a sample of each of the two styles at a craft fair. If people like them, she will make more.

Here are Luna's notes about the two styles.

Square style:
all sides are $2\frac{1}{2}$ inches

Rectangle style:
sides are $3\frac{1}{4}$ inches and $2\frac{1}{4}$ inches

Note: I will have to cut pieces of braid to fit, but I won't put together two small pieces for one side.

Length (inches)	Cost (dollars)
2	$2
4	$4
6	$6
8	$8
10	$10
12	$11
20	$17

Luna needs to buy enough gold braid to make one sample purse for each design. She wants to spend as little as possible.

How can Luna use this price chart to decide what lengths of gold braid to buy?

Plan It and Solve It

Find a solution for Luna's Coin Purses problem.

Write a detailed plan and support your answer. Be sure to include:

- a diagram.
- the lengths of gold braid Luna should buy.
- how you used the cost to help make your decision.

You may want to use the problem-solving tips to get started.

Problem-Solving Tips

Questions

- What are some steps that I might take to solve the problem?
- What step should I do first? Why?

Word Bank

length	rectangle	whole
cost	square	perimeter

Sentence Starters

- The lengths of gold braid needed for each design is _____
- The total length of gold braid is _____
- The perimeter of the square is _____
- I can add _____

Problem-Solving Checklist

Make sure that you . . .

- ☐ tell what you know.
- ☐ tell what you need to do.
- ☐ show all your work.
- ☐ show that the solution works.

Reflect

Use Mathematical Practices As you work through the problem, discuss these questions with a partner.

- **Make Sense of Problems** How can you decide what to do first?
- **Make an Argument** What can you do to support your plan to show that it makes sense?

Read the problems. Write a solution on a separate sheet of paper. Remember, there are many different ways to solve a problem!

Hair Ribbons

Luna is teaching 3 friends how to make hair ribbons. She plans to use leftover ribbons from another project. She will share the ribbon between the 3 friends so they all get the same total length of ribbon. Luna's notes and the lengths of the pieces of ribbon she has are shown below.

- Cut the ribbons so each friend gets the same total length.
- Cut the pieces to be as long as possible.
- It doesn't matter how many pieces of ribbon each friend receives.
- It doesn't matter what color ribbon each friend receives.
- There are $4\frac{3}{4}$ feet of the blue ribbon, $6\frac{1}{4}$ feet of the purple ribbon, and 10 feet of the green ribbon.

How should Luna cut the ribbons?

Solve It **Suggest a way that Luna could cut the ribbons so that each friend gets the same total length.**

Tell the number of pieces of ribbon each friend gets and the length of each piece. Explain how you got your answer, and how you made your decision.

Reflect

Use Mathematical Practices After you complete the task, choose one of these questions to discuss with a partner.

- **Persevere** Did you try approaching the task in different ways before deciding on a plan? Explain.
- **Real-Life Problems** Did you think about a real-life situation that is like this problem? Describe it.

Sports Picture Frame

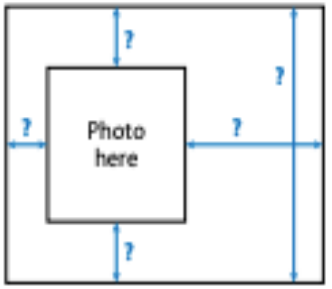
Luna is designing a sports picture frame. Below are her instructions.

- Paint 6 craft sticks . Each stick is $\frac{3}{4}$ inch wide and $5\frac{3}{4}$ inches long.
- Glue the craft sticks side-by-side on a piece of cardboard.
- Glue a photograph $2\frac{1}{4}$ inches wide and $2\frac{1}{4}$ inches tall on the frame.
- Leave a space at least $2\frac{2}{4}$ inches wide to the right of the photo. Put your decorations here.
- There needs to be at least $\frac{2}{4}$ inch of space above and below the photo.

Will Luna's plan work?

Solve It **Help Luna design the picture frame.**

- Copy the outline of the frame at the right and fill in all the measurements.
- Show and explain why your measurements work.



Reflect

Use Mathematical Practices After you complete the task, choose one of these questions to discuss with a partner.

- **Use a Model** How did the frame outline help you solve the problem?
- **Make an Argument** How did you show that your measurements work?

Possible Solutions

Sand Jars

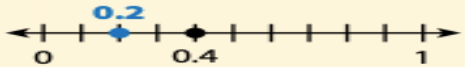
The whole jar is 2 cups, and 1 is $\frac{1}{2}$(0.5) of 2.

I'll show the colors as a part of the jar using decimals.

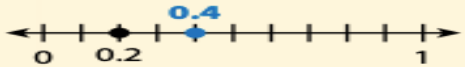
Pink $<$ 0.4 of the jar.
Purple $>$ 0.2 of the jar.
Yellow $<$ 0.5 of the jar.

Then I'll use number lines to find decimals that fit Luna's rules.

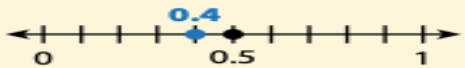
$0.2 < 0.4$



$0.4 > 0.2$



$0.4 < 0.5$



I'll draw and shade a bar showing tenths, to be sure that the parts equal 1 whole $\left(\frac{10}{10}\right)$.

My instructions: Fill any jar 0.2 with pink sand, 0.4 with purple sand, and 0.4 with yellow sand.

Coin Purses

I need to buy enough gold braid to go around two purses. Purse 1 is a square with $2\frac{1}{2}$-inch sides. Purse 2 is a rectangle with sides of $3\frac{1}{4}$ inches and $2\frac{1}{4}$ inches.

I need to find the perimeter of each purse and use pieces of gold braid that waste as little braid as possible.

Purse 1 has a perimeter of $2\frac{1}{2} + 2\frac{1}{2} + 2\frac{1}{2} + 2\frac{1}{2} = 10$ inches. Purse 2 has a perimeter of $2\frac{1}{4} + 3\frac{1}{4} + 2\frac{1}{4} + 3\frac{1}{4} = 11$ inches.

The table tells me the lengths I can buy and the cost of each length. Pieces that are 12 inches or longer cost less than \$1 per inch. I can use 1 piece of 10-inch braid for Purse 1 and have no braid left over. That costs \$10.

I can use 1 piece of 12-inch braid for Purse 2 and have only 1 inch left over. That costs \$11.

So the total is \$10 + \$11 = \$21.

Hair Ribbons

I know how long each piece is and each friend needs the same total length. I will add the lengths and divide by 3. $4\frac{3}{4} + 6\frac{1}{4} + 10 = 21$ and $21 \div 3 = 7$, so each friend gets 7 feet of ribbon.

I can cut a 7-foot piece from the 10-foot ribbon. That leaves 3 feet. The $6\frac{1}{4}$-foot piece only needs $\frac{3}{4}$ foot more to be 7 feet, so I can cut $\frac{3}{4}$ of a foot from the 3-foot piece. Now 2 friends have their ribbons.

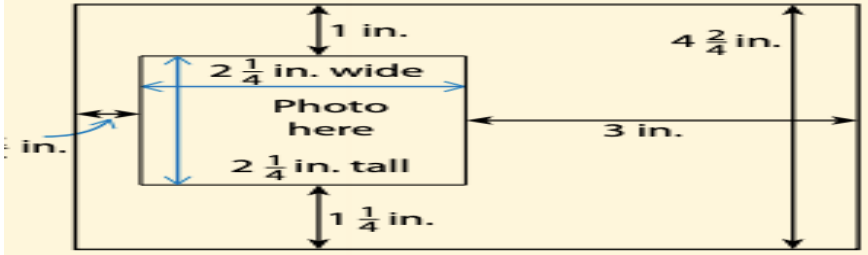
The last piece is $4\frac{3}{4}$ feet long and I have $2\frac{1}{4}$ feet left from the 3-foot piece.
$4\frac{3}{4} + 2\frac{1}{4} = 7$ so now everyone has 7 feet of ribbon.

One friend gets one 7-foot piece. Another gets $6\frac{1}{4}$ feet and $\frac{3}{4}$ feet, and the last gets $4\frac{3}{4}$ feet and $2\frac{1}{4}$ feet.

Sports Picture Frame

Together the 6 craft sticks are $\frac{3}{4} + \frac{3}{4} + \frac{3}{4} + \frac{3}{4} + \frac{3}{4} + \frac{3}{4} = \frac{18}{4}$ inches tall. There are $\frac{4}{4}$ in 1 whole, so $\frac{18}{4}$ inches is $4\frac{2}{4}$ inches. The photo is $2\frac{1}{4}$ inches tall. $4\frac{2}{4} - 2\frac{1}{4} = 2\frac{1}{4}$, so I have $2\frac{1}{4}$ inches to use above and below the photo.

The diagram shows how I placed the photo.



The space to the right of the photo is more than $2\frac{2}{4}$ inches wide and the space above and below the photo is more than $\frac{2}{4}$ inch, so this plan works.

Fourth Grade
Social Studies

Week of May 11, 2020
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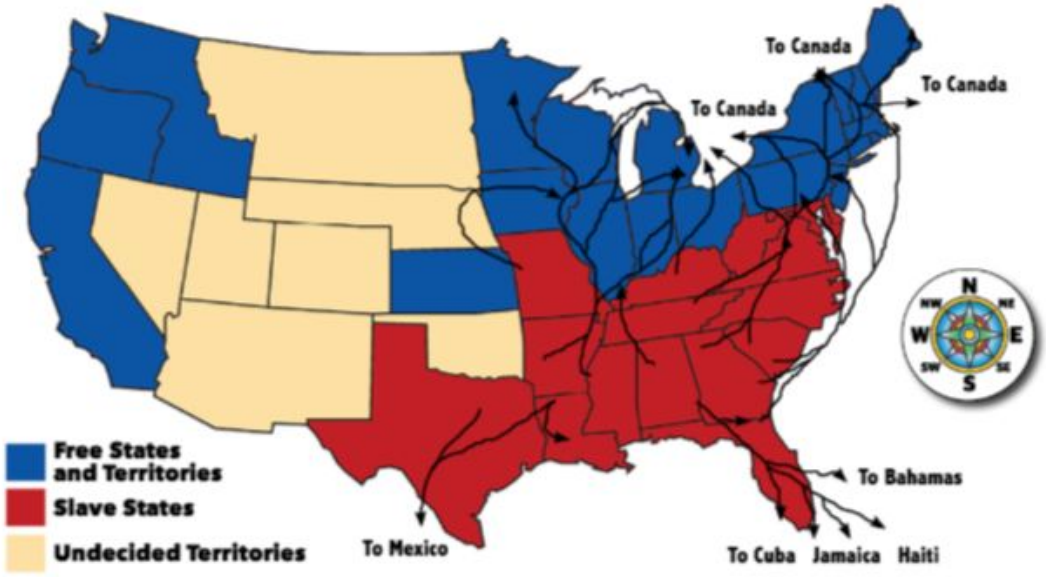
4th Grade Social Studies
Sectionalism and Abolitionists

*There will be a short video lesson of a Knox County teacher to accompany this task available on the KCS YouTube Channel and KCS TV.

Map Skill-Builder

This map shows some of the routes on the Underground Railroad. Study the map and answer the questions.



1. What areas did escaped slaves travel away from? _____
2. What areas did escaped slaves travel to? _____
3. Did escaped slaves travel through Tennessee? _____
4. Was Tennessee a slave state or a free state? _____

IN YOUR OWN WORDS

Describe the patterns that you see in the map above. What do you notice about where escaped slaves traveled to? Why do you think they went to those new places? What connections can you make to the Abolitionists and the Underground Railroad?

_____

_____

_____

_____

Fourth Grade
ELA

Week of May 11, 2020
knoxschools.org/kcsathome

GRADE 4 ELA WEEK 6 – PUZZLES AND MYSTERIES

A video lesson of a Knox County 4th grade teacher that accompanies this text is available on KCS YouTube Channel and KCS TV.

In this week's text, your child will be looking for specific clues about:

TOPIC: Puzzles and Mysteries

ESSENTIAL QUESTION: Why are secret codes necessary?

BUILDING BACKGROUND KNOWLEDGE:

- Remind your child that languages can be a valuable resource.
- Tell them as they read this week, they'll be looking for clues to explain how knowing different languages can be valuable. Students will learn that secret codes need to be precise to communicate messages and have existed since ancient times.

READING THE TEXT: *Recognizing the Navajo Code Talkers*

- You may choose to take turns reading the text with your child, read the text at the same time, or have your child read independently.
- At the end of the text, there is a "*Be a Sleuth*" section. Use the questions to discuss and write about the text.

GATHER EVIDENCE:

- List at least four text details that explain how the author feels about the Code Talkers.

EXEMPLAR WRITING FOR PROMPT:

The author respects the Navajo Code Talkers. Throughout the text the author gives examples of how the code talkers were recognized. For example, some received the Congressional Gold Medal, and they were all made into action figures. The author also mentions the great sacrifices the code talkers made. They risked their lives for our country and could not share their contributions with anyone. Based on the evidence the author chose to include in the text, he or she clearly respects the code talkers.

EXEMPLAR WRITING FOR RESEARCH EXTENSION:

Being a Navajo Code Talker required both brains and bravery. During World War II, Navajo men were recruited to the military to create a code. This code was difficult because it used the Navajo language that was hard to understand. The Code Talkers had to memorize over 200 Navajo code words. The Code Talkers then had to go into many battles to relay these secret messages which showed bravery. In conclusion, the unbreakable code and the courage of the Code Talkers turned the course of World War II.

Fourth Grade
Science

Week of May 11, 2020
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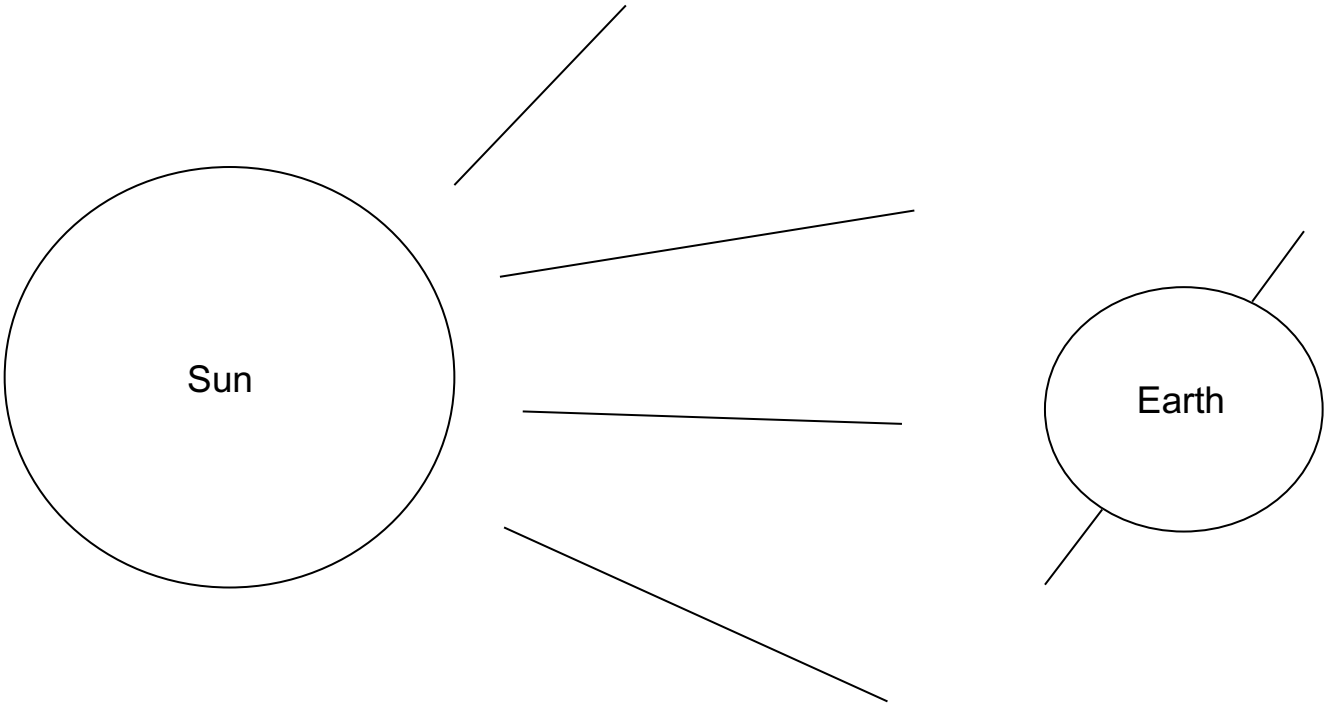
4th Grade Science: Week 6, May 11

What predictable events happen because the Earth rotates?

This handout can also accompany a KCSatHome Teacher Video. If you have access to the video, watch the video before doing this activity. You can find the videos at https://www.knoxschools.org/Page/2181

Directions: Color the diagram to show where the sun's light will shine on Earth.



The Earth rotates around its axis as it revolves around the sun. The rotation causes the Earth to have times where certain parts of the planet have sunlight, while another part is facing away from the sun causing darkness

How could you make a three-dimensional model of this phenomenon at home?

Part 1: Make A 3-D Model

Look around your house for items to represent the sun and the Earth in order to create a 3-D model of the Earth's rotation.

Materials: Ball (tennis ball, modeling clay, or even Play-doh), a flashlight or lamp (with the shade off), a sticker

Step 1: Place the sticker on the ball. The sticker represents where you are on Earth

Step 2: Turn the ball in your hand as you hold it up in front of the light source.

Step 3: Observe when your sticker is facing the light and when it is in shadow.

List any observations in the box below:

If the ball turns once in your hand, what has occurred on Earth?

_____

Part 2: Investigation: How does the time of day affect your shadow?

Make a Prediction- Remember a prediction is a guess about what might happen in the future using what you know from your own knowledge and experiences.

How do you think the time of day will affect your shadow?

_____

_____

Outside Investigation

(Check with an adult) Choose an item you can use to track its shadow three times throughout the day, like a toy you can place on the sidewalk that will cast a shadow.

Materials:

A toy that will cast a shadow

A piece of sidewalk chalk

A ruler or tape measure

Directions: Place the toy on the sidewalk in the early morning (some time before 11 am). Trace the shadow using the chalk. Measure the length of the shadow. Record your results. Repeat at midday and again in the evening before sunset.

Time of Day	Length of Shadow	Direction of Shadow (left or right of toy)
Morning-_____A.M.		
Midday- _____		
Evening-_____P.M.		

Communicate Information:

1.) At what time was your shadow the longest?_____

2.) At what time was your shadow the shortest?_____

3.) What causes the shadow to move and change lengths throughout the day?

_____

_____

4.) Based on your observations, was your prediction correct? Why or why not.

_____

_____