

KCS  **home**

Fifth Grade Math

In this lesson, you will use what you know about fractions to solve real-world problems. Look at this problem and one solution.

Solar Lights

G.O. and his neighbors are taking steps to save energy and water. G.O.'s street is $1\frac{1}{2}$ miles long. They plan to install solar lights along the sidewalk. Read G.O.'s plan.

Solar Light Plan

- Install the lights at equal intervals.
- Use a fraction of the whole length to choose the interval length.
- Use a fraction greater than $\frac{1}{8}$ but less than $\frac{1}{2}$.

Choose an appropriate fraction. Find the length of the interval. Tell how many solar lights are needed and where along the street the lights should be located.



Look at G.O.'s Solution on the right to see how he did it. Can you do it a different way?

G.O.'s Solution

▶ **I know the length of the street.** I have to use the length and a fraction between $\frac{1}{8}$ and $\frac{1}{2}$ to find the distance between the lights.

▶ **I can use $\frac{1}{4}$.** The fractions $\frac{1}{8}$, $\frac{1}{4}$, and $\frac{1}{2}$ all have the same numerator, so I can look at the denominators to compare.

Since $4 < 8$, $\frac{1}{4} > \frac{1}{8}$.

Since $4 > 2$, $\frac{1}{4} < \frac{1}{2}$.

▶ **I know that** the distance is a fraction of the whole length, so I multiply $\frac{1}{4}$ by $1\frac{1}{2}$.

$$1\frac{1}{2} = \frac{3}{2} \text{ and } \frac{1}{4} \times \frac{3}{2} = \frac{3}{8}$$

The interval length is $\frac{3}{8}$ mile.

▶ **Now I can** make a number line to find where the lights will go and how many are needed. It represents the street, so it goes to $1\frac{1}{2}$.



▶ **I put a light at 0**, which is one end of the street. Then I marked each $\frac{3}{8}$ mile along the number line.

▶ **The number line shows** that there will be 5 lights installed at intervals of $\frac{3}{8}$ mile. The locations are at:

0 miles, $\frac{3}{8}$ mile, $\frac{6}{8}$ mile, $\frac{9}{8}$ ($1\frac{1}{8}$ miles), and $\frac{12}{8}$ ($1\frac{1}{2}$ miles).

▶ There are 5 lights but only 4 intervals. Each interval is $\frac{3}{8}$ mile long and $4 \times \frac{3}{8} = \frac{12}{8}$. That's the same as $1\frac{1}{2}$ miles.

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



"Fraction of"
means multiply by
a fraction.

I divided the
number line into eighths
so I can count by $\frac{3}{8}$.

My answer makes
sense because it
fits the information
in the problem.

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

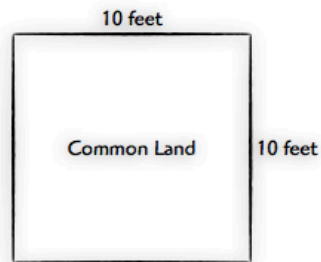
Plant Shrubs

The neighborhood has a small piece of common land that is now covered with grass. To save water, the neighbors will plant shrubs on part of the common area. Read G.O.'s notes.



Planting Notes

- Plant shrubs on a rectangular area a little more than half of the common land area.
- One side of the shrub section has a length greater than 8 feet and less than 9 feet.



What is the area of the part where G.O. and his neighbors will plant shrubs?

Plan It and Solve It Find a solution to the Plant Shrubs problem.

Find the length, width, and area of the part of the common land that will be used to plant shrubs.

- Find the area of the common land.
- Find a length and width of a rectangle that will create an area that is a little more than half the area of the common land.

Reflect

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

- **Reason Mathematically** How can you compare fractions to find a fraction a little more than $\frac{1}{2}$?
- **Use Models** What models can you use to help you visualize the problem?

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

Water Shrubs

G.O. and his neighbors clear an area $8\frac{1}{2}$ feet by $6\frac{1}{4}$ feet to plant the shrubs. Now they have to decide how many shrubs to plant and how much water to use on the shrubs. Read G.O.'s planting instructions.

Shrub Planting Instructions

- Each shrub needs an area of about 2 square feet.
- Each shrub will need about $1\frac{1}{4}$ gallons of water a week.



How many shrubs should G.O. plant?

How much water will the shrubs need?

Solve It Help G.O. make a plan for planting shrubs.

- Tell how many shrubs G.O. should plant and why you chose this number.
- Find the amount of water this number of shrubs will need in a week.

Reflect

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

- **Reason Mathematically** How did you decide the number of shrubs that G.O. should plant?
- **Make an Argument** How could you justify the number of shrubs that you suggested?

Use Compost

A local nursery hears about the shrub planting project that G.O. and his neighbors are planning. The nursery gives them 50 pounds of compost to use. G.O. reads about using compost on a website.

About how many shrubs can G.O. plant with the compost that the nursery gave him?



Solve It Help G.O. estimate how many shrubs he can plant with the compost.

- Decide on a fraction of a pound to use as the weight of an average scoop.
- Show how to use this fraction to find the number of shrubs that can be planted. Explain.

Reflect

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

- **Make Sense of Problems** How did you use each of the numbers given in the problem?
- **Persevere** Why might you try using different fractions before giving your final answer? Explain.

Possible Solutions

*Remember that with our Math in Action lessons there may be multiple solutions!

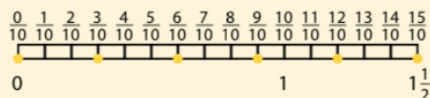
Solar Lights

I need to find a fraction that is $> \frac{1}{8}$ and $< \frac{1}{2}$ and use it to make equal intervals for placing lights on the street. The street is $1\frac{1}{2}$ miles long.

I can use an interval of $\frac{1}{5}$, which is less than $\frac{1}{2}$ but greater than $\frac{1}{8}$. The lights will be at intervals that are $\frac{1}{5}$ of the total street length. $\frac{1}{5}$ of the whole length is $\frac{1}{5} \times 1\frac{1}{2}$ miles.
 $\frac{1}{5} \times \frac{3}{2} = \frac{3}{10}$

I can draw a model of the street and mark tenths. There are 10 tenths in 1 mile and 5 tenths in $\frac{1}{2}$ mile. That's 15 tenths in all.

I will place lights every $\frac{3}{10}$ mile along the street, starting at 0.



There will be a light at 0 miles, $\frac{3}{10}$ mile, $\frac{6}{10}$ ($\frac{3}{5}$ mile), $\frac{9}{10}$ mile, $\frac{12}{10}$ ($1\frac{1}{5}$ miles), and $\frac{15}{10}$ ($1\frac{1}{2}$ miles).

Plant Shrubs

I know the area of the common land is 10×10 or 100 square feet. Half of that is 50 square feet. The shrub section will be a little more than that.

To estimate the area for the shrub section, I can use a fraction that is a little more than $\frac{1}{2}$. $\frac{5}{8}$ is a little more than $\frac{1}{2}$, since $\frac{4}{8}$ is equivalent to $\frac{1}{2}$. $\frac{5}{8}$ of 100 square feet is $\frac{5}{8} \times 100$, which is $\frac{500}{8}$.

I can divide $500 \div 8$. I know $8 \times 60 = 480$ and $8 \times 2 = 16$ so 8×62 is 496. If I divide the leftover 4 by 8 that's $\frac{1}{2}$, so $500 \div 8 = 62\frac{1}{2}$ square feet.

I know that $9 \times 7 = 63$, which is close to $62\frac{1}{2}$. I can make one side a little less than 9 and the other side 7 feet. So, the length will be $8\frac{1}{2}$ feet. $8\frac{1}{2} \times 7 = \frac{17}{2} \times 7 = \frac{119}{2} = 59\frac{1}{2}$ square feet. [Students should show division.] That's a little more than half the area of the common land.

Water Shrubs

The area is $8\frac{1}{2}$ feet long by $6\frac{1}{4}$ feet wide.

$8\frac{1}{2}$ is $\frac{17}{2}$. $6\frac{1}{4}$ is $\frac{25}{4}$. I can multiply these fractions to find the area. $\frac{17}{2} \times \frac{25}{4} = \frac{(17 \times 25)}{(2 \times 4)}$ which is $\frac{425}{8}$. [Student work should show the multiplication.] Divide to get $\frac{425}{8} = 53\frac{1}{8}$.

[Student work should show the division.] So the area is $53\frac{1}{8}$ square feet.

Each shrub needs about 2 square feet, and I don't want to over-crowd the shrubs. So I will use 52 square feet of the area. $52 \div 2 = 26$. [Student should show work.] G.O. can plant 26 shrubs.

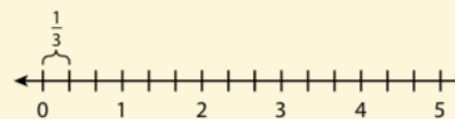
Each shrub needs $1\frac{1}{4}$ gallons of water a week. So that's $26 \times 1\frac{1}{4} = (26 \times 1) + (26 \times \frac{1}{4})$. That's $26 + \frac{26}{4} = 26 + 6\frac{1}{2}$, or $32\frac{1}{2}$ gallons a week.

G.O. can plant 26 shrubs. The shrubs need $32\frac{1}{2}$ or about 33 gallons of water each week.

Use Compost

I will use $\frac{1}{3}$ pound as the weight of an average scoop since it is greater than $\frac{1}{4}$ and less than $\frac{1}{2}$. I have 50 pounds of compost and I need $\frac{1}{3}$ pound for each shrub.

I can use a number line model. My model shows a number line from 0 to 5. There are 15 thirds in this model.



There are 10 fives in 50, so there are 150 thirds in 50.

Another way to think about it is to divide 50 by $\frac{1}{3}$ to find the number of $\frac{1}{3}$ pounds I can get from 50 pounds. $50 \div \frac{1}{3} = 150$.

So I can plant 150 shrubs.



Fifth Grade Social Studies



Fifth Grade Social Studies

SHOW WHAT YOU KNOW!

Last week you reviewed and read about the indigenous people and settlements of Tennessee and the pre-colonial Tennessee American Indian Tribes.

Based on the information about the customs and traditions of the **Cherokee, Chickasaw, Creek, and Shawnee**, create an informative acrostic poem using EACH tribe's name.

Use the facts from the Gallopade text as well as the information from your research from the online articles.

Be creative with your lettering or font and make a complete sentence in each letter of your acrostic.

Be sure and include the tribe's location in Tennessee, roles of men and women, dwelling, government and/or religion, and an interesting fact.

The following is an example acrostic of an early Tennessee indigenous group.

After the Ice Age and the climate warmed, the Archaic people adapted.

Rock shelters were their homes.

Culture survived longer than any other indigenous group.

Hunters of small animals and gatherers of nuts, roots, and berries.

Atlatl, or spear thrower, were invented by them.

In Tennessee 8,000 years ago is when they lived.

Could stay in one place longer, so not nomadic like Paleo people.

*Remember you will have 4 acrostic poems!



Fifth Grade

ELA

There will be a short video lesson of a Knox County 5th Grade Teacher to accompany this text available on the KCS YouTube Channel and KCS TV.

If you have access, refer to last week's KCS packet. This week's video will include a recap of the text read last week.

Tennessee's English Language Arts (ELA) standards ask students to read, talk, and write about a variety of texts. In this activity packet, your child will have the chance to do just that as they work to solve a mystery.

If your child completed last week's activity packet introducing them to the text and tasks, this week's activities will allow them to review their prior learning and to extend their understanding of this topic. If your child did not complete last week's activity packet, this week's activities will allow them to read, talk, and write in response to a text, as well as compare their work to an exemplar.

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

TOPIC: Adapting

ESSENTIAL QUESTION: How do people adapt to difficult situations?

At the end of the text, there is a "Be a Sleuth" section containing questions to discuss and write about the text. Once you have done these activities, review the exemplar to the Make Your Case assignment below.

- Make Your Case – Should the U.S. government pass a national law to require individuals and businesses to recycle plastic? List two convincing reasons to explain and support your viewpoint.

After reading A Green Island?, it is clear the U.S. government should pass a law to require the public and businesses to recycle plastic. Because of the enormous volume of trash produced by the American public, landfills across the country are filled with waste. If the government required plastic recycling, plastic could be reused instead of crowding these landfills. "Rishi" Sowa had a unique and creative idea to use plastic waste to create two islands. Unfortunately, after the first island was destroyed, the waste polluted the beaches. Even Sowa's great idea cannot prevent waste plastic from polluting the environment; therefore, recycling is the only safe option for reducing plastic waste.

ACTIVITIES TO COMPLETE WITH THE EXEMPLAR:

1. Identify the topic sentence and concluding sentence.
2. Circle the author's opinion. Underline the reasons that support her viewpoint.
3. Identify one dependent clause and one independent clause.
4. Find a possessive noun and a proper noun.
5. Write a response to the author contradicting her opinion and taking the opposite stance.

SUGGESTED EXTENSION ACTIVITY:

Design your own structure made of recycled material

- Draw a model including labels
- Write a "how to" explaining the steps to create the structure
- With adult permission, use recycled materials in your home to create a structure

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Fifth Grade Science

5th Grade Science: Week 2 / April 13th

Trait Variation and Survival



Part 1: The following is a review about variations and adaptations. Read alone or to someone else and then follow directions for the Inquiry Activity.

A variation is the appearance of an inherited trait that makes an individual different from other members of the same species. Variations can be small, such as differences in eye color in humans, or large, like a fruit that grows without seeds. Adaptations are variations that make an organism better suited to its environment. The variations that result in an adaptation can be in an organism's color, shape, behavior, or chemical makeup. Organisms that adapt to their environment the best are more likely to survive and pass their traits to their offspring. This idea is known as natural selection.

Part 2: Inquiry Activity



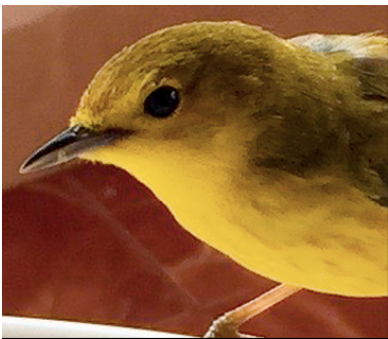
Now you will complete the inquiry activity. You will investigate trait variations of finches. How do different trait variations of finches help them survive in their environment? Before you begin the activity, you need to make a prediction: Will the variations help or harm the finches' ability to survive?

Next, you need to read through all of the steps you will take to carry out the investigation.

1. You have been provided with pictures of four species of finches found on the Galapagos Islands, which are in the Pacific Ocean. Scientists think these finches all came from the same species. Study the differences among the beaks and take notes on the table provided. You can also include sketches.
2. Make notes about the traits that you observed. Write a possible explanation for how it might help a bird survive and reproduce.
3. Add other notes to your table that have been provided to you: what do they eat and where do they live?

You will use the photographs and information on the next page to complete the table. You can even make a larger table of your own on a separate piece of paper.

Types of Finches			

Name and Photograph of Finch	Where it Lives & What it Eats
<p data-bbox="321 186 607 220">Large Ground Finch</p> 	<p data-bbox="824 186 1471 331">The large ground finch lives in the Galapagos Islands. It mainly eats large seeds and nuts, but will sometimes eat large insects or caterpillars.</p>
<p data-bbox="305 606 623 640">Medium Ground Finch</p> 	<p data-bbox="824 606 1468 751">The medium ground finch lives in the Galapagos Islands. It feeds on seeds, but will sometimes eat flowers, buds, and young leaves.</p>
<p data-bbox="342 1016 586 1050">Small Tree Finch</p> 	<p data-bbox="824 1016 1474 1161">The small tree finch lives in the Galapagos Islands. It feeds on insects that it finds on tree bark and leaves, but it also bites through the bark to reach insect larvae.</p>
<p data-bbox="315 1417 613 1451">Green Warbler Finch</p> 	<p data-bbox="824 1417 1468 1493">The green warbler lives in the Galapagos Islands. It feeds on small insects and spiders.</p>

Part 3: Make an Inference

Now that you have completed the Inquiry Activity, answer the following question: Use your observations and notes to propose an explanation for how these variations might have occurred.
