Norfolk Public Schools
The cornerstone of a proudly diverse community

Learning in Place

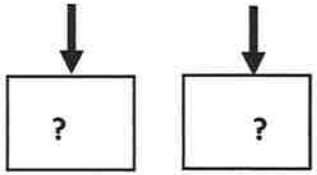
Fourth Grade

Student Name

Social Studies Learning in Place Plans

Grade 4

Week 1

Monday March 23	Tuesday March 24	Wednesday March 25	Thursday March 26	Friday March 27
Look at textbook page 258. Respond to the prompt at the top of the page. Read the section on pg 258: A World of New Technology Answer the following questions on a sheet of paper. 1) What is the Industrial Revolution? 2) How did it change people's lives? 3) Draw and complete this Cause and Effect organizer. **Cause:** Advancements during the Industrial Revolution  	Today we are going to learn about an invention during the Industrial Revolution. Read the section Eli Whitney: Inventions and Innovations on textbook pg 258 – 259. Answer the following questions on a sheet of paper. 1) How did Eli Whitney contribute to the Industrial Revolution? 2) What did the cotton gin do? 3) What was an effect of the cotton gin? 4) Because the cotton gin increased the production of cotton, farmers wanted to grow more. What effect do you think this had on slave labor in the south?	Read Textile Mills on textbook pg 259. Answer the following questions on a sheet of paper. 1) What inventions made it faster and easier to make cloth and clothing? 2) Textile is another name for fabric or cloth. What are textile mills? 3) An entrepreneur is a person who organizes resources to bring a new or better good or service to market in hopes of earning a profit. Is Francis Cabot Lowell and entrepreneur? Explain your answer.	Read about three farming inventions on textbook page 260. Complete the Drawing Conclusions section at the bottom of the page. Additional notes: Jo Anderson, an enslaved African American, and Cyrus McCormick worked to invent the reaper. McCormick was an entrepreneur who brought the reaper to market.	Transportation also improved during the Industrial Revolution. Read textbook pg 261. While reading, complete the following tasks. Circle the problems people faced when traveling the roads in the early 1800s. Underline details that explain how improvements impacted the United States. Answer the question at the bottom of page 261.

Social Studies Learning in Place Plans

Grade 4

Week 2

Monday March 30	Tuesday March 31	Wednesday April 1	Thursday April 2	Friday April 3
Transportation on rivers was also improved during the Industrial Revolution. Read textbook pg 262 to learn how Robert Fulton's steamboat improved river transportation. Complete the questions on the bottom of the page.	Steam power was not just used on the river. Read textbook pg 263 to learn about a new invention in 1800s. While reading, complete the following task: Underline details that explain how improvements impacted the United States. Answer the question at the bottom of page 261.	Communication also improved during the Industrial Revolution. Read textbook pg 264. As you read, highlight or underline the effects of the telegraph and Pony Express. Answer the following questions on a sheet of paper. 1) How did Samuel Morse improve communication? 2) What was the purpose of the Pony Express? 3) Compare and contrast the Pony Express to modern mail carriers.	Create a chart that illustrates and explains the importance of the steamboat, steam locomotive, and the Pony Express. Use textbook pages 262-264 to help you.	Create the front page of a newspaper with headlines and an article detailing what you feel is the most important invention of the Industrial Revolution. Remember to provide details about the invention including what effects it had on America.

Social Studies Learning in Place Plans

Grade 4

Week 3

Monday April 6	Tuesday April 7	Wednesday April 8	Thursday April 9	Friday April 10
This week you will learn about four people who worked to end slavery. These people are called abolitionists. Read textbook pg 299 and create a chart that shows you understand the contributions of William Lloyd Garrison, Frederick Douglass, and Harriet Beecher Stowe Person / Contribution Wiliam Lloyd Garrison Frederick Douglass Harriet Beecher Stowe	All three people you learned about yesterday were writers. Write a paragraph that compares and contrasts the ways they used their writing skills in their role as an abolitionist.	Another famous abolitionist is Harriet Tubman. Read textbook pg 300. As you read, circle the words that relate to the term railroad. Underline details that tell you about the contributions of Harriet Tubman. Answer the following question at the bottom of the page: Why do you think Harriet Tubman chose to be a conductor on the Underground Railroad? Answer in a complete sentence(s).	Read the poem Harriet Tubman by Eloise Greenfield. After reading, answer the questions that follow.	Choose one of the people you learned about this week: Harriet Tubman, William Lloyd Garrison, Frederick Douglass, Harriet Beecher Stowe Pretend you are a news reporter interviewing the historical person. Write a conversation between you and the person. Be sure to ask important questions about their contributions as an abolitionist working to end slavery.

Lesson 3

The Industrial Revolution

Essential Question

How do ideas influence choices?

What do you think?

Think about the different kinds of technology you use everyday. Which item is most important to you? What would life be like if you didn't have that item anymore?

Words To Know

Add a suffix to the end of each word to make it plural.

cotton gin ____

***application** ____

reaper ____

interchangeable part ____

stagecoach ____

A World of New Technology

Until the early 1800s, most families made the items they needed, such as tools and clothes, by hand. Then came a period of rapid invention, when machines began to do the work people once did. This period of invention is called the Industrial Revolution. During this time, new machines and new ideas changed the way people worked, traveled, and lived.

The Industrial Revolution greatly affected the market economy of the United States. In Unit 4, you learned that in a market economy, people decided what goods to make and how much to sell their goods for. Because of the advancements made during the Industrial Revolution, businesses were able to make more goods and sell them at reduced cost. This also meant that more people could afford to buy goods than ever before.

Eli Whitney: Inventions and Innovations

In 1793 Eli Whitney built a **cotton gin** to remove seeds from cotton. The gin, which is short for "engine," could clean more cotton in a few minutes than a whole team of workers could clean by hand in a day. The cotton gin made cotton the most important cash crop in the South.

A cotton gin ▶

Bettmann/Corbis

In 1801 Whitney had another important idea that would change the way goods were made—**interchangeable parts**. These are pieces made to fit any specific tool or machine. A barrel for one rifle would fit another rifle of the same type, for example. Whitney's idea had many **applications**, and allowed guns, tools, and other products to be made faster and at a lower cost.

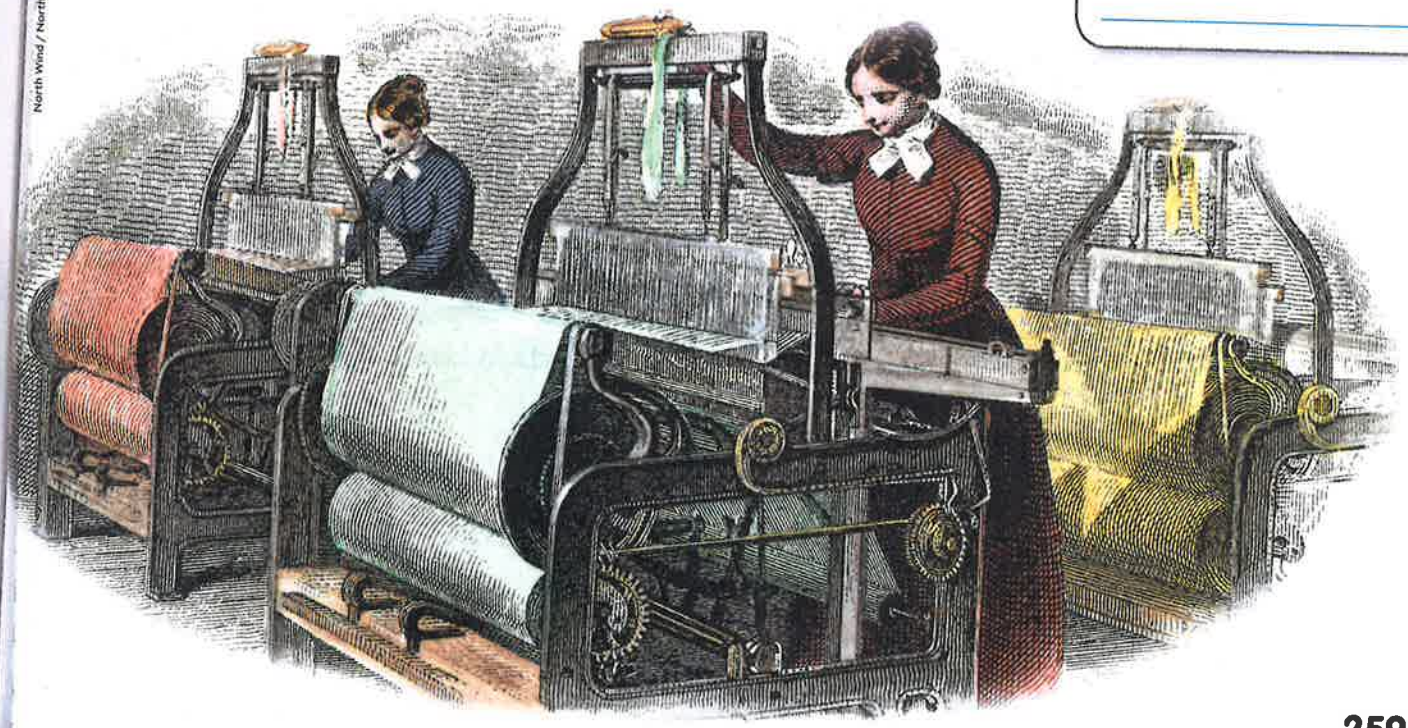
Textile Mills

New inventions, such as the double-sided needle, sewing machines, and spinning machines, made it faster and easier to make cloth and clothing. People no longer had to do the whole process by hand. Soon, large factories called textile mills began producing more cloth than ever before. Mills were built near swift rivers. The rushing water turned a large wheel in the factory, which powered the machines. Most mills were built in the North, since that was where the country's known fast-moving rivers were located at that time.

Francis Cabot Lowell was one person who prospered from these inventions. In 1813 he built a textile mill in Waltham, Massachusetts. Lowell's business partners later built several textile mills as well as a town, called Lowell, for the workers. By 1850, Lowell had more than 10,000 workers. Many were young women who left home to work in the town of Lowell.

Explain how the Industrial Revolution affected the market economy of the United States.

Workers weaving cloth in a Lowell textile mill



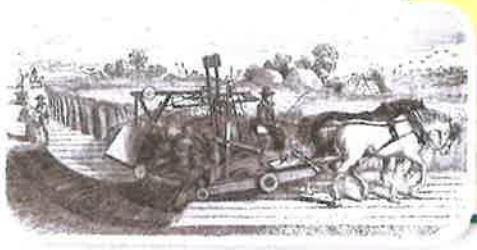
North Wind / North Wind Picture Archives

Bettmann/Corbis

DID YOU KNOW?
Farmers in the Great Plains couldn't use Newbold's plow. The iron blades could not cut through the clay-like soil. When the soil was wet, it would stick to the plow.

Farming Improves

The Industrial Revolution was not limited to manufacturing. The reaper and better plows greatly improved farming during the Industrial Revolution.



The Reaper

In 1832 Cyrus McCormick invented the **reaper**. A reaper is a machine with sharp blades to cut grain. The reapers could harvest four times as much grain as people working by hand in the same amount of time.

The Mechanical Plow

Farmers had traditionally used hand tools to plant seeds. The first horse-drawn mechanical plow was invented in 1797 by Charles Newbold. His iron plow made planting seeds much quicker and easier.

John Deere's Plow

In 1837 John Deere improved the mechanical plow by adding a steel blade. This blade was better able to cut through tough soil. The blade was also polished so that mud would not stick to it.

Reading Skill

Draw Conclusions

How did new farming equipment impact farming?

What were the effects of these improvements?

New Forms of Transportation

Underline details explaining how improvements to roads impacted the United States.

Farming wasn't the only area where improvements brought changes. Transportation also changed quickly. As more people moved westward, the demand for safer, easier, and faster forms of transportation increased. Suddenly, connecting the West and the East Coast became a priority.

The Road to Better Travel

In the early 1800s, most people traveled in large, horse-drawn carriages called **stagecoaches**. At the time, the best roads in the United States were paved with rocks or logs. Most others were narrow dirt trails that were full of potholes and tree stumps. When it rained, these roads became muddy, and horses and wagons were slowed down or became stuck. Even on a good day, travel on these roads was slow.

In 1811 the federal government began construction on the National Road. This road stretched from Cumberland, Maryland, to Vandalia, Illinois. The National Road was made of stone and gravel. It connected the East Coast with what was then the West. Businesses could now move more goods and move them faster. The National Road also made it easier for people to settle new lands in the West.

How did improved roads help businesses?

Rolling on the River

Until the early 1800s, people and goods were also moved on flatboats that traveled on rivers. These boats were pushed downstream by hand with long poles. Traveling upstream was a much tougher job!

River travel improved quickly with the **steam engine**. A steam engine uses compressed steam to power a motor. It produces more power than a team of horses and can pull heavier loads. In 1807 Robert Fulton designed a boat powered by a steam engine. His steamboat traveled 150 miles in 32 hours. Boats without steam engines took 4 days to make the same trip.

These steamboats had one major problem: most rivers don't connect with each other. To solve this problem, people built canals. Canals use a system of locks to raise and lower the water level. In 1825 the Erie Canal was opened. It connected Lake Erie with the Hudson River and the Atlantic Ocean.

The Erie Canal was a huge success. Goods were shipped more quickly between the East and the Midwest. The canal connected Midwest goods with the Atlantic Ocean, making it easier to trade with foreign countries. Trade boomed, and New York City became the country's largest and most important port.

DID YOU KNOW?
The success of the Erie Canal caused a rush of canal-building in the 1820s. These canals helped people move more quickly to the West. It wouldn't be long before the United States would need even more land.

Reading Skill

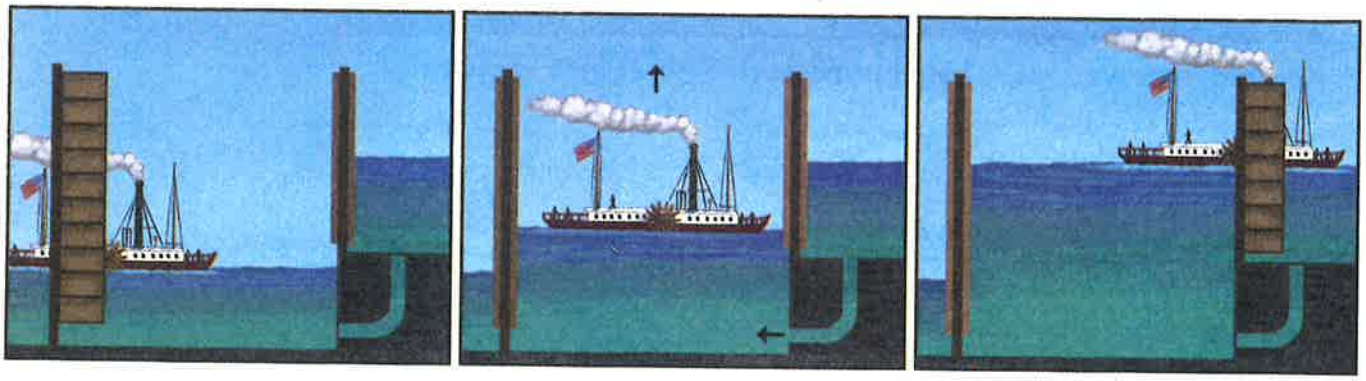
Use Visuals Examine the diagram of the lock. Then answer the questions.

1. Why were locks necessary? _____

2. How did canals improve transportation and trade?

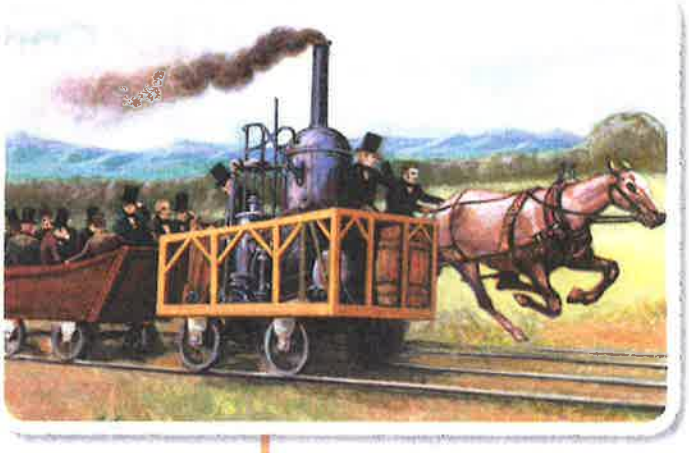
_____

_____



The Iron Horse

Within a few years, a new steam-powered invention made canals less important. People had traveled by railroad for years, but on early railroads, horses pulled coaches over iron rails. In 1814 British inventor George Stephenson built the first train powered by a steam engine. These new trains were nicknamed "iron horses."



Bettmann/Corbis

▲ Tom Thumb racing a horse-drawn carriage

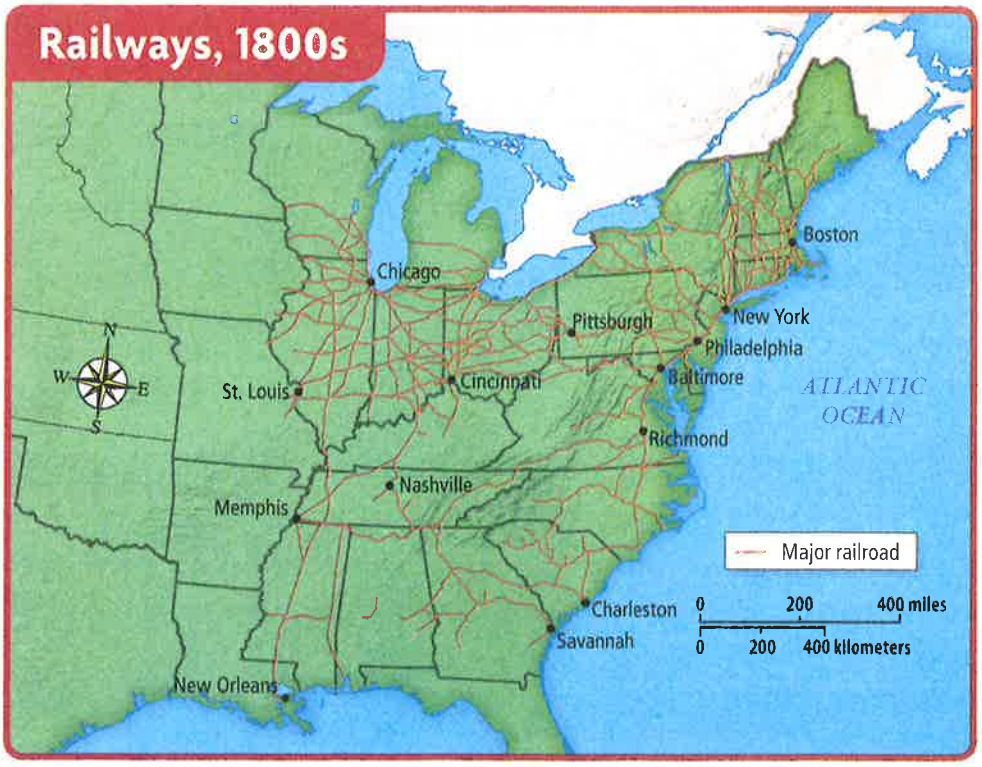
In 1830 Peter Cooper, an American merchant, built a small locomotive he named *Tom Thumb*. At first, few people believed a locomotive could move without horses. A Baltimore stagecoach company challenged Cooper and his locomotive to a race against a horse-drawn carriage. Although this train lost the race, trains won in the end. Railroads soon became the main form of transportation in the United States.

The combination of canals and railroads made shipping goods quicker and cheaper than **previous** methods. As a result, businesses sold goods at lower prices, which meant more people could afford them.

FUN FACTS

Trains provided Americans with one of their first chances at tourism. Passengers took tours of new lands in the West. Granted, at first only the wealthy could afford to ride trains.

Explain why railways were located near rivers or large ports.



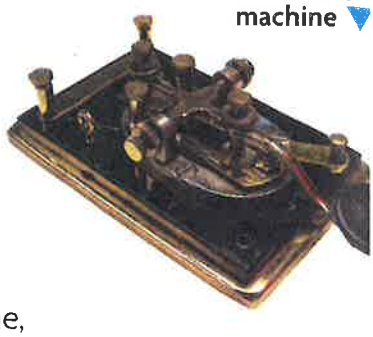
Highlight the effects of the telegraph and the Pony Express.

Better Communication

New inventions also helped people communicate much faster. Samuel Morse began working on an invention called the telegraph in 1832. The telegraph sent messages using electricity. It could send a message in a matter of minutes, compared to waiting weeks for letters to arrive in the mail. Telegraph messages were a series of clicks and sounds that stood for letters and numbers. By 1844, the first telegraph line connected Washington, D.C., to Baltimore, Maryland.

DID YOU KNOW?
By 1861, there were over 67,000 miles of telegraph lines across the country.

A telegraph machine ▼



The Pony Express

It took a while for telegraph lines to reach the western United States. In the meantime, people needed a faster way to send and receive messages. In April 1859 the Leavenworth & Pike's Peak Express Company was created. The company employed mail carriers who traveled on horseback along a trail that was nearly 2,000 miles long. Because carriers rode horses, the service was referred to as the Pony Express. The Pony Express was in operation until late October 1861, when telegraph lines finally reached the West Coast.

A Pony Express rider passes crews installing telegraph poles ▼

The Fight over Slavery

By the 1830s, many Americans wanted to abolish, or end, slavery. These people were called **abolitionists.**

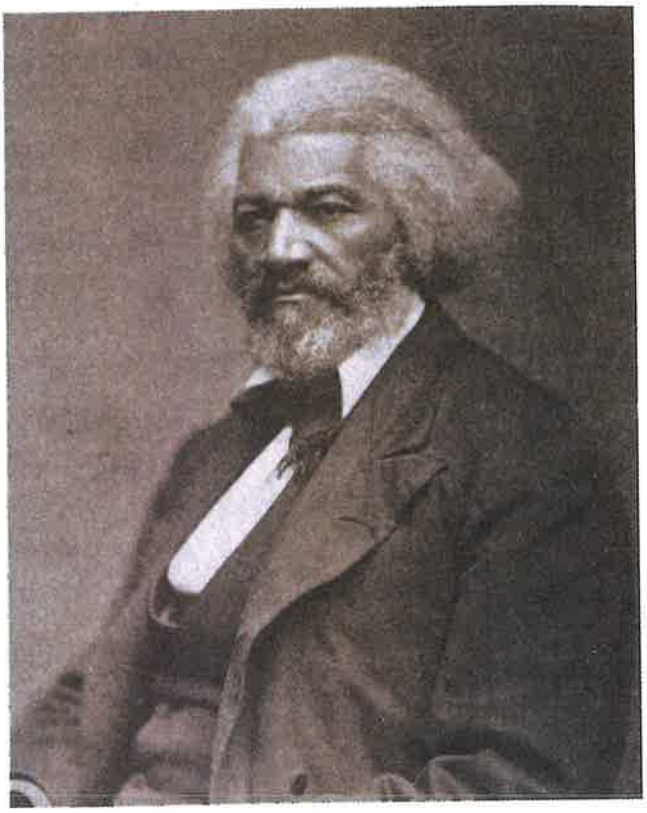
Among the abolitionists were two sisters who grew up in South Carolina—Angelina and Sarah Grimké. Angelina said the abolition of slavery was

"a cause worth dying for."

One abolitionist leader was William Lloyd Garrison of Massachusetts. In 1831 he founded *The Liberator,* an abolitionist newspaper. In 1833 Garrison founded the American Anti-Slavery Society.

Another well-known person who spoke out against slavery was Frederick Douglass. He was born into slavery. After escaping Douglass gave speeches about his early life. He also published an anti-slavery newspaper, *The North Star.*

In 1852 Harriet Beecher Stowe wrote *Uncle Tom's Cabin.* Her novel described a cruel slaveholder's treatment of enslaved people. This book turned many people against slavery.



Frederick Douglass

(l)Library of Congress, Prints and Photographs Division [LC-USZ62-107587]; (m)Library of Congress Prints and Photographs Division [LC-USZ61-1608]; (r)Library of Congress Prints and Photographs Division [LC-USZ61-1609]

Reading Skill

Fact and Opinion

Was Angelina Grimké's statement a fact or an opinion? Why do you think so?

A Route to Freedom

In the 1830s, enslaved people, free African Americans, and white abolitionists started the Underground Railroad. This was a secret network of trails, river crossings, and hiding places which helped people escape slavery. Many railroad terms had double meanings on this network. Enslaved people who decided to escape were called *passengers*. *Conductors* helped enslaved people escape. The houses where passengers could eat and rest were called *stations*.

Jermain Loguen was one of the many sucessful conductors on the Underground Railroad. He had escaped from slavery and wanted to help other people gain their freedom. His home in Syracuse, New York, became a well-known station. Harriet Tubman, who had escaped slavery herself, was a famous conductor who led many others North to freedom.

Circle around the word that explains why this network was called the *Underground* Railroad.

Many people who escaped slavery headed North on the Underground Railroad.

Library of Congress, Prints & Photographs Division [LC-B815-0518]

Harriet Tubman
By Eloise Greenfield

Harriet Tubman didn't take no stuff
Wasn't scared of nothing neither
Didn't come in this world to be no slave
And wasn't going to stay one either

"Farewell!" she sang to her friends one night
She was mighty sad to leave 'em
But she ran away that dark, hot night
Ran looking for her freedom
She ran to the woods and she ran through the woods
With the slave catchers right behind her
And she kept on going till she got to the North
Where those mean men couldn't find her

Nineteen times she went back South
To get three hundred others
She ran for her freedom nineteen times
To save Black sisters and brothers
Harriet Tubman didn't take no stuff
Wasn't scared of nothing neither
Didn't come in this world to be no slave
And didn't stay one either
And didn't stay one either

From Honey, I Love and Other Love Poems: 25th Anniversary Edition by Eloise Greenfield.

Questions:

1) Why did Harriet Tubman say farewell to her friends?

2) Why did Harriet Tubman head to the North?

3) How many times did Harriet Tubman go back to get more people?

4) How many people did Harriet Tubman save?

5) Why does the author mean when she says, "Didn't come in this world to be no slave And didn't stay one either"?

NPS Learning in Place
Mathematics
Grade 4

	Monday	Tuesday	Wednesday	Thursday	Friday
Week 1	Time Study Guide	Practice Problems 4.9	Elapsed Time Re-teaching	Elapsed Time practice	Quick Check
Week 2	Practice Problems 4.7	Understanding Area	Area of Squares and Rectangles	Same, Area, Different Perimeter Re-teaching	Same, Area, Different Perimeter Re-teaching Sa
Week 3	Measurement Study Guide Length	Measurement Study Guide Weight/Mass	Measurement Study Guide Volume	Practice Problems 4.8 1-15	Practice Problems 4.8 16-39

SOL 4.9 Study Guide
Elapsed Time

Name: _____ **Date:** _____

Learning Goals

4.9 The student solve practical problems related to elapsed time in hours and minutes within a 12 -hour period.

Strategy

Use a T-chart: **Start time – 5:15 am** **End time – 8:05 am**

1. First, figure out the hours left off.

5:15	hrs
6:15	1
7:15	1

2 hr

2. Since we can't add another whole hour, switch to minutes.

3. Begin the minutes where the hours

7:15	min
7:30	15
7:45	15
8:00	15
8:05	5

50 min

4. Add the total hours and minutes

2 hours, 50 minutes

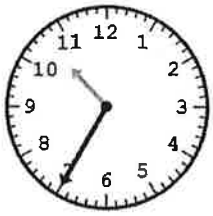
Vocabulary:

Elapsed Time: The time that goes by while an event is occurring.

Practice at Home

- Many questions require students to read a clock, a skill learned in previous grades. Have an analog clock or watch in your home so that your child can practice telling time.
- Use everyday tasks to help your child practice elapsed time. For example, "I started making dinner at 4:55. We ate at 5:40. How long did it take to make dinner?" or "Practice started at 6:15 and ended at 8:00. How long were you at practice?"

1.) What time will it be in 45 minutes?



A.) 10:15
B.) 10:20
C.) 11:20
D.) 7:35

2.) What time is 2 hours and 20 minutes past 1:15?

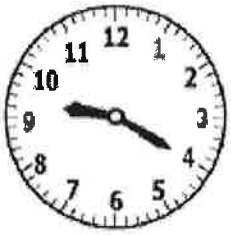
A.) 2:30
B.) 3:30
C.) 3:35
D.) 4:35

3.) A game started at the time shown on the clock.

The game ended 2 hours and 35 minutes later. The game ended at –

A.) 2:20 P.M.
C.) 2:45 P.M.
B.) 1:45 P.M.
D.) 3:20 P.M.

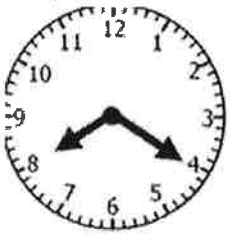
4.) The Washington family started cleaning their garage one morning at the time shown on the clock.



They stopped for lunch at 1:15 P.M. the same day. What is the total amount of time that passed between the time the Washington family started cleaning and the time they stopped for lunch?

A.)4 hours 55 minutes
C.) 4 hours 5 minutes
B.)3 hours 55 minutes
D.) 3 hours 5 minutes

5.) Seth left home at the time shown on the clock to go to the science museum.



Seth stayed at the science museum for 5 hours and 45 minutes. He left the museum at –

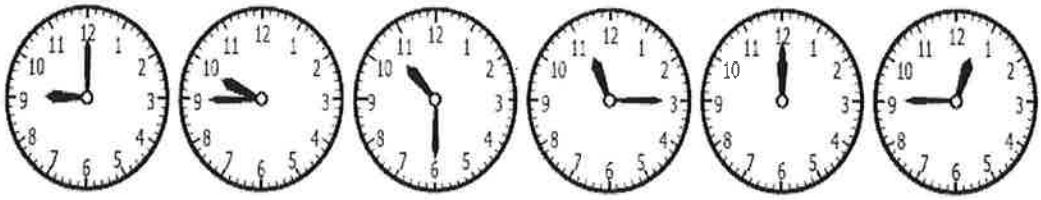
A.) 1:20 p.m.
C.) 2:20 p.m.
B.) 3:05 p.m.
D.) 2:05 p.m.

6.) Austin played football for 3 hours and 25 minutes. The clock below shows what time Austin stopped playing football.

What time did Austin start playing football?

A.) 10:05 a.m.
C.) 4:55 p.m.
B.) 11:25 a.m.
D.) 3:25 p.m.

7.) The clocks show when the first 6 boat rides begin at an amusement park.



9:00 9:45 10:30 11:15 12:00 12:45

If the time between rides stays the same, which clock show when the next boat ride will begin?

A.)

2:00

B.)

1:30

C.)

1:15

D.)

1:00

8.) The watch shows the time Mariah's bus left the school for a field trip.

It took the bus 2 hours and 15 minutes to get to Jamestown. What time did Mariah's bus arrive?

A.) 8:20 a.m.

C.) 9:40 a.m.

B.) 10:35 a.m.

D.) 11:30 a.m.

9.) The clock shows the time when Chase gets up on Saturday morning.

What time would it be in 10 hours and 45 minutes?

A.) 7:00 p.m.

C.) 7: 45 p.m.

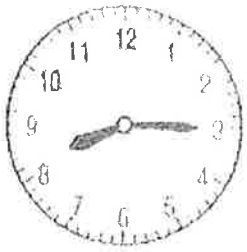
B.) 7:00 a.m.

D.) 7: 45 a.m.

4.9 The student will solve practical problems related to elapsed time in hours and minutes within a 12-hour period.

1 This clock shows the time Linda put a cake in the oven to bake. The cake baked for 1 hour and 12 minutes.

What time did Linda take the cake out of the oven?



A 7:03
B 7:15
C 8:27
D 9:27

2 Sue watched a movie that lasted 2 hours and 18 minutes. This clock shows the time the movie ended.

What time did the movie begin?

F 2:25
G 2:37
H 10:07
J 10:23

3 The clock shows the time Kristen started reading her book. She read for 1 hour and 50 minutes.

What time did Kristen stop reading her book?

A 1:02
B 12:52
C 10:42
D 9:22

4 This watch shows the time Dave went to a football game. He returned 2 hours and 45 minutes later.

What time did Dave return?

F 2:45
G 3:50
H 7:35
J 8:15

5 **This is the time Melissa started riding her bike.**

This is the time Melissa stopped riding her bike.

How long did Melissa ride her bike?

A 2 hours, 50 minutes
B 2 hours, 20 minutes
C 1 hour, 40 minutes
D 1 hour, 50 minutes

6 **Lauren began shopping at this time.**

She finished at this time.

How long did Lauren shop?

F 4 hours, 53 minutes
G 4 hours, 33 minutes
H 2 hours, 53 minutes
J 2 hours, 33 minutes

7 **This is clock shows the time Meghan started exercising.**

This clock shows the time she stopped.

How long did Meghan exercise?

A 1 hour, 10 minutes
B 2 hours, 13 minutes
C 2 hours, 20 minutes
D 3 hours, 47 minutes

8 **Mathville School begins at 8:15 and ends at 3:10. How long does school last?**

F 4 hours, 55 minutes
G 5 hours, 5 minutes
H 6 hours, 55 minutes
J 8 hours, 15 minutes

Name _____

Reteaching
16-10

Elapsed Time

Elapsed time problems can be solved in more than one way.

Find the elapsed time between 8:50 A.M. and 11:00 A.M.

One Way	**Another Way**
8:50 to 9:00 is 10 min.	8:50 to 10:50 is 2 h.
9:00 to 11:00 is 2 h.	10:50 to 11:00 is 10 min.
That's 2 h 10 min.	That's 2 h 10 min.

Find each elapsed time.

1. Start: 12:00 P.M.
Finish: 5:30 P.M. _____

2. Start: 5:15 P.M.
Finish: 8:20 P.M. _____

3. Start: 7:35 A.M.
Finish: 8:57 A.M. _____

Write the time each clock will show in 35 minutes.

4.  _____

5.  _____

6. Number Sense Is the elapsed time from 3:35 A.M. to 11:00 A.M. more than or less than 7 hours? Explain.

_____

_____

_____

Name _____

Practice
16-10

Elapsed Time

Find each elapsed time.

1. Start: 3:52 P.M.
Finish: 4:10 P.M.

_____

2. Start: 1:35 A.M.
Finish: 7:25 A.M.

_____

3. Start: 3:15 P.M.
Finish: 5:00 P.M.

_____

4. Start: 2:20 A.M.
Finish: 5:35 A.M.

_____

Write the time each clock will show in 30 min.

5.

_____

6.

_____

7.

_____

8. Number Sense Max says that the elapsed time from 3:55 A.M. to 5:10 A.M. is more than an hour and a half. Is he correct? Explain.

_____

9. Gary began eating lunch at 12:17 P.M. and finished at 1:01 P.M. Which is the elapsed time?

A 41 min **B** 42 min **C** 43 min **D** 44 min

10. Writing to Explain Ella went in the swimming pool at 1:20 P.M. She swam for 1 hour 20 minutes. What time was it when she finished swimming? Show your work.

_____

_____

Name _____

Quick Check
16-10

1. Mike started mowing his lawn at 12:10 P.M. He finished at 2:20 P.M. How long did it take him to mow his lawn?

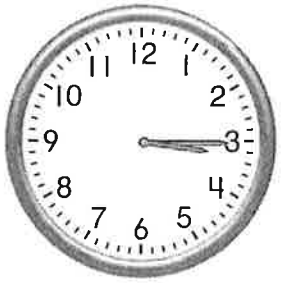
A 2 hours 0 minutes

B 2 hours 5 minutes

C 2 hours 10 minutes

D 2 hours 20 minutes

2. What time will the clock show in 1 hour 15 minutes?



A 2:00

B 4:15

C 4:30

D 5:30

3. Mr. Patton started jogging at 7:05 A.M. He jogged for 36 minutes. What time did he finish jogging?

A 7:31 A.M.

B 7:31 P.M.

C 7:41 A.M.

D 7:41 P.M.

4. Beth spent 3 hours 15 minutes writing a paper and 30 minutes taking a break. She finished at 7:20 P.M. What time did she start?

A 3:05 P.M.

B 3:35 P.M.

C 4:05 P.M.

D 4:35 P.M.

5. Writing to Explain Justin was watching a baseball game. The game lasted 3 hours 25 minutes and ended at 6:10. He says that the game started at 3:45. Is he correct? Explain.

_____

_____

_____

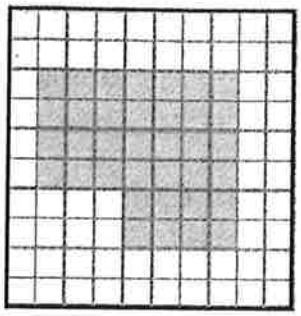
Quick Check 16-10

4.7 The student will solve practical problems that involve determining perimeter and area in the U.S. Customary and metric units.

1 A piece of wood was cut so it's size was 4 feet wide and 5 feet long. What is the perimeter of the wood?

_____

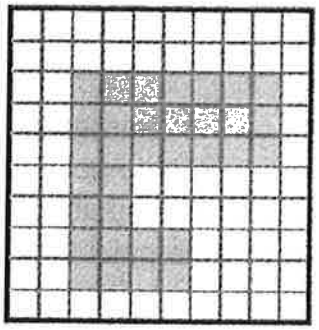
2 Determine the perimeter and the area for the figure below.



Area = _____ square units

Perimeter = _____units

3 Determine the perimeter and the area for the figure below.



Perimeter = _____ units

Area = _____square units

4 An envelope from the post office is 7 inches wide and 8 inches long. What is the perimeter of the envelope?

_____

5 Mr. Stevens is building a garden in the backyard. He wants to get enough soil to cover it. The garden is 3 meters wide and 5 meters long. What is the area of the garden that needs soil?

_____

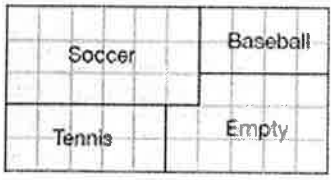
Name _____

Practice
14-1

Understanding Area

For **1** through **4**, use the picture below.

Athletic Field



1. What is the area of the soccer section of the field? _____

2. What is the area of the field that is **NOT** being used? _____

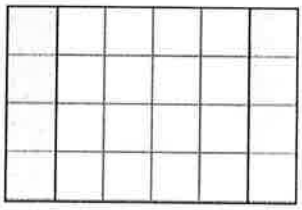
3. How many square units of the athletic field are being used?

   _____

4. If the school used the soccer and baseball fields to build a football stadium, how large could the area of the stadium be?

   _____

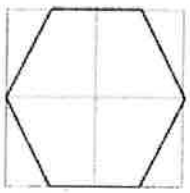
5. What is the area of the shaded section?



A 16 sq units **B** 12 sq units **C** 8 sq units **D** 4 sq units

6. **Writing to Explain** A hexagon has a grid on it. The height of the hexagon is 2 units. What would be the approximate area? Explain.

   _____



Name _____

Reteaching
14-2

Area of Squares and Rectangles

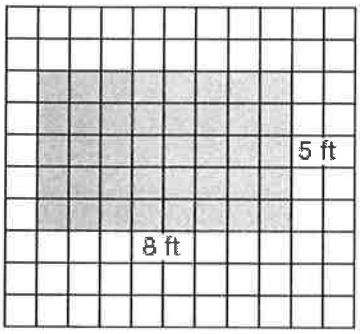
What is the area of this rectangle?

Use the formula $A = \ell w$:

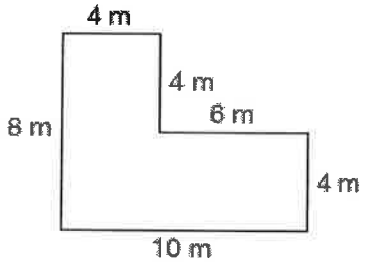
$A = 8 \times 5$

$A = 40$

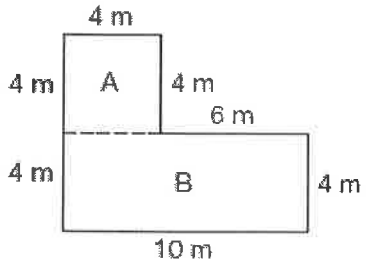
The area is 40 square feet.



What is the area of this figure?



You can draw segments to divide the figure into rectangles. Then find the area of each rectangle and add.



Rectangle A

$A = \ell w$

$A = 4 \times 4$

$= 16$

Rectangle B

$A = \ell w$

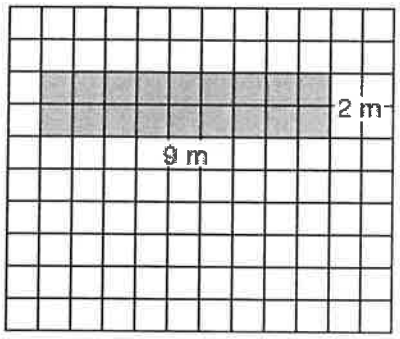
$A = 4 \times 10$

$= 40$

16 + 40 = 56, so the area of the original figure is 56 square meters.

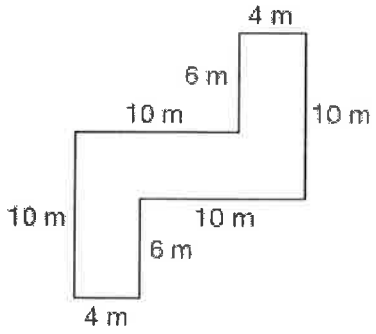
Find the area of each figure.

1.



_____

2.



_____

3. Reasoning The area of a rectangle is 56 square inches. The width of the rectangle is 7 in. What is the length? _____

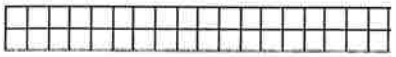
Name _____

Reteaching
14-8

Same Area, Different Perimeter

Make three rectangles with an area of 36 square feet that have a different perimeter. Use grid paper or color tiles to help you.

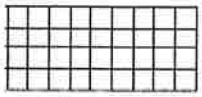
1st Rectangle



Find the area:
$A = \ell \times w$
$= 18 \times 2$
$= 36$ square feet

Find the perimeter:
$P = (2 \times \ell) + (2 \times w)$
$= (2 \times 18) + (2 \times 2)$
$= 36 + 4 = 40$ feet

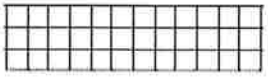
2nd Rectangle



Find the area:
$A = \ell \times w$
$= 9 \times 4$
$= 36$ square feet

Find the perimeter:
$P = (2 \times \ell) + (2 \times w)$
$= (2 \times 9) + (2 \times 4)$
$= 18 + 8 = 26$ feet

3rd Rectangle



Find the area:
$A = \ell \times w$
$= 12 \times 3$
$= 36$ square feet

Find the perimeter:
$P = (2 \times \ell) + (2 \times w)$
$= (2 \times 12) + (2 \times 3)$
$= 24 + 6 = 30$ feet

Solve.

1. Draw two different perimeters of a rectangle with an area of 14 units. Name their dimensions.

2. What is the greatest perimeter of a rectangle with an area of 39 square feet? _____

3. What is the least perimeter of a rectangle with an area of 32 square feet? _____

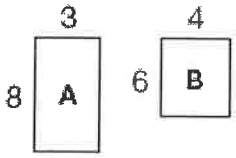
4. **Number Sense** A rectangle has an area of 42 square inches. Which has a greater perimeter, the rectangle with the dimensions 21×2 or the dimensions 6×7? _____

Name _____

Practice
14-8

Same Area, Different Perimeter

For **1** through **9,** write "yes" if the 2 rectangles have the same area and "no" if they do not. If they have the same area, tell which one has the smaller perimeter.

1. 

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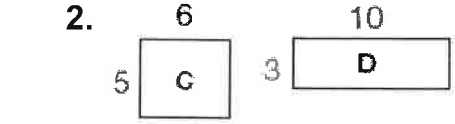
2. 

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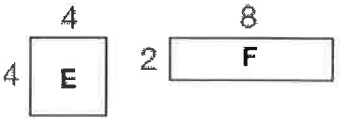
3. 

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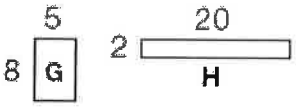
4. 

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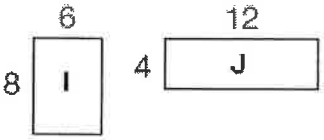
5. 

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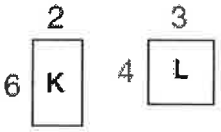
6. 

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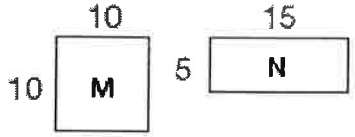
7. 

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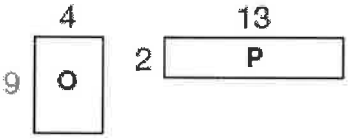
8. 

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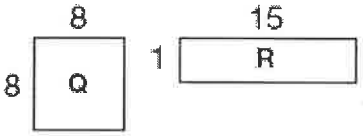
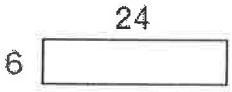
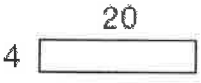
9. 

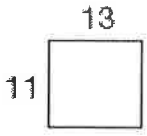
_____

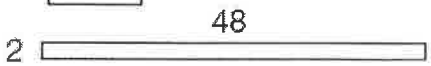
10. Two rectangles have an area of 81 square inches. Name two possible perimeters for the rectangles. _____

11. The length of a rectangle is 12 inches and the width is 12 inches. Which rectangle has the same area?

A 

B 

C 

D 

12. Writing to Explain The area of a rectangle is 100 square inches. The perimeter of the rectangle is 40 inches. A second rectangle has the same area but a different perimeter. Is the second rectangle a square? Explain why or why not.

_____

_____

SOL 4.8 Study Guide
Measurement – Weight/Mass, Length, Volume

Name: _____ **Block:** _____ **Date:** _____

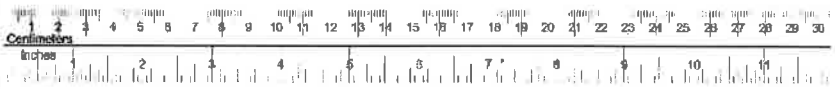
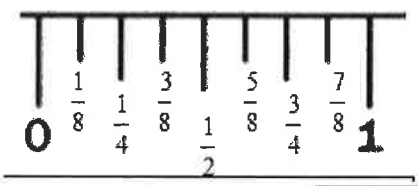
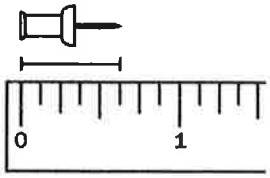
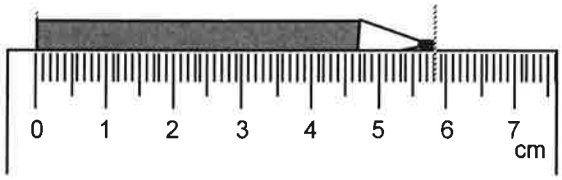
Learning Goals

4.7 **Solve practical problems that involve determining perimeter and area in U.S. Customary and metric units**

4.8
a) estimate and measure length, and describe the result in both metric and U.S. Customary units; and
b) estimate and measure weight/mass and describe the result in U.S. Customary and metric units
c) given the equivalent measure of one unit, identify equivalent measures of length, weight/mass, and liquid volume between units within the U.S. Customary system
d) solve practical problems that involve length, weight/mass, and liquid volume in U.S. Customary units

4.9 solve practical problems related to elapsed time in hours and minutes within a 12-hour period.

Vocabulary

Vocabulary	Definition	Examples
Length	How far an object is from end to end measured in units - inch, foot, yard, mile, millimeter, centimeter, or meter	When estimating length, choose the best unit of measure. A fly's wing would be measured in *millimeters* A pencil would be measured in *centimeters* or *inches* A person would be measured in *feet* The length of the playground would be measured in *yards* or *meters* The distance to the next city would be measured in *miles*.
Ruler	The instrument used to measure the length of an object. A standard ruler is 1 foot long (12 inches). It can have customary units on one side and metric units on the other side. **Length Conversions** Customary: 12 inches = 1 foot 3 feet = 1 yard 36 inches = 1 yard 1,760 yards = 1 mile Metric: 10 mm = 1 cm 100 cm = 1 m 1,000 mm = 1m	 When measuring in inches, measure to the nearest 1/8 inch.   *The tack is 5/8 of an inch long.* **When measuring in centimeters, measure to the nearest millimeter.** *The pencil measures 5.8 centimeters or 58 millimeters.* 

Use your inch ruler to determine the length of the pencil

A. $3\frac{7}{8}$ inches

B. 4 inches

C. $4\frac{1}{8}$ inches

D. 10 inches

1 meter = 1,000 millimeters

2 meters = _____ millimeters

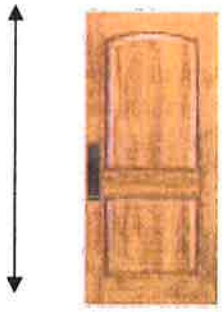
A. 2,000 millimeters

B. 200 millimeters

C. 20,000 millimeters

D. 29 millimeters

About how high is a door?

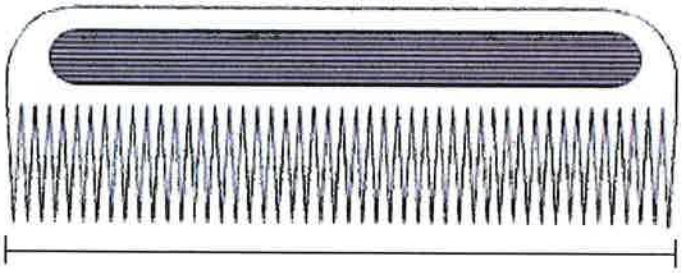


A.) 7 feet
B.) 7 inches
C.) 7 yards
D.) 7 centimeters

Identify each measure that is equivalent to 12 feet. You must circle ALL correct measurements.
12 inches = 1 foot
3 feet = 1 yard

36 yards	4 yards
120 inches	144 inches

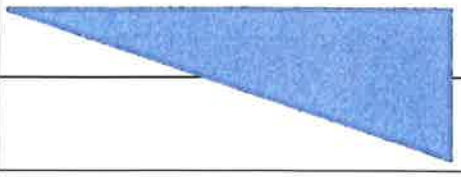
Which is closest to the length of this hair comb, in inches?



A. 3 ¾ inches
B. 3 ½ inches
C. 3 3/8 inches
D. 3 ¼ inches

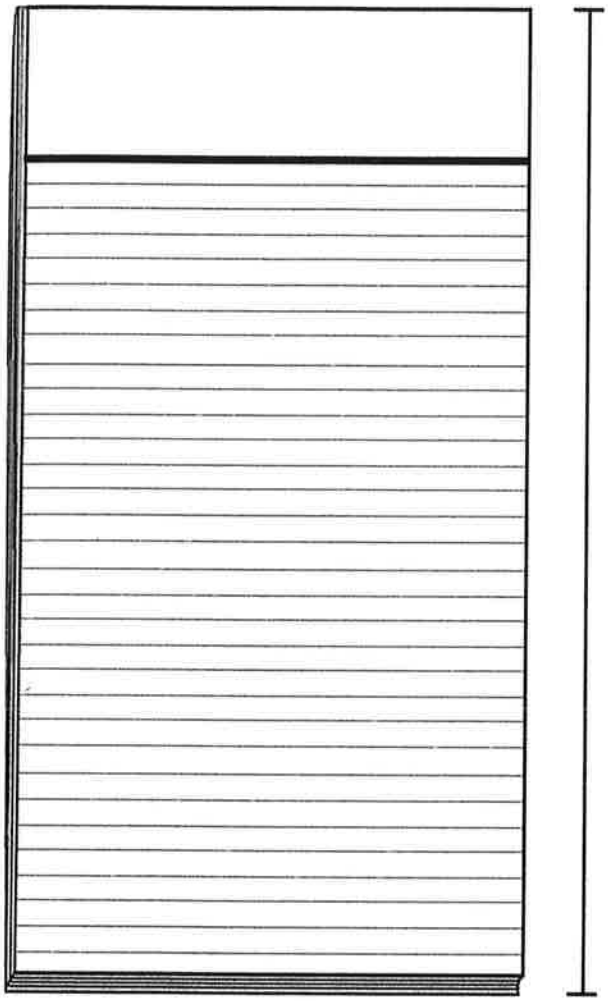
Use your centimeter (cm) ruler to answer this question.

Which is closest to the perimeter of the figure shown?



A. 24 cm B. 30 cm C. 19 cm D. 13 cm

8.) Use your inch ruler to help you answer this question.



Which is closest to the length of this notepad?

A.) 5 1/8 inches C.) 4 ½ inches

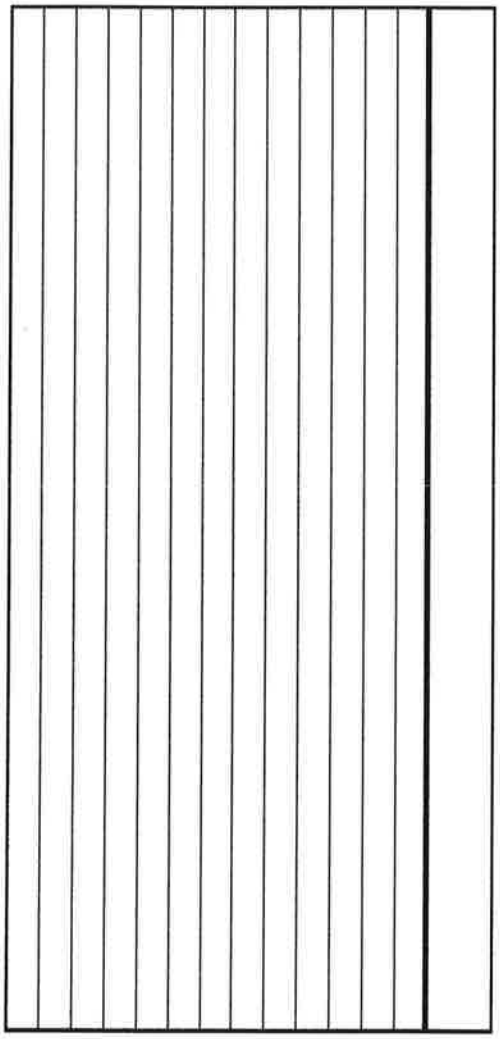
B.) 4 inches D.) 5 inches

9.) Use your inch ruler to answer this question.

Which is closest to the perimeter of the index card shown?

A.) 8 inches C.) 40 inches

B.) 12 inches D.) 18 inches



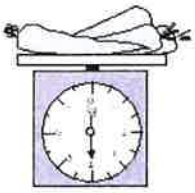
Preston's younger brother is 36 inches tall. Which of the following is equivalent to 36 inches?

A.) 1 foot C.) 1 yard
B.) 12 inches D.) 12 feet

Mr. Pelloni is making a bookcase. Each shelf will be 1 yard long. A length of 1 yard is about the same as –

A.) 1 kilometer C.) 10 millimeter
B.) 1 meter D.) 10 centimeters

100 cm = 1 meter **Emion ran a 500 – meter race. How many centimeters are equal to 100 meters?** 10,000 B.) 10 C.) 100 D.) 1,000	**12 inches = 1 foot** **3 feet = 1 yard** **Audrey's scrapbook is 12 inches wide.** **Which of the following is equivalent to 12 inches?** A.) 1 centimeter C.) 1 yard B.) 1 foot D.) 1 meter
	Gio plans to cover a tabletop with tiles. Which should Gio know to make sure he buys enough tile? A The perimeter C.The weight B The height D The area

Vocabulary	Definition	Examples
Weight	how heavy an object is; determined by the pull of gravity (ounce, pound)	 The weight of the pink eraser is 1 ounce.  The weight of the loaf of bread is about 1 pound.
Mass	The amount of matter in an object (gram, kilogram) **Weight Conversions** Customary: 16 ounces = 1 pound 1 ton = 2,000 pounds Metric: 1,000 grams = 1 kg	 The mass of the paperclip is about 1 gram.  The mass of the large book is about 1 kilogram
Scale	Instrument used to measure weight or mass	 *The apples weigh 5 pounds.*  *The carrots have a mass of 4 kilograms.*  *The boy weighs 70 pounds.*

Scott borrowed an encyclopedia from the library. It has a mass of 3 ½ kilograms. What is the mass of the book in grams?

1,000 grams = 1 kilogram

A.) 300 grams
B.) 350 grams
C.) 3,000 grams
D.) 3,500 grams

LuLu's puppy weighed 6 pounds. What is the total number of ounces LuLu's puppy weighed?

16 ounces = 1 pound

A.) 48 ounces C.) 72 ounces
B.) 60 ounces D.) 96 ounces

Which of these objects has a mass closest to 1 kilogram?

A.) A pencil C.) A sheet of paper
B.) A dictionary D.) A desk

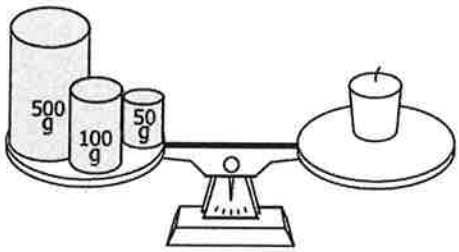
1,000 g = 1 kg
45g = __?__ kg

A.) 450 kg
B.) 4.5 kg
C.) 0.045 kg
D.) 45,000 kg

16 ounces = 1 pound
3 pounds = ____ ounces

A.) 48 ounces
B.) 36 ounces
C.) 30 ounces
D.) 24 ounces

Bryce measured the mass of a candle on a balance scale.



Which appears to be the mass of the candle pictured?

A.) 550 g B.) 600 g C.) 650 g D.) 500 g

During science class, Gunnar found that the mass of a rock was 3 kilograms. What was the mass of Gunnar's rock in grams?
1000 grams = 1 kilogram

A.) 300

B.) 30,000

C.) 3,000

D.) 30

Which is the best estimate of the mass of a pencil?

A.) 10 pounds C.) 100 ounces

B.) 10 grams D.) 100 kilograms

Makaila bought an 8 – ounce bag of candy. Which measurement is equivalent to 8 ounces.
16 ounces = 1 pound

A.) 1 pound C.) 2 pounds

B.) 2 ½ pounds D.) ½ pound

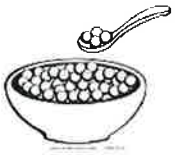
Mike filled a bucket with 2 gallons of water. Choose all of the measurements below that are equal to 2 gallons.

4 quarts = 1 gallon
8 pints = 1 quart

4 quarts	32 cups	12 pints
16 pints	8 quarts	16 cups

Brianna poured milk in her cereal bowl. About how much milk did she use?

A.) 1 gallon
B.) 2 quarts
C.) 2 pints
D.) 1 cup



A restaurant has 3 gallons of soup. What is the total number of pints of soup this restaurant has?

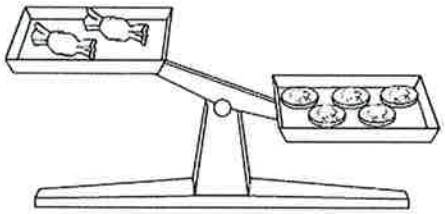
4 pints = 1 gallon

A.) 18 pints
B.) 12 pints
C.) 48 pints
D.) 24 pints

Which of the following cards shows a true statement?

A.)	4 pints = 1 gallon
B.)	2 quarts = 8 pints
C.)	4 cups = 1 pint
D.)	2 gallons = 8 quarts

The mass of the 5 nickels is 25 grams, which measurements is closest to the total mass of 2 pieces of candy?



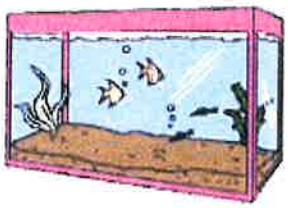
A.) 30 grams
B.) 35 grams
C.) 20 grams
D.) 25 grams

Layla weighed the bag of candy that she brought to share with her classmate. The bag weighed 5 pounds. How many ounces of candy did Layla bring to share with her class?
16 ounces = 1 pound

Volume	the amount of space a solid or liquid occupies; capacity (cup, pint, quart, gallon)	
<u>Conversions</u> 1 gallon = 4 quarts 1 gallon = 8 pints 1 gallon = 16 cups 1 quart = 2 pints 1 pint = 2 cups	When estimating volume, choose the best unit of measure. How much milk you put in your cereal would be measured in *cups.* *Pints* and *quarts* may be used to measure somewhat larger containers (less than a gallon). Large containers, such a bathtubs or swimming pools, should be measured in *gallons.*	

Vita used 1 pint of liquid to completely fill a container. Which container could be the one Vita filled?

A.) 

B.) 

C.) 

D.) 

Harley bough 1 pint of chocolate milk. Which of the following is equivalent to 1 pint?

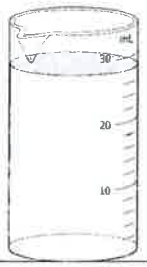
4 pint = 1 gallon
2 cups = 1 pint

A.)2 cups B.) ½ gallon C.) ½ cup D.) 1 quart

A scientist filled an eyedropper with vinegar. Which of the following amount would fit in an eyedropper?

A.) 1 kiloliter
B.) 10 liters
C.) 10 milliliters
D.) 1 liter

Which measurement is closest to the volume of liquid in this beaker?



A.) 10 milliliters
B.) 40 milliliters
C.) 20 milliliters
D.) 30 milliliters

4.8 The student will
a) estimate and measure length and describe the result in U.S. Customary and metric units;
b) estimate and measure weight/mass and describe the result in U.S. Customary and metric units as appropriate;
c) given the equivalent measure of one unit, identify equivalent measures of length, weight/mass, and liquid volume between the units within the U.S. Customary system;
d) solve practical problems that involve length, weight/mass, and liquid volume in U.S. Customary units.

1 Which object would weigh *about* one gram?

A a puppy
B a paper clip
C a math book
D a chair

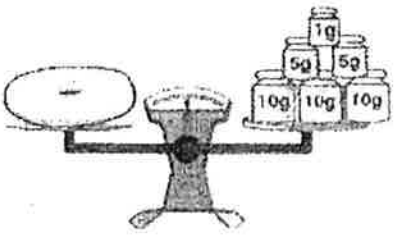
2 Which is closest to the weight of a pear?

F 40 tons
G 40 pounds
H 4 pounds
J 4 ounces

3 Which is the closest weight/mass of a nickel?

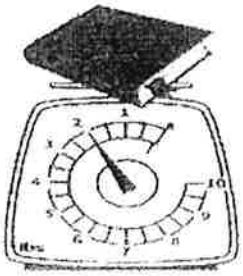
A 5,000 grams
B 500 grams
C 50 grams
D 5 grams

4 Michael bought a doughnut at the store. What is the mass of his doughnut?



_____ grams

5 What is the weight of Jeff's book?



_____ pounds

6 Mrs. Meekson bought 64 ounces of potatoes. How many pounds is that?

F 2 pounds
G 3 pounds
H 4 pounds
J 5 pounds

7 Sally's math book has a mass of 2 kilograms. How many grams are there in 2 kilograms?

A 2,000 grams
B 200 grams
C 20 grams
D 2 grams

8 Juan bought 3 pounds of candy. How many ounces is that?

F 3 ounces
G 16 ounces
H 32 ounces
J 48 ounces

9 A loaf of bread is 3,000 grams. How many kilograms is that?

A 3 kilograms
B 30 kilograms
C 300 kilograms
D 3,000 kilograms

10 Evan saw an elephant at the zoo that weighed 1 ton. How many pounds is that?

1 ton = _____ pounds

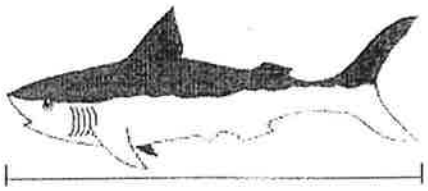
11 *About* how long is a cricket?

F 5 millimeters
G 5 centimeters
H 5 meters
J 5 kilometers

12 What is closest to the height of an average door?

A 7 inches
B 7 feet
C 7 yards
D 7 miles

13 Use an inch ruler to answer this question. Which is closest to the length of this shark?



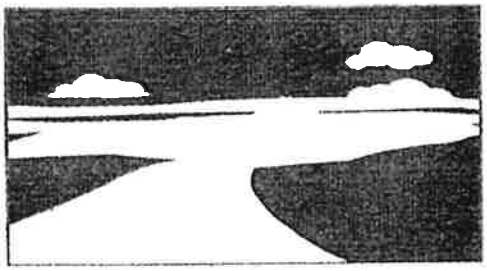
A 2 inches

B $2\frac{1}{4}$ inches

C $2\frac{1}{2}$ inches

D 3 inches

14 Use the centimeter ruler to answer this question. Which is closest to the length of this picture?



F 6 centimeters
G 6.5 centimeters
H 7 centimeters
J 7.5 centimeters

15 Use an inch ruler. How tall is this box?

A $2\frac{1}{2}$ inches

B 2 inches

C $1\frac{1}{2}$ inches

D 1 inch

16 A baseball bat is about 1 yard long. How many feet is that?

F 30 feet
G 10 feet
H 3 feet
J 1 foot

17 Carolyn's pencil is 60 millimeters long. How many centimeters long is Carolyn's pencil?

A 6 centimeters
B 10 centimeters
C 60 centimeters
D 100 centimeters

18 Mary's little brother is 48 inches tall. How many feet are equal to 48 inches?

F 2 feet
G 4 feet
H 6 feet
J 8 feet

19 The height of a door is about 3 meters. How many centimeters is this?

_____ centimeters

20 Identify each measurement that is equivalent to 2 yards.

24 inches	36 inches	72 inches	3 feet	6 feet	9 feet

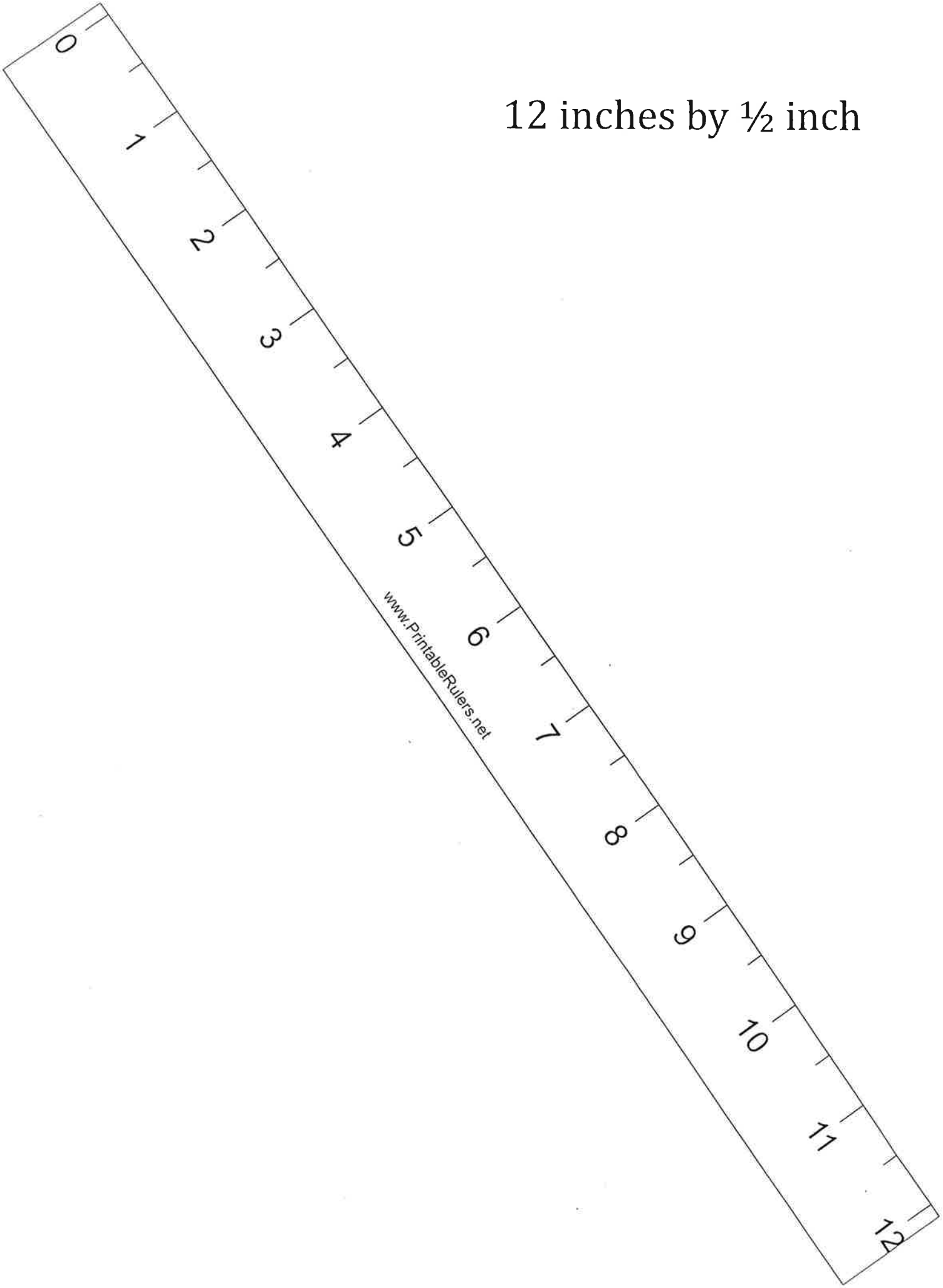
21 Which would hold 30 gallons of liquid?

A a coffeepot
B a soda can
C a paint bucket
D a washing machine

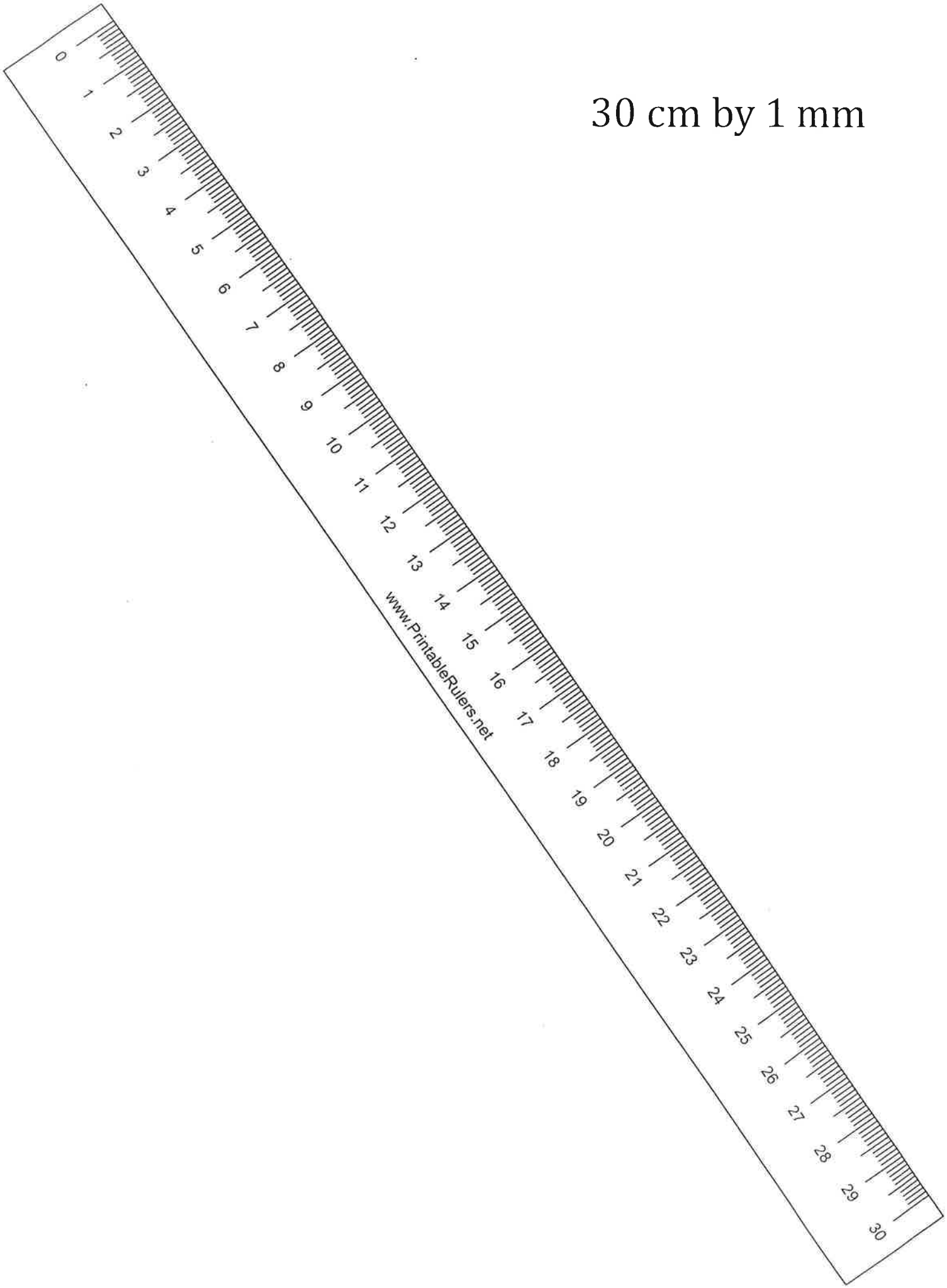
22 *About* how much soup would this bowl hold?

F 2 cups
G 2 quarts
H 20 cups
J 20 quarts

12 inches by ½ inch



30 cm by 1 mm


0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30
www.PrintableRulers.net

Norfolk Public Schools
Science Learning in Place Plan – Grade 4

Week 1

Monday	Tuesday	Wednesday	Thursday	Friday
Grade Four Science Fusion Textbook Unit 4, Lesson 2				
Read pages 196-197. ▪ Use arrows to show how energy moves from one living thing to another in the desert food chain shown on pages 196-197. ▪ Write a paragraph to explain how energy flows in this food chain.	Read pages 196-197 ▪ Illustrate a food web for the organisms below. Label each organism with its name, and the title ***producer*** or ***consumer***. Use arrows to show how energy moves in the food web model. Organisms: ***clam, crab, lobster, mussels, plankton, sea stars, and shark***.	Read pages 196-197 ▪ For the food web constructed on the previous day, write a brief paragraph to describe how energy flows in this food web.	Read pages 198-199 ▪ Observe the chart on page 199. Answer the questions below: 1. What year was the gray wolf population close to 2000? 2. Describe what happens to the elk population after 1998. 3. Why do you think the elk population dropped in 1999?	Review Lesson 2 (pages 189-197) ▪ Complete "*Brain Check*", page 201, 1-8.

Norfolk Public Schools
Science Learning in Place Plan – Grade 4

Week 2

Monday	Tuesday	Wednesday	Thursday	Friday
Grade Four Science Fusion Textbook				
Read pages 154-159 ▪ Explain the difference between a ***physical*** and ***behavioral adaptation*** and give an example of each.	Read pages 104-105. ▪ Name and describe two groups of plants (***vascular*** and ***nonvascular***). Give an example for each group.	Read page 181. ▪ Name and describe two groups of animals (***vertebrates*** and ***invertebrates***). Give an example for each group.	Read pages 310-311. ▪ Underline the information that helps you understand the food web diagram. ▪ Complete page 314, ***Sum it Up***, questions 1-7.	Read pages 272-273. ▪ List two ways humans influence the environment in a positive way and two ways humans influence the environment in a negative way.

Norfolk Public Schools
Science Learning in Place Plan – Grade 4

Week 3

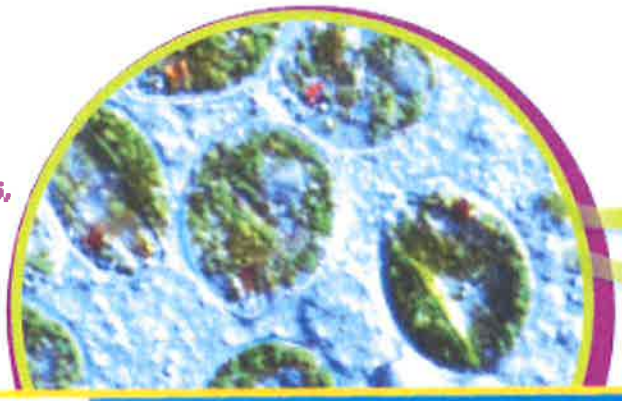
Monday	Tuesday	Wednesday	Thursday	Friday
Grade Four Science Fusion Textbook				
Read pages 178- 179. Define the term habitat. Explain what a ***habitat*** provides for an organism.	Read page 179. Define the term ***niche.*** 1. Describe two parts of an organism's niche. 2. What helps an organism to fit its niche?	Read pages 178-179 ▪ Compare and contrast the niches of organisms in the same community: ***mosquito larvae, tadpoles, adult frog*** and ***a tree swallow.***	Read page 179. ▪ Explain the different ways a frog interacts with its surroundings at different stages in its life cycle.	Read pages 178-179. ▪ Explain how 2 organisms share the same niche and habitat. Identify the organisms and their role in the environment.

Food Webs

A food chain shows how energy moves from one living thing to another. But living things often eat more than one kind of food. How can you show these different feeding relationships?

Active Reading As you read these two pages, draw a line under the main idea.

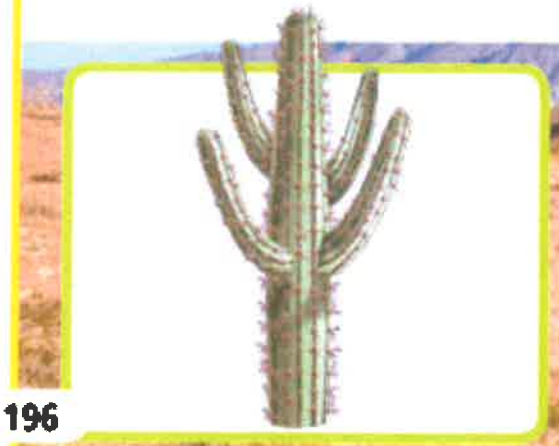
Lobsters eat clams. But they also eat crabs, sea stars, and mussels. Other animals, like the shark and the octopus, eat the lobster. You can use a model to show all these feeding relationships. A **food web** shows the relationships among different food chains. Food web models use arrows to show who eats what.



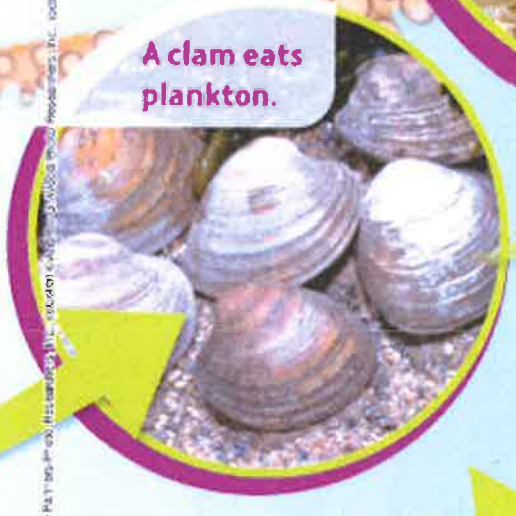
These green plankton are producers. They are eaten by clams, small fish, whales, and other organisms.

Desert Food Chain

Use arrows to show how energy moves from one living thing to another in this desert food chain.



A lobster eats clams. It also eats small fish, crabs, and sea stars.



A clam eats plankton.

A small fish can eat plankton. It might also be eaten by larger fish or lobsters.

How are food chains like food webs?

Why It Matters

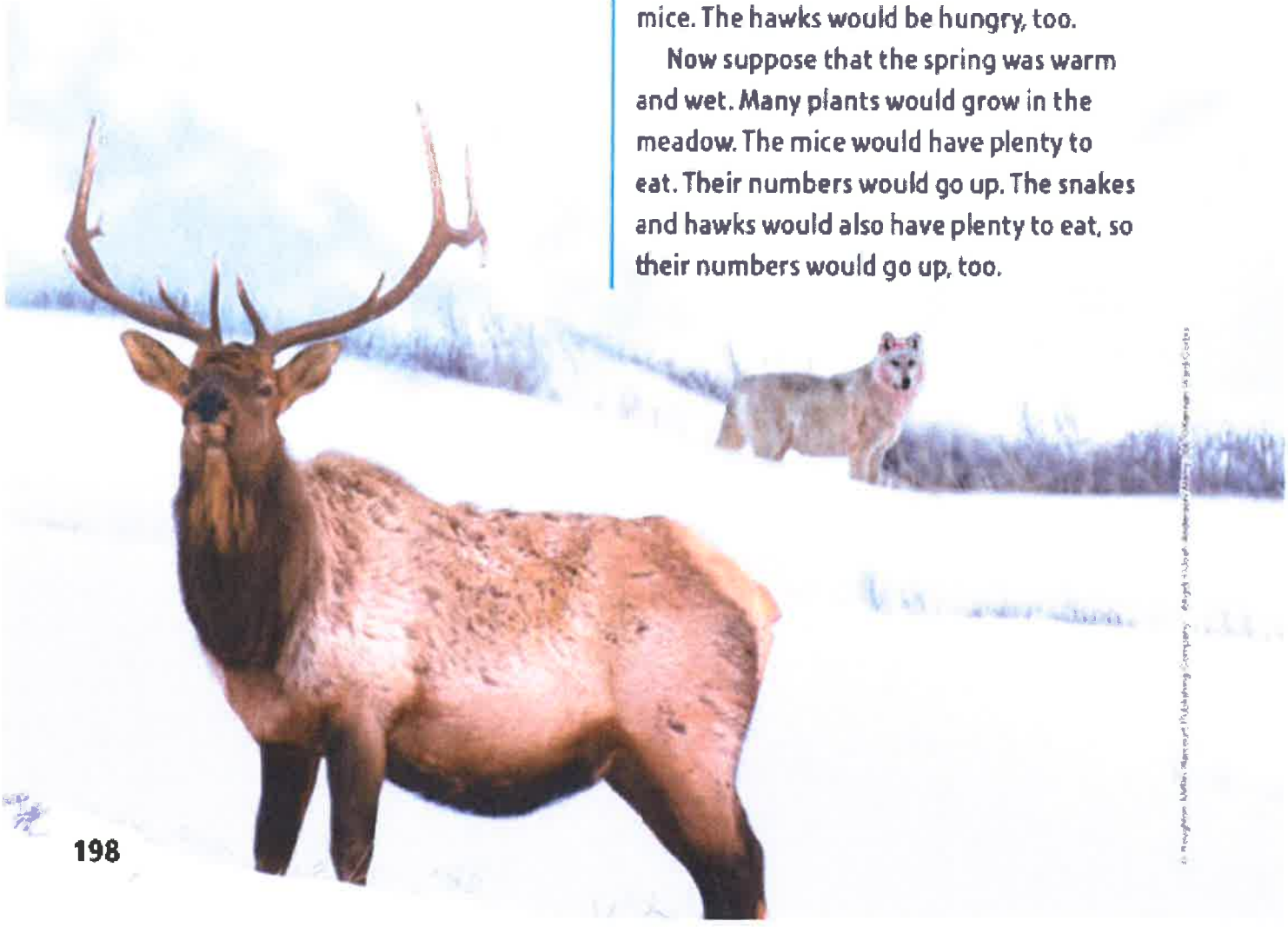
Changes in Food Webs

Imagine that one animal disappeared. What would happen to the other living things in the food web?

Active Reading As you read these two pages, circle clue words that signal a detail such as an example or an added fact.

Changes in food webs can affect all parts of a food web. For example, suppose the weather was very cold in the spring. Only a few plants in a meadow might live through the cold spring. This means that the mice in the meadow would not have enough to eat. Their numbers would go down. The snakes in the meadow eat mice. Their numbers would also go down. The hawks in the meadow hunt snakes and mice. The hawks would be hungry, too.

Now suppose that the spring was warm and wet. Many plants would grow in the meadow. The mice would have plenty to eat. Their numbers would go up. The snakes and hawks would also have plenty to eat, so their numbers would go up, too.



Food webs can be disrupted when one member of a food web goes away. This happened in Yellowstone National Park. During the early 1900s, the gray wolf was hunted in the park. Eventually, no gray wolves were left.

The gray wolf preyed mostly on elk. The number of elk in the park increased after the wolves disappeared. In 1995, scientists returned 14 gray wolves to the park. The number of wolves has since increased. As a result, the number of elk in the park has decreased.

Other changes happened, too. Elk eat trees. Before the wolves were reintroduced, the elk overgrazed the trees in the park. This harmed the trees. Since beavers had fewer trees to build dams with, the beaver population decreased. After the wolves were reintroduced to the park, both the trees and beavers began to thrive.

Populations in Yellowstone National Park

Do the Math!

Interpret Tables

The table shows the height of trees in Yellowstone National Park before and after the gray wolves returned. Study the table, and then answer the questions.

Kind of tree	*Average height before 1995*	*Average height after 2002*
Cottonwood	less than 1 m	2 to 3 m
Willow	less than 1 m	3 to 4 m

1. Describe the heights of the trees before the gray wolves were brought back to Yellowstone National Park.

_____

2. Describe the heights of the trees after the gray wolves were brought back to Yellowstone National Park.

_____

3. Why do you think the heights of the trees changed?

_____

_____

_____

_____

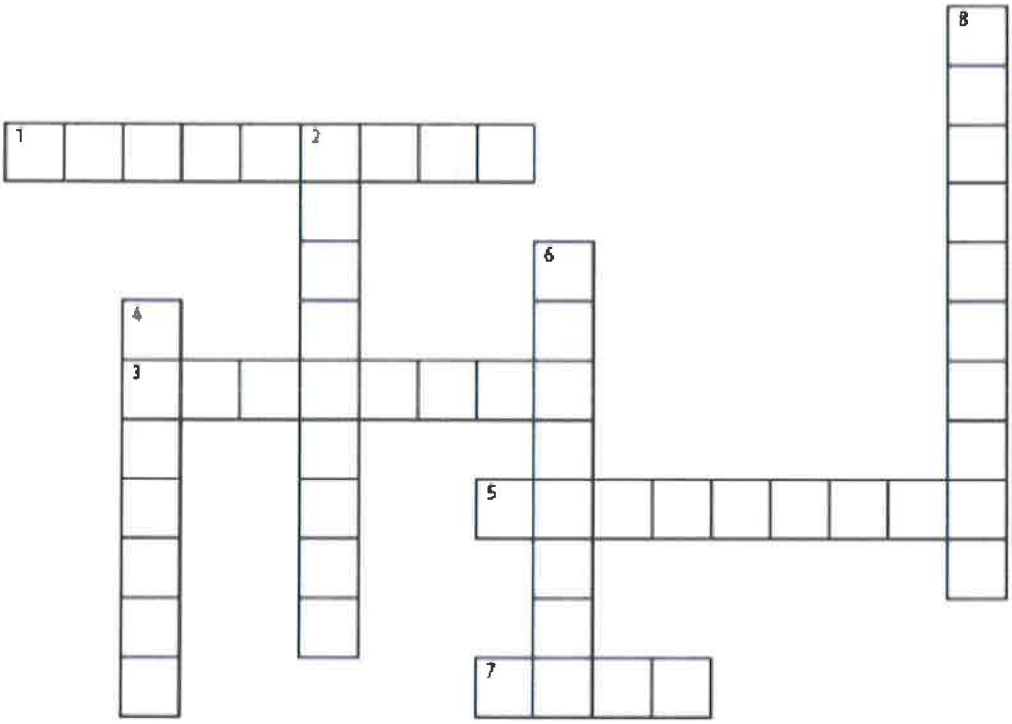
Brain Check

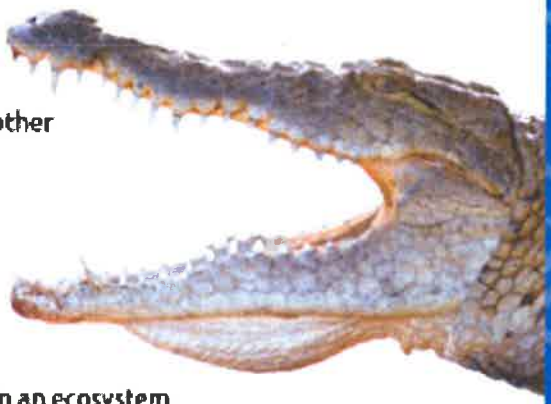
Lesson 2

Name _____

Word Play

1 Use the clues to complete the crossword puzzle.





Across

1. The transfer of energy from one living thing to another
3. Consumer that eats both plants and animals
5. Consumer that eats other animals
7. Animal that is hunted

Down

2. Consumer that eats only plants
4. Shows the relationship among all the food chains in an ecosystem
6. Animal that hunts
8. Consumer that breaks down the remains of plants and animals

Lesson 2

Essential Question

What Are Food Chains?

Engage Your Brain!

Find the answer to the following question in this lesson and record it here.

Is this frog a predator, or is it prey?

_____

_____

_____

_____

Active Reading

Lesson Vocabulary

List the terms. As you learn about each one, make notes in the Interactive Glossary.

_____ _____

_____ _____

_____

Main Ideas

The main idea is the most important idea of a paragraph or section. The main idea may be stated at the beginning, or it may be stated elsewhere. Active readers look for main ideas by asking themselves, What is this paragraph or section mostly about?

Food Chains

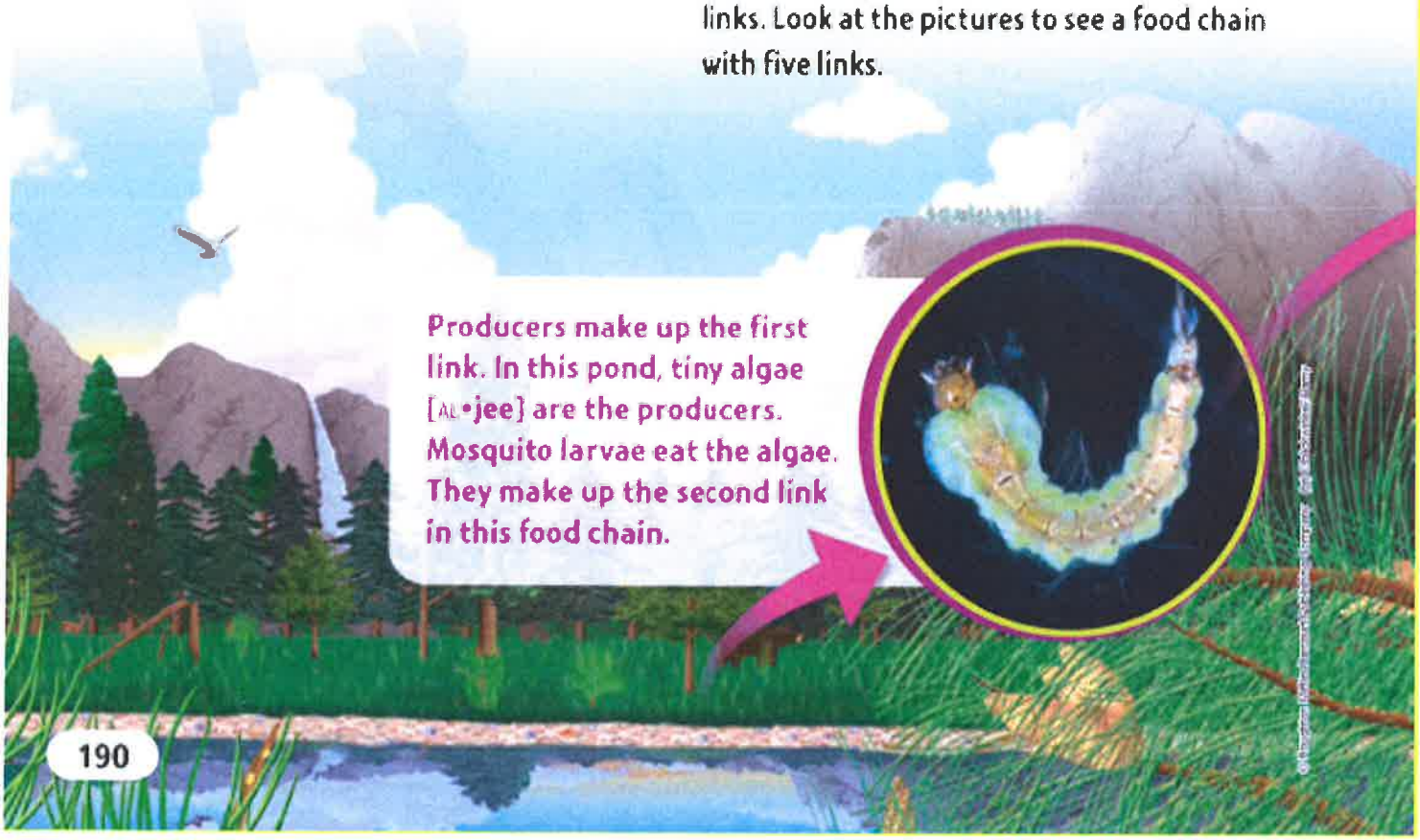
Did you know that you are fed by the sun? Find out how!

Active Reading As you read these two pages, circle common, everyday words that have a different meaning in science.

Lettuce is a plant that uses energy from the sun to make its own food. When you eat lettuce, some energy passes from the lettuce to you. You can show this relationship in a food chain. A **food chain** is the transfer of food energy in a sequence of living things. In a diagram of a food chain, arrows show how energy moves. Here is a food chain that shows how energy moves from lettuce to you.

lettuce → you

The food chain above has only two steps, or links. Food chains can have more than two links. Look at the pictures to see a food chain with five links.



Producers make up the first link. In this pond, tiny algae [AL•jee] are the producers. Mosquito larvae eat the algae. They make up the second link in this food chain.

Make a Food Chain

Choose a food that you ate for breakfast or lunch today. Make a food chain showing how energy from the sun flowed from the food to you.

Minnows are small fish. They eat the mosquito larvae. They make up the third link in this food chain.

Bass are bigger fish. They eat the minnows. They make up the fourth link in this food chain.

People eat the bass. People make up the last link in this food chain.

You Are What You Eat

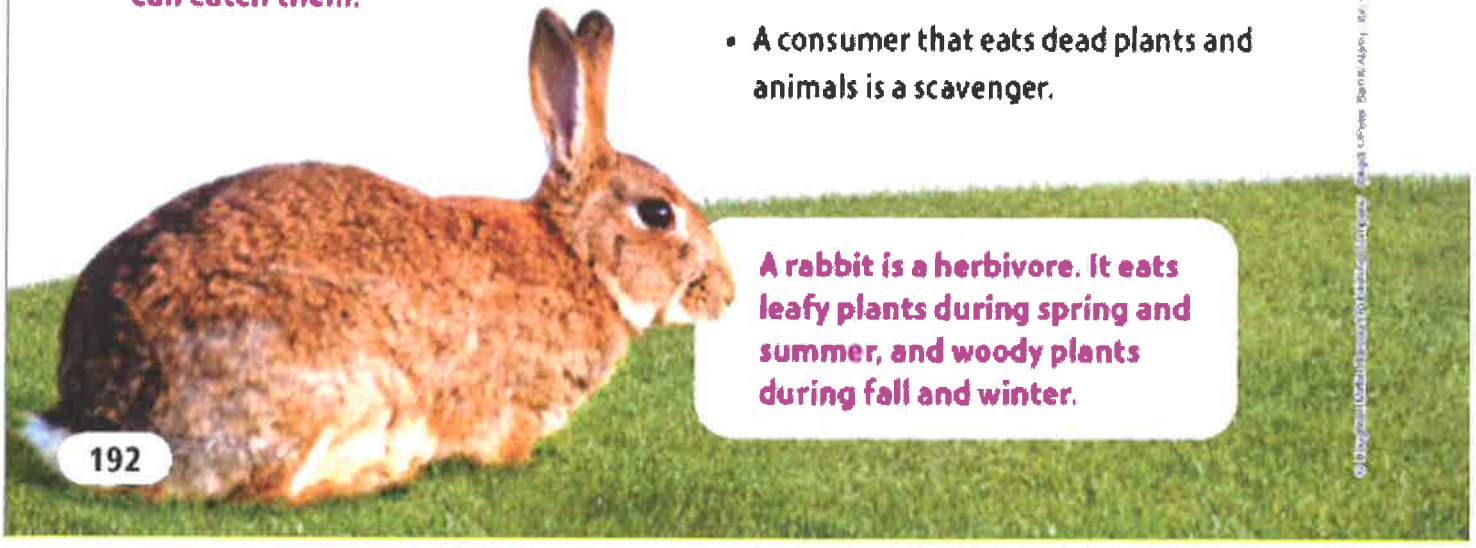
A zebra and a lion are both consumers. But they eat very different foods. How can you group consumers by what they eat?

Active Reading As you read this page, underline the sentence that identifies one characteristic that is used to classify consumers.

Consumers eat other living things. They can be placed into groups according to the kind of food they eat.

- A consumer that eats only plants is a **herbivore**. A zebra is a herbivore. It eats grasses and other plants.
- A consumer that eats other animals is a **carnivore**. A lion is a carnivore. It eats zebras and other animals.
- A consumer that eats both plants and animals is an **omnivore**. People are omnivores. They eat plants such as tomatoes and animals such as fish.
- A consumer that eats dead plants and animals is a scavenger.

A crocodile is a carnivore. It eats mainly fish. But it will eat big animals, such as hippos, when it can catch them.



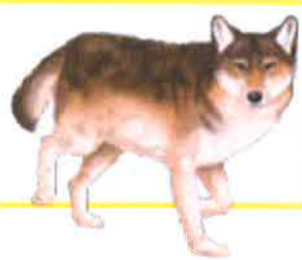
A rabbit is a herbivore. It eats leafy plants during spring and summer, and woody plants during fall and winter.

Raccoons are omnivores. They eat fruit, acorns, fish, and mice. They'll eat sweet corn right from your garden!

Vultures are scavengers. They eat dead animals.

What Does It Eat?

Look at the pictures below. The top row shows different kinds of consumers. The bottom row shows the kinds of food they eat. Draw lines to match the consumers to the foods they eat. Some consumers might eat more than one kind of food.



Hunt or Be Hunted

A lion crouches in the tall grass. Nearby, a zebra nibbles on the grass. Who is the hunter? Who will be hunted?

Active Reading As you read these two pages, draw boxes around two words that are key to understanding the main idea.

A hawk can see the movement of small animals, like this mouse, from high in the sky.

Consumers are grouped by what they eat. But you can also group consumers by whether they hunt or are hunted.

A *predator* is an animal that hunts other animals. Lions are predators. They often hunt in packs. This helps them catch big animals, like hippos and rhinos. They hunt smaller animals, too.

An animal that is eaten is called *prey*. Deer, elk, and moose are all prey for wolves in the Rocky Mountains.

Some animals can be both predator and prey. A frog might eat insects in a forest. But the frog might be eaten by a snake.

Lions can run fast for short bursts. Zebras may not run as fast, but they can run for a much longer time.

Sharks feed on many kinds of prey. Fish stay in large groups to make it difficult for predators to hunt individuals.

Who's the Hunter? Who's Hunted?

Fill in the table below. Classify the animals shown on these pages as predators or prey.

Animals	
Predators	Prey

Caring for Our Ecosystems

Of all living things, people can affect ecosystems the most. What are some things we can do to care for ecosystems?

Active Reading As you read these pages, circle cause-and-effect signal words or phrases.

People share natural resources with other living things in the environment. We also have the ability to change the environment the most. Therefore, we are responsible for taking care of it.

We can practice conservation to care for the environment. **Conservation** is the use of less of something to make its supply last longer. Conservation also means preserving the natural condition of the environment.

People, communities, businesses, and governments all help care for the environment. People, for example, volunteer to locate and remove invasive species from ecosystems. Communities operate water treatment facilities, where polluted water is cleaned up before it is released to the environment.

Many businesses have adopted more efficient technology. As a result, they have found ways to make products using less energy. They have also designed *biodegradable* materials that break down quickly in the environment.

Governments have passed laws to protect the environment. As a result, many rivers and streams are cleaner than they used to be. Governments have also set aside millions of acres of land to use as national parks and animal refuges. As a result, some **endangered species**, organisms whose whole population was at risk of dying out, have thrived.

Millions of American bison lived in the United States before people reduced their population to less than 1,000 animals. Today, because of government laws, there are about 450,000 American bison in the United States.

Water treatment facilities capture and remove pollutants in wastewater before the water is released into the environment.

A federal law passed in 1977 requires that land be reclaimed or restored once mining activities end.

What Can You Do?

List two ways you can practice conservation.

_____

_____

_____

Who Is out on a Limb?

If you were in a forest, which bird would you expect to see up in the trees—a blue jay or an ostrich?

Active Reading As you read this page, underline the definition of *adaptation*.

Did you guess a blue jay? You are right! Blue jays are small and have feet that can grip tree branches. Ostriches are large. They have long legs and wide, strong feet. Blue jays have adaptations that help them live in trees, while ostriches do not. An **adaptation** is a characteristic that helps a living thing survive.

Ostriches live on grasslands. They have long, strong legs that enable them to run quickly in open spaces. Their brown color helps them blend in.

Prairie dogs have strong paws for digging burrows. Their brown color enables them to blend in with their environment.

A **physical adaptation** is an adaptation to a body part. Living things have different physical adaptations based on their specific environments. For example, plants and animals in open spaces have different physical adaptations than living things in forests.

In open spaces, grasses can bend in strong winds. Grassland animals have coverings to blend in with the grass. These animals may be able to run fast or have shovel-like paws for burrowing.

Living things in forests have physical adaptations to live in and around trees. Vines can climb up trees to reach sunlight they need. Many forest animals can grip branches.

This blue jay's curved feet help it grip small branches. Its wings enable it to fly from branch to branch.

This sloth's long claws help it to hang from tree branches for most of its life. A sloth can even sleep without letting go of the branch.

▶ Compare the prairie dog's grassland adaptations with the sloth's forest adaptations.

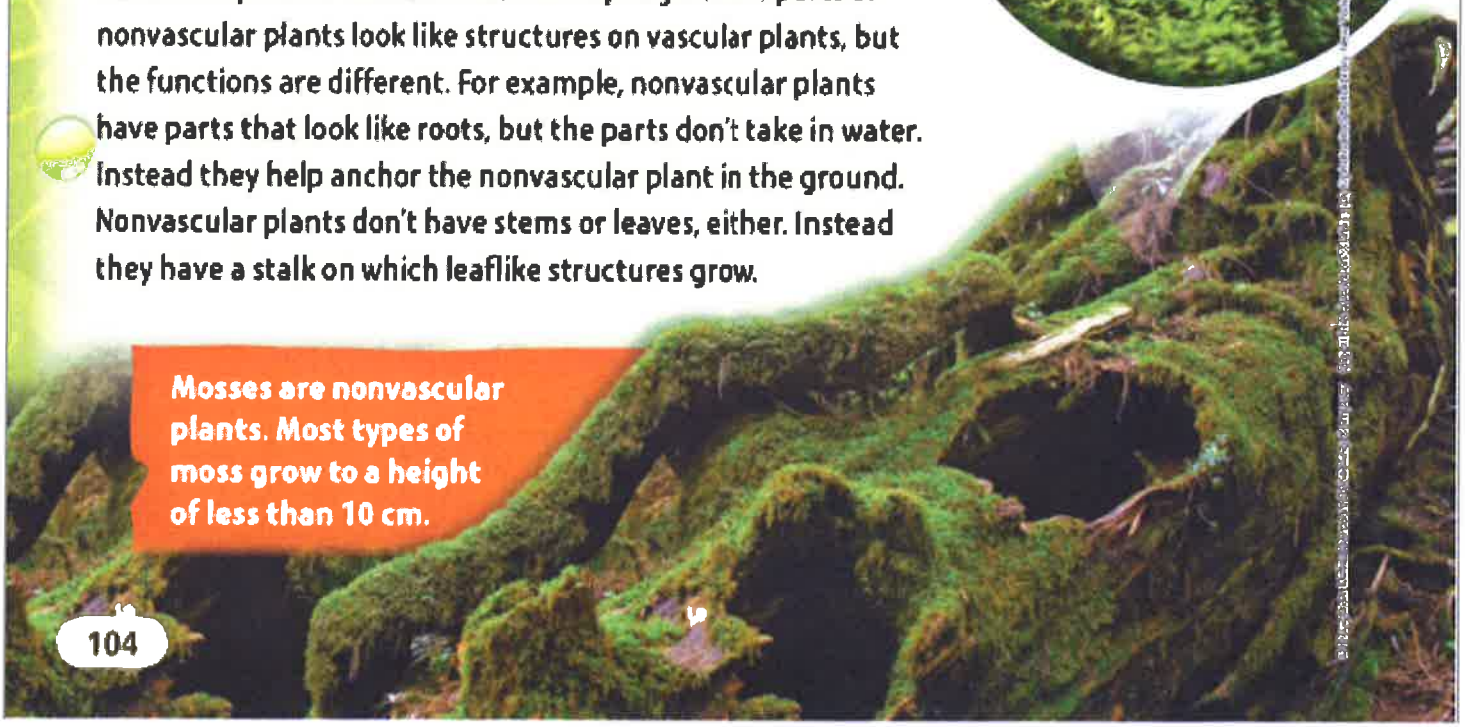
Types of Plants

How many plants can you name? Rosebushes, maple trees, cacti, ferns, and mosses are just a few examples. Scientists have identified more than 310,000 types of plants on Earth! How do scientists group all of them?

Active Reading As you read these two pages, circle the two types of plants that are being compared each time they appear.

Scientists classify plants into two groups: *nonvascular plants* and *vascular plants*.

Nonvascular plants are the simplest types of plants that grow on land. These small plants grow close to the ground and soak up water and minerals like a sponge. Some parts of nonvascular plants look like structures on vascular plants, but the functions are different. For example, nonvascular plants have parts that look like roots, but the parts don't take in water. Instead they help anchor the nonvascular plant in the ground. Nonvascular plants don't have stems or leaves, either. Instead they have a stalk on which leaflike structures grow.



Mosses are nonvascular plants. Most types of moss grow to a height of less than 10 cm.

Vascular plants, such as this rosebush, have roots, stems, and leaves. Water and nutrients taken in by the roots move through the stem to the leaves in tubes. The tube system also moves food from the leaves to other parts of the plant.

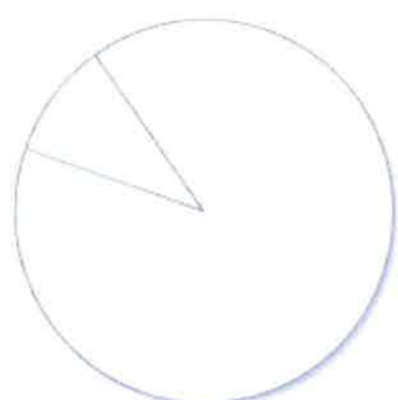
Most plants that you see every day are vascular plants. Vascular plants have a system of tubes that carry water and nutrients through the plant. These tubes run through the plant's roots, stems, and leaves. Roots take in water and minerals and also anchor the plant in the ground. Stems hold up the plant's leaves, which make food for the plant.

All plants that produce flowers, such as rosebushes and magnolia trees, are vascular plants. *Flowers* are reproductive structures, but not all vascular plants have flowers. Some vascular plants, such as pine trees, produce reproductive structures called cones.

Do the Math!

Work with Fractions

About $\frac{1}{10}$ of the 310,000 known types of plants are nonvascular. The remaining $\frac{9}{10}$ are vascular plants. Use this information, and two different colors, to color in and label the circle below.



Kingdom
Animalia

Crabs are invertebrates, meaning they do not have backbones. They live on land and in water.

This frog is an amphibian. It begins life under water as a tadpole before growing into an adult frog that lives on land.

This lion is a mammal. Mammals have fur. When they are young, they drink milk from their mothers' bodies.

Birds have wings and feathers. Although a chicken cannot fly far, most other birds can.

Most animals are made of multiple cells and cannot make their own food. Animals are often divided into two main groups. Animals that have backbones are called vertebrates. Vertebrates include fish, birds, reptiles, amphibians, and mammals. Animals without backbones are invertebrates. Invertebrates include insects, worms, jellyfish, and sponges.

Vertebrates make up only about 5% of the animal population on Earth. Approximately 95% of Earth's animals are invertebrates!

Within these two main groups, animals are further classified according to their body structures, how they take in oxygen and digest food, and many other factors. What do you think some of these other factors could be?

Do the Math!
Use Fractions

Mammals account for about $\frac{1}{10}$ of all vertebrates. Birds account for about $\frac{1}{6}$ of all vertebrates. Together, what fraction of vertebrates is made up of mammals and birds?

____

Food Webs

Like a spiderweb held together by many connecting threads, the paths in a food web show the feeding relationships among species in a community.

Active Reading As you read, underline the information that helps you understand the food web diagram.

You don't eat just one kind of food, and neither do organisms in food chains. Each consumer has a variety of choices when it comes to its next meal. A **food web** shows how food chains overlap. In other words, it shows what eats what. Look at the forest food web on the next page. Both the mouse and the insect eat parts of the pine tree or its seeds. A snake can eat a mouse or a salamander. All of these living things eventually become food for decomposers. Decomposers return nutrients to soil. These nutrients, in turn, are used by producers to make food.

Arrows in the web point in the direction that energy moves. Find the acorns and the mouse. Which way does the arrow point? It points from the acorns to the mouse. Energy moves from producer to consumer when the mouse eats the acorns.

Predators limit the number of animals below them in a food web. If snakes were removed from this forest food web, the number of mice would increase. More mice mean that more plants would be eaten. Eventually, the mice might run out of food and begin to die off. This would affect the hawks and other living things that eat mice. All of the organisms in a food web are interdependent.

▶ In the forest food web, trace two overlapping food chains that include the snake. Make the path of each food chain a different color.


311
red-tailed hawk
kinglet
oak acorns
pine-borer insect
corn snake
mouse
salamander
pine tree
fungi
311

Sum It Up!

When you're done, use the answer key to check and revise your work.

Fill in the missing words to summarize the main ideas of the lesson.

Energy Moves Through Ecosystems

Food Chains

The first organisms in a food chain are

1. _____.

Herbivores are the

2. _____-level consumers, and

3. _____

and 4. _____ are the second- and third-level consumers.

5. _____

are the final organisms in all food chains. They recycle materials by breaking down plant and animal remains, thereby returning nutrients to the environment.

Food Webs

A food web shows how food chains

6. _____.

Arrows show the direction of

7. _____

transfer through the web.

Energy Pyramids

Most of the energy in an ecosystem is present in the

8. _____.

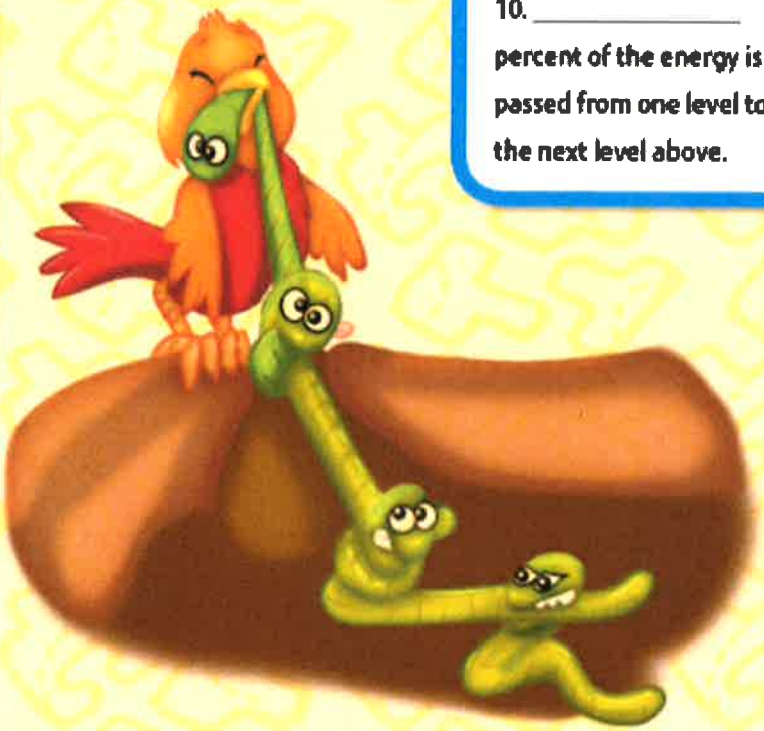
At each level, organisms use

9. _____ percent

of the available energy for life processes. Only

10. _____

percent of the energy is passed from one level to the next level above.



Answer Key: 1. producers 2. first 3. carnivores 4. omnivores 5. decomposers 6. overlap 7. energy 8. producers 9. 90 10. 10

Humans Change the Environment

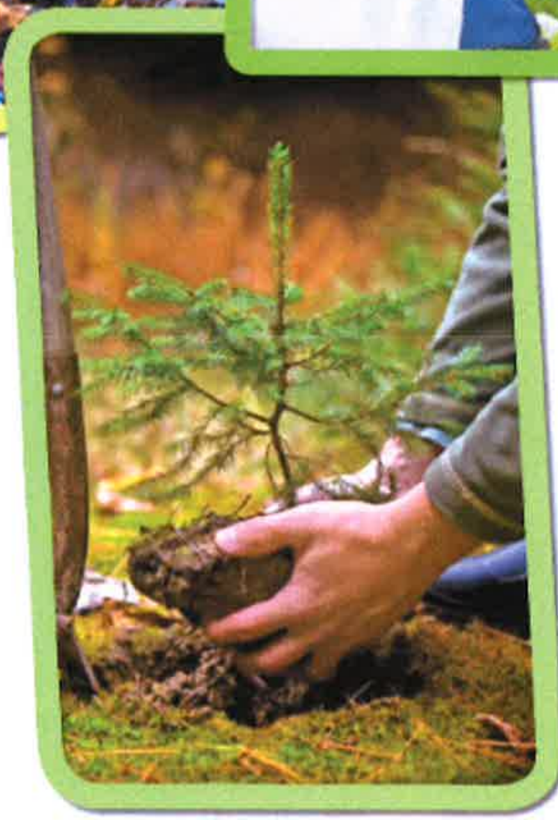
Humans are not outside of the environment, and we have a large impact on our ecosystems. The effects of humans on the environment can be both harmful and beneficial.

Active Reading As you read these two pages, draw brackets around sentences that describe ways in which people harm the environment. Underline sentences that describe ways people help the environment.

Human activities can harm an ecosystem. For example, people mine coal to produce energy for homes and businesses. Open-pit mining, as shown here, kills all the plants living in the area where the mine is dug. Animals that depend on the plants for food must move.

Highways can also disrupt ecosystems. Land must be cleared of plants and animals before a highway can be built. Often hills get leveled and valleys get filled in, blocking streams. Communities of plants and animals that lived in the ecosystem can no longer survive.

Humans produce a large amount of waste that is disposed of as trash. Most trash ends up in landfills. If landfills are not built properly, wastes can pollute soil and water. *Pollution* is the contamination of air, water, or soil by substances harmful to organisms.



Not all changes caused by humans are harmful. People work to protect their environment and to protect organisms from harm as a result of ecosystem change. Protecting ecosystems and the organisms living in them is called *conservation*.

People try to restore habitats and repair damaged ecosystems by replanting trees and cleaning up pollution. People also remove invasive plants and animals so native organisms can survive.

In addition, people try to help organisms affected by natural disasters. People care for animals injured or orphaned by these disasters.

What Can You Do to Help?

In the space below, list things that you can do to help the environment. Include things you already do and what you would like to do in the future.

A Place of One's Own

All organisms have the same basic needs. Different organisms meet their needs in a number of ways. Read on to find out about where an organism finds what it needs in an ecosystem.

Active Reading As you read the next page, circle the clue words or phrases that signal a detail.

Ponds are busy ecosystems filled with different populations of organisms and habitats. In and around ponds, the habitats of many organisms overlap. As a result, different kinds of organisms often have to interact.

Tadpoles

Mosquito larvae and tadpoles often share the same habitat. They use the same resources for food and shelter

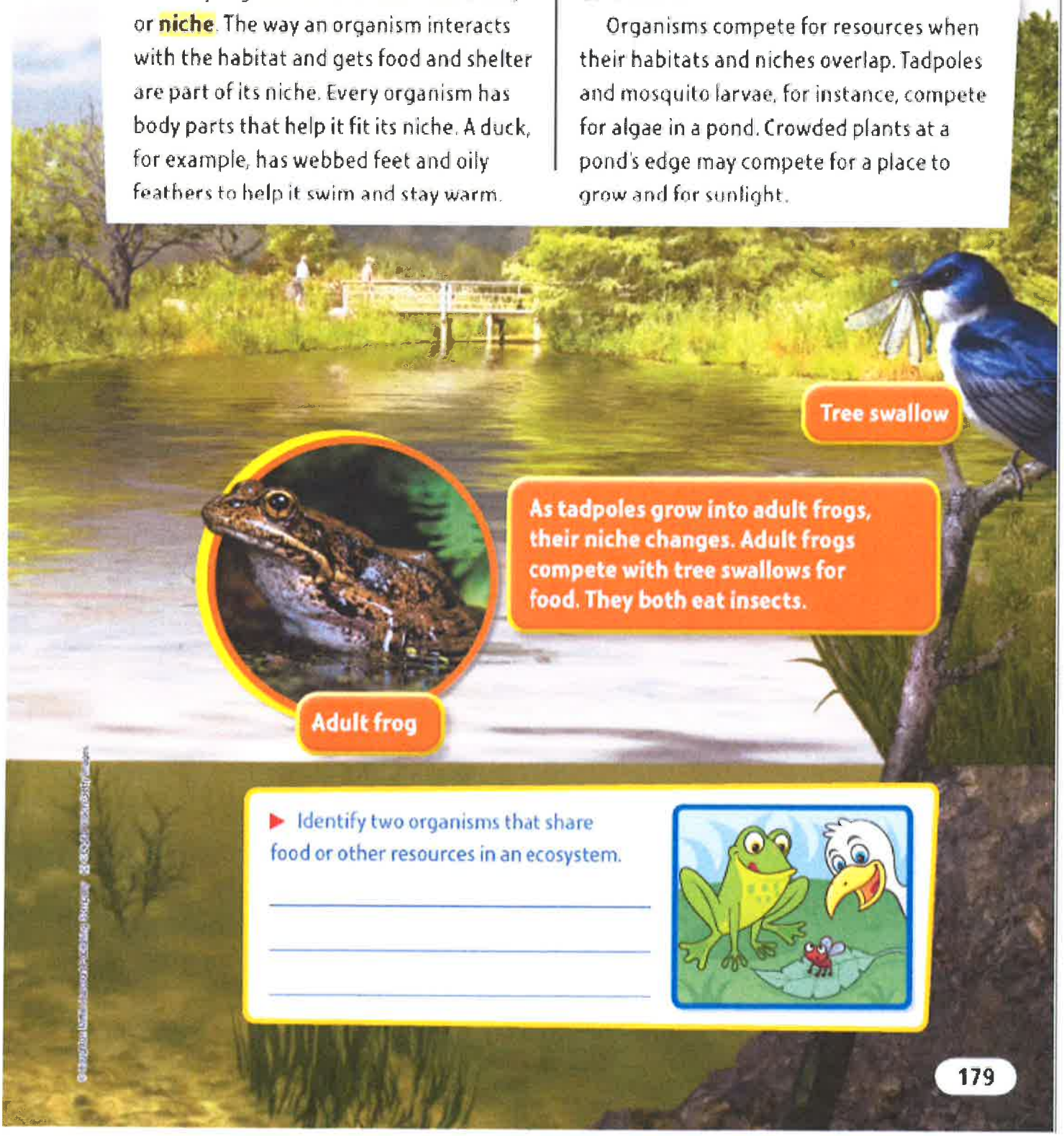
Mosquito larvae

Organisms find the resources they need in their habitat. A **habitat** is the physical part of the ecosystem that meets the needs of an organism. Organisms find food and shelter in their habitats.

Every organism in a habitat has a role, or **niche**. The way an organism interacts with the habitat and gets food and shelter are part of its niche. Every organism has body parts that help it fit its niche. A duck, for example, has webbed feet and oily feathers to help it swim and stay warm.

Some animals, such as frogs, change niches during their life cycle. At first, tadpoles live in water, breathe through gills, and eat algae. As adults, frogs breathe through lungs, live at the water's edge, and eat insects.

Organisms compete for resources when their habitats and niches overlap. Tadpoles and mosquito larvae, for instance, compete for algae in a pond. Crowded plants at a pond's edge may compete for a place to grow and for sunlight.



As tadpoles grow into adult frogs, their niche changes. Adult frogs compete with tree swallows for food. They both eat insects.

▶ Identify two organisms that share food or other resources in an ecosystem.

#NPS_LITERACY
STRATEGIC.
AUTHENTIC.
ENGAGED.

NPS Learning in Place English
Grade: Fourth Grade

READ 14.2D

	Monday	Tuesday	Wednesday	Thursday	Friday
Week 1	Read ***The World According to Humphrey*** **Vocabulary, Background, & Comprehension** pp. 530-533 Complete practice book pg. 241 & 242 *How do you spend your free time at home? What is your hobby? Write to describe what your favorite hobby is and why?*	Read ***The World According to Humphrey*** pp. 534-546 At the end of each page, pause to write a brief summary about what you have just read. Choose a device that you rely on (ex. computer, refrigerator, phone) *What would you do if this device stopped working? Write a paragraph describing how you would handle the situation.*	Reread ***The World According to Humphrey*** pp. 534-546 *What lesson does the Thomas family learn? How might this lesson apply to your life? Write to explain the theme expressed in this story and how it applies to you. Be sure to use details from the story to support your thoughts.*	Read ***Make the Switch*** pp. 548-550 *What did you learn from **Make the Switch*** about how advertisements can influence your thinking? Write a letter to a friend describing these persuasive techniques and the positive and negative effects these techniques can have.	Reread ***Make the Switch*** pp. 548-550 Complete practice book pg. 252 *Would you rather watch TV in the evening or play games and tell stories like the Thomas family did when their TV was unplugged? Write a paper to express your opinion. Be sure to include evidence to support your opinion.*
Week 2	Read ***I Could Do That!*** **Vocabulary, Background, & Comprehension** pp. 556-559 Complete practice book pg. 253 & 254 *What events led to women gaining the right to vote? Use the information on p. 558 to write a paragraph explaining the important events that led to voting rights for women.*	Read ***I Could Do That!*** pp. 560-570 At the end of each page, pause to write a brief summary about what you have just read. *Think of a time when you faced a challenge and did something nobody thought you could do. What was the challenge, and how did you overcome it? Write a paragraph about your experience.*	Reread ***I Could Do That!*** pp. 560-570 *Think about the many important things Esther Morris did in her life. Create a timeline that shows her accomplishments as described in **I Could Do That!***	Read ***Working for the Vote*** pp. 572-574 *Imagine that you could talk to Esther Morris. What would you say to her? Write your thoughts in a letter. Be sure to include a greeting, the date, and a closing.*	Reread ***Working for the Vote*** pp. 572-574 *Anthony and Stanton worked for women's rights. What is a cause that is important to you (ex. animal rights, homelessness, bullying, climate)? Write a paper to describing the cause that is important to you and how you would work to help this cause.*
Week 3	Read ***The Ever-Living Tree*** **Vocabulary, Background, & Comprehension** pp. 580-583 Complete practice book pp. 265 & 266	Read ***The Ever-Living Tree*** pp. 584-598 At the end of each page, pause to write a brief summary about what you have just read. *What new information did you learn about the Redwood*	Reread ***The Ever-Living Tree*** pp. 584-598 *Use facts from **The Ever-Living Tree** to write a paragraph describing how animals and insects depend on the redwood trees over*	Read ***Towering Trees*** pp. 600-602 *Think of a tree you have seen in your neighborhood. Write a poem about it. You might describe how it grows and changes through the year or*	Read ***Grammar*** *and* ***Write to Inform*** pp. 604-607 *A procedural text explains a process or series of events. What process can you explain to others (water cycle, how to play a*

	What do you already know about Redwood trees? What questions do you have? Write to explain what you already know and question you have?	*trees? Write to explain what you learned from reading the text.*	*the course of their lives. Then tell about ways in which humans depend on trees.*	*how it makes you feel and why.*	*game)? Pick something that you know a lot about and write a procedural composition to explain the process.*
Read 14.2	*Read a book of choice and record it on the reading log each day.*				
Materials	Access to the books is in the NPS link. If you have your book at home: Journeys Textbook and Journeys Practice Book Reading Log Book of choice to read each day Paper/pencils				

READ 14.2 READING LOG			
Date	**Number of Pages Read**	**Title**	**#summary**
3-12-20	10	*Cinderella*	#mistreatedgirlmeetsprincelosesshoeandliveshappilyeverafter

Name _____ Date _____

Theme

The World According to Humphrey
Comprehension: Theme

Read the selection below.

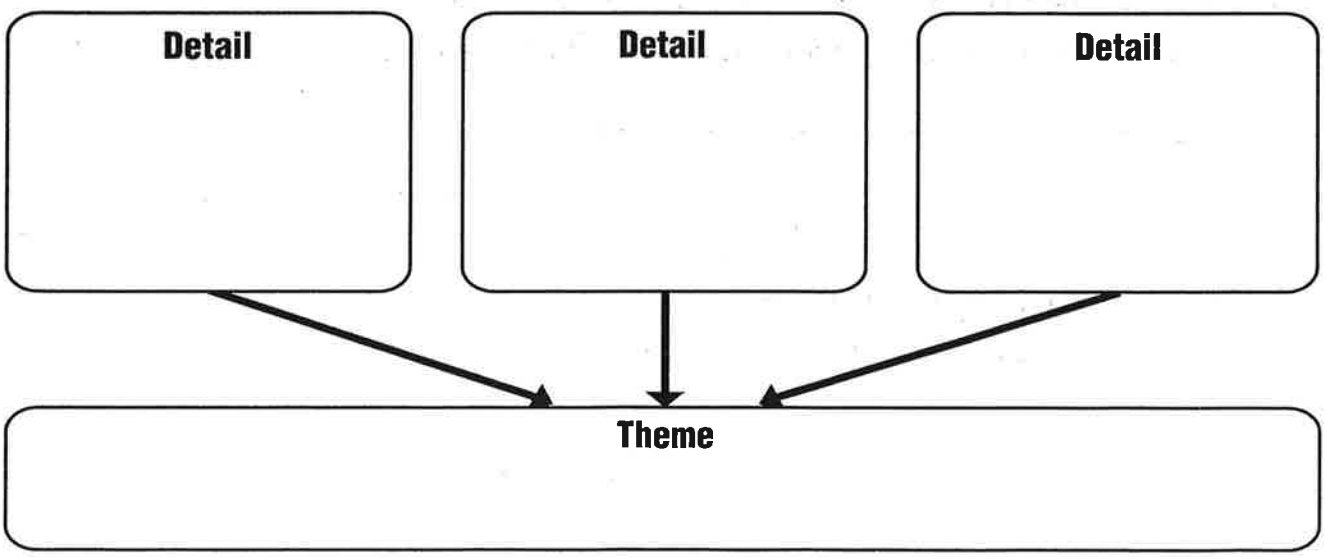
A Home for Melvin and Peanut

Brittany and her twin brother Josh decided to adopt some pets. Brittany got a dwarf hamster named Melvin, and Josh got a gerbil he named Peanut. To have the right cages and right food for each animal, the twins had read books and compared notes.

The twins learned how to make a home for their new pets. They put them into a clear tank with a mesh top to keep them from escaping. The holes in the mesh allowed the animals to breathe. Next, they put a layer of wood chips on the bottom of the tank and hung a water bottle with a metal spout on the side of the tank. Then they placed a heavy bowl in the tank for food. Gerbils and hamsters like to climb, so they put rocks in the tank, too. Since gerbils and hamsters also like to run, the twins put in an exercise wheel. Josh got a piece of cardboard for Peanut to chew, too.

Brittany decided to get some vegetables, fruits, mealworms, and crickets for Melvin. Her brother added some cheese and bread for his gerbil. All their research helped the twins make Melvin and Peanut comfortable in their new home.

Use the Inference Map to explain details from the text that will help you understand the lesson that the characters learn. Then write the theme in the bottom box.



Name _____ Date _____

Theme

The World According to Humphrey
Comprehension: Theme

Read the selection below.

A Soft Landing

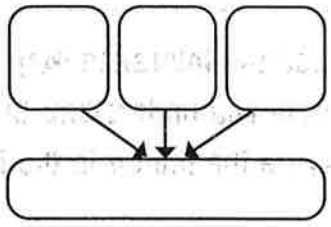
I never knew life could be so easy! I began life in a cardboard box in a dirty alley. My cat littermates and I ran for our lives from dogs and huge boxes on wheels.

Then someone caught me and put me in a metal cage. I was in a big square box all day and all night. They fed me and washed me. They kept me away from dogs, but I missed my family. All the cats there were in cages and frightened.

Lots of people came to visit. Sometimes the people let me out of the cage for a while. Then, one day, they unlocked my cage! They put me in an even smaller cage and carried me out of the building to one of the boxes on wheels!

We all traveled until we came to a nice, big place. It was clean and bright with soft furniture and carpeting. It had cats and people. Food and water were waiting for me, and there was not a box in sight! Boy, did I get lucky! Life can be good.

Use an Inference Map like the one here to explain details from the selection and determine its theme. Then answer the questions below.



1. How does the title "A Soft Landing" explain what happens in the selection? Support your answer with text details.

_____

_____

_____

2. What does the author want readers to learn from this selection? Support your answer with details from the selection.

_____

_____

Name _____ Date _____

Focus Trait: Ideas

The World According to Humphrey
Writing: Write to Inform

You can make your ideas clearer if your paragraph has a topic sentence. Remove unimportant or unnecessary details to help support the main idea better.

Read the paragraph below. Circle the sentence that would make the best topic sentence to start the paragraph. Underline two details that do not belong in the paragraph.

One of the earliest toothbrushes was called the "chew stick." It was made from a twig about the size of a pencil. One end of the twig was pointed. The other end was chewed until it became soft and brushlike. People brushed with the chewed end. They cleaned between their teeth with the pointed end. New Orleans dentist Levi Spear Parmly (1790–1859) is credited as the inventor of modern dental floss. You might be surprised to learn that people have been using toothbrushes for thousands and thousands of years. The Chinese were the first to make and use toothbrushes with bristles. The handle was carved from bone or bamboo. The bristles were made from animal hair and then attached to one end of the handle. These stiff bristles did a better job cleaning teeth than the chew stick. The first nylon toothbrush was called Doctor West's Miracle Toothbrush.

Name _____ Date _____

Cause and Effect

I Could Do That!
Comprehension:
Cause and Effect

Read the selection below.

Elizabeth Cady Stanton

Elizabeth Cady Stanton was a leader of the women's rights movement in the United States. Her work helped get women in the U.S. the right to vote.

Elizabeth was born in 1812. Her father was a New York congressman and judge. When she finished school, Elizabeth studied law in her father's office. She grew upset at how unfair the laws were for women and began speaking up for women's rights.

In 1854, Elizabeth was asked to speak before the New York state legislature. Thanks to her speech, married women in New York won many of the same rights as their husbands.

In 1870, Elizabeth joined Susan B. Anthony and other women to work for women's voting rights. She spent many years traveling the country to win support for their cause.

Until she died in 1902, Elizabeth kept writing and speaking about women's rights. In 1878 she wrote an important paper about giving women the right to vote. The paper was given to Congress each year. In 1920, women finally won the right to vote.

Complete the Flow Chart to show a chain of effects connected to a single cause in Elizabeth Cady Stanton's life.

Cause:

↓

Effect:

↓

Effect:

↓

Effect:

Name _____ Date _____

Cause and Effect

I Could Do That!
Comprehension:
Cause and Effect

Read the selection below.

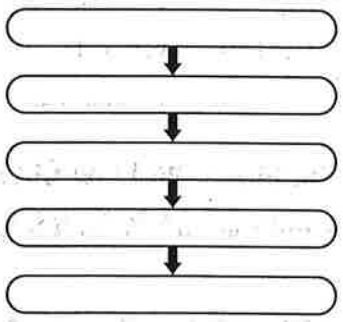
She Didn't Run—She Walked

Sojourner Truth was a slave who was not afraid to stand up for what was fair. One day her owner promised he would free her if she spun a certain amount of wool. Then she got hurt and spun less wool than expected, so the owner changed his mind.

That wasn't fair. So she made a plan. She worked until she had spun all the wool the owner had wanted. Then she left. Sojourner was proud of how she left. She didn't run away. She walked. Sojourner found a family who kept her safe until she could become free legally. To earn her keep, she worked for the couple. They paid her wages for her work. That was fair.

Once she was free, Sojourner wanted to help her children become free. Then an owner illegally sold her son into further slavery. That wasn't fair. So Sojourner fought him in court. Even though she was a woman and a former slave, she was not afraid to fight for what was right and fair.

Use a Flow Chart like the one shown here to identify cause-and-effect relationships in the selection. Then read and answer the items below.



1. Identify a cause-and-effect text structure in the selection. Use details from the selection to support your answer.

_____

_____

_____

2. Explain how the cause-and-effect text structure you identified can help you locate and recall information. Use selection details to support your answer.

_____

_____

_____

Name _____ Date _____

Text and Graphic Features

Read the selection below.

Yosemite National Park

One of the most popular national parks in the United States is Yosemite National Park. The park is in east-central California. The area of the park is 1,189 square miles, and it is set along the *Sierra Nevada.*

The park is famous for its tall mountains and valleys. *The highest mountain is Mount Lyell, which is 13,114 feet tall.* The valleys have rock walls made from granite. *The largest is El Capitan. It rises up to 7,569 feet.*

People come to Yosemite to climb the mountains and to hike the trails. Along the trails, hikers can see animals such as mule deer, squirrels, chipmunks, and black bears.

If you are ever in California, go visit Yosemite National Park!

Major Features
alpine wilderness, giant sequoia trees, Yosemite Valley

Use the Column Chart to show the location and purpose of the text and graphic features used in the selection.

Text or Graphic Feature	Location	Purpose

Name _____ Date _____

Text and Graphic Features

Read the selection below.

Pine Tree Identification Guide

Introduction

There are approximately 115 species of pine trees worldwide. Thirty-five of them grow here in the United States. Sometimes it's hard to tell one tree from another. This guide will help you identify some of the more common pine trees by looking at where they grow, their height, needles, and cones.

Eastern White Pine
Range: northeastern United States
Height: 80–100 ft.
Needles: Occur in bundles of five
Cones: Curved, 4–8 in. long

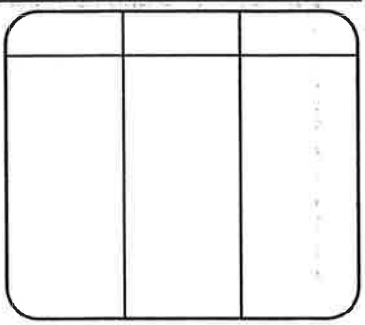
Norway Spruce
Range: northern United States
Height: 80–100 ft.
Needles: stiff, less than an inch long, sharp pointed tips
Cones: 4–6 in. long, cylindrical

Pinyon Pine
Range: southwestern United States
Height: 10–30 ft.
Needles: 1–2 in. long; occur in bundles of 2
Cones: 1–2 in. long; oval shaped; very thick scales containing edible seeds

Conclusion

Pines trees are economically important as a source of lumber and other useful products. They are also beautiful ornamental plants. It's fun to learn about them.

Use a Column Chart to explain text and graphic features in the selection. Then answer the questions below.



1. If you see a pine tree with needles that occur in bundles of five, what kind of tree is it?

_____

2. Why are some words in italics in the text?

_____

3. What kind of information is found after the word *Cones* in bold for each tree?

_____