JCPS NTI Grade 5 Mathematics Packet #3

Grade 5 Mathematics

Student At-Home Activity Packet

This At-Home Activity Packet is intended for a two-week period, and it includes lessons that your student may complete across more than one day.

The practice problems align to important math concepts your student has worked with so far this year.

Specific instructions to guide your student are found at the top of each page.

Encourage your student to do the best they can with this content—the most important thing is that they continue developing their mathematical fluency and skills.

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Explore Dividing Multi-Digit Numbers

CONNECT IT: **You already know how to divide a multi-digit number by a one-digit divisor. Now you will learn how to divide with two-digit divisors. Use what you know to try to solve the problem below.**

1 There are 92 fifth graders at Wilson Middle School and 23 students in each fifth-grade classroom. How many fifth-grade classrooms are there at Wilson Middle School? [What is 92 ÷ 23?] Explain your reasoning.

2 Let's look at how we solve do the math:

Multiplication and division are called **inverse operations** because they "undo" each other. For example, the related multiplication and division equations $5 \times 7 = 35$ and $35 \div 5 = 7$ show that if you multiply a number by 5 and then divide the result by 5, you end up with the number you started with.

Think about the related equations $264 \div 12 = ?$ and $12 \times ? = 264$.

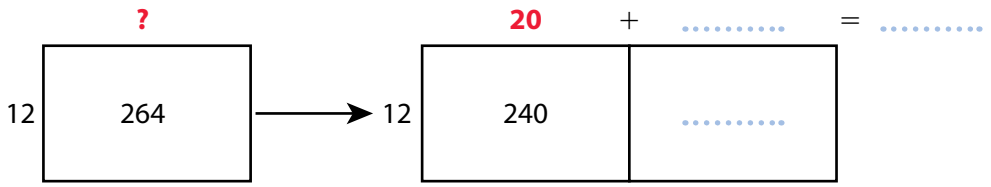
You can use the related multiplication equation to help you divide.

a. Start by listing products of the divisor, 12, and **multiples of 10**.

Multiple of 10	**10**	**20**	**30**	**40**	**50**
12 × Multiple of 10	120				

b. Which row of the table above is related to the dividend in 264 ÷ 12? How could you use the table above to estimate the quotient 264 ÷ 12?

c. Start with 12 × **a multiple of 10** to divide 264 by 12 using an area model. Complete the missing numbers.



3 REFLECT

How can you use the inverse relationship between multiplication and division to check your answer to 264 ÷ 12?

.....

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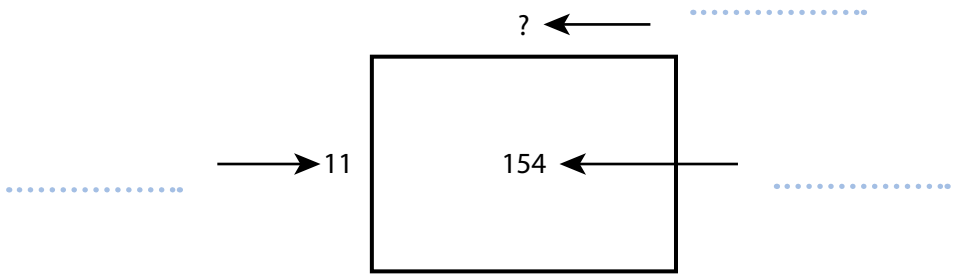
Prepare for Dividing Multi-Digit Numbers

1 Think about what you know about division. Fill in each box. Use words, numbers, and pictures. Show as many ideas as you can.

Word	In My Own Words	Example
dividend		
divisor		
quotient		

2 Label the *dividend*, *divisor*, and *quotient* of the division equation shown by the area model. Then write the division equation.



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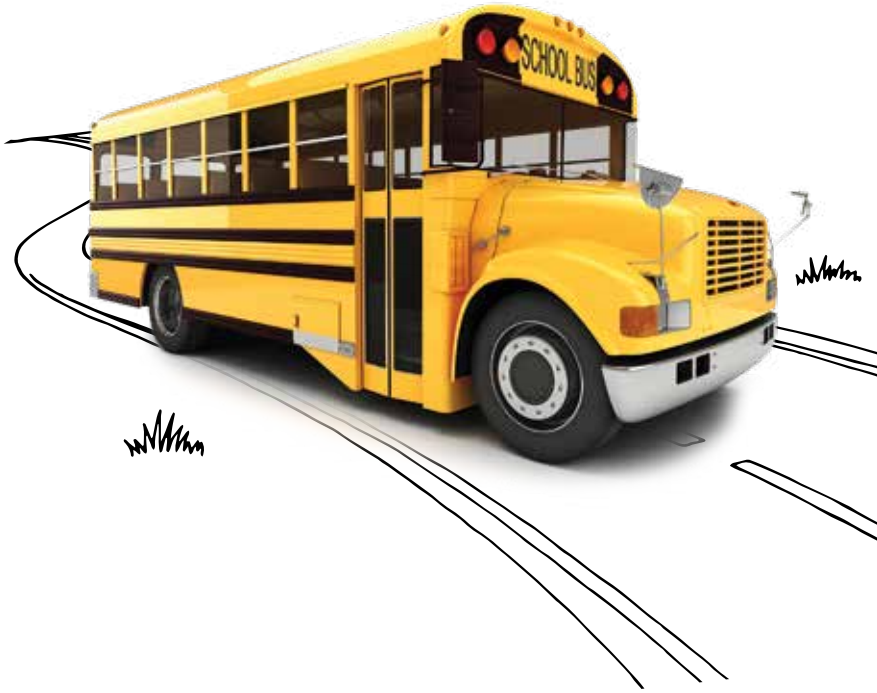
3 Solve the problem. Show your work.

There are 95 students on a field trip and 19 students on each bus. How many buses of students are there on the field trip?



Solution .....

4 Check your answer. Show your work.

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Develop Estimating Quotients

Explore different ways to understand how to estimate quotients when dividing whole numbers.

A toy company packs 504 robots into 21 boxes. Each box has the same number of robots. Show how you could estimate the number of robots in each box.

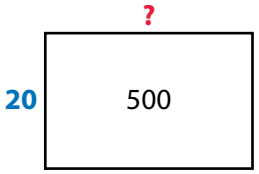
MODEL IT

You can use compatible numbers to estimate a quotient.

Compatible numbers are numbers close to the values of the actual dividend and divisor that allow you to multiply or divide using basic facts.

500 and 20 are compatible numbers that are close to 504 and 21.

You can use them to estimate by thinking 500 ÷ **20** = **?** means **20** × **?** = 500.



MODEL IT

You can use the inverse relationship between multiplication and division to estimate a quotient.

504 ÷ **21** = **?** or **21** × **?** = 504

Multiply **21** by **multiples of 10**. Make a table.

Number of Robots per Box	Total Number of Robots
10	**21** × **10** = 210
20	**21** × **20** = 420
30	**21** × **30** = 630

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CONNECT IT

Now you will use the problem from the previous page to help you understand how to estimate quotients with two-digit divisors.

1. Look at the first **Model It**. Why are 500 and 20 good choices to use for compatible numbers? Why not round to the nearest thousand and use 1,000 and 20 as compatible numbers?

2. How can you find the quotient 500 ÷ 20? What estimate does this give for the number of robots in each box?

3. Look at the second **Model It**. Why do you multiply 21 by multiples of 10? Could you multiply 21 by multiples of 5 instead of by multiples of 10?

4. Look at the table. Between which two numbers is a good estimate for the number of robots packed in each box? Explain how you know.

5. What do the methods of estimating quotients in the **Model Its** have in common?

6. ### REFLECT

   Look back at your **Try It**, strategies by classmates, and **Model Its**. Which models or strategies do you like best for estimating quotients? Explain.

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APPLY IT

Use what you just learned to solve these problems.

7 Estimate the quotient 342 ÷ 38. Show your work.

Solution .....

8 Estimate the quotient 1,103 ÷ 23. Show your work.

Solution .....

9 Camille arranged 238 chairs into equal rows of 14 chairs. Which of the following is the best estimate for the number of rows she made? [Show your work.]

Ⓐ a number close to 30

Ⓑ about 20

Ⓒ a number between 30 and 40

Ⓓ about 10

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Practice Estimating Quotients

Study the Example showing how to estimate a quotient with a two-digit divisor. Then solve problems 1–4.

EXAMPLE

Estimate the quotient 1,474 ÷ 22.

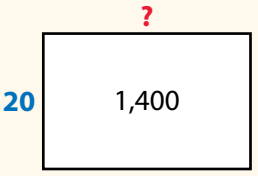
Choose compatible numbers that are close to the actual dividend and divisor and easy to multiply and divide using a basic fact.

1,400 and 20 are close to 1,474 and 22.

$2 \times 7 = 14$, $2 \times 70 = 140$, and $20 \times 70 = 1{,}400$.

$20 \times 70 = 1{,}400$ is the same as $1{,}400 \div 20 = 70$.

So, 70 is the estimated quotient for 1,474 ÷ 22.



1 Look at the Example. You can also multiply 22 by **multiples of 10** to estimate the quotient 1,474 ÷ 22.

a. Complete the table.

Multiple of 10	**10**	**20**	**30**	**40**	**50**	**60**	**70**	**80**
22 × Multiple of 10	220	440	660	880	1,100			

b. Complete the statement below with two numbers from the table.

The dividend 1,474 is between ..... and .....

c. What is a good estimate for the quotient 1,474 ÷ 22?

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2 Which of the following is the best estimate for the quotient 713 ÷ 31?

Ⓐ a number between 10 and 20

Ⓑ a number close to 40

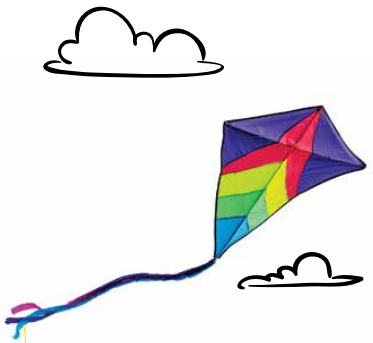
Ⓒ a number close to 35

Ⓓ a number between 20 and 30

3 A beverage company makes 1,008 bottles of water and packs them into boxes. The company packs 24 bottles in each box. Estimate how many boxes of water bottles the company packs. Show your work.

Solution

4 Marcus builds 2,744 kites for a 14-day summer kite festival.
He plans to give away about the same number of kites each day.
He gives away 492 kites the first two days. Did Marcus stick to his plan?
Use estimation to explain. Show your work.



Solution

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Develop Using Estimation and Area Models to Divide

Explore different ways to understand how to divide multi-digit numbers using estimation and area models.

A factory produces 768 buses and puts them in 24 buildings. Each building has the same number of buses. How many buses are in each building? Estimate and then solve.

MODEL IT

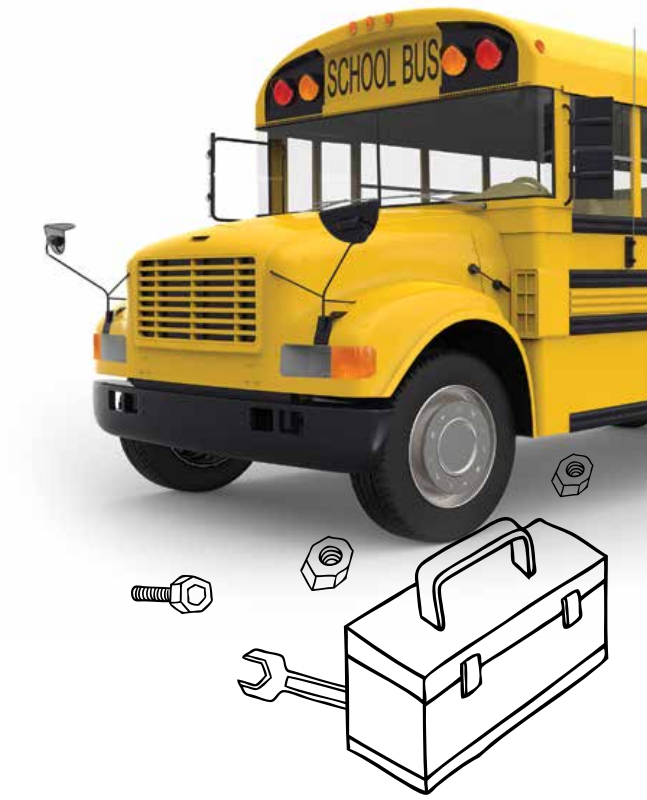
You can use the relationship between multiplication and division to estimate the quotient.

768 ÷ 24 = **?** and 24 × **?** = 768

Multiply 24 by **multiples of 10** to estimate the quotient. You can organize your work in a table.

Number of Buses in Each Building	Total Number of Buses
10	240
20	480
30	720
40	960

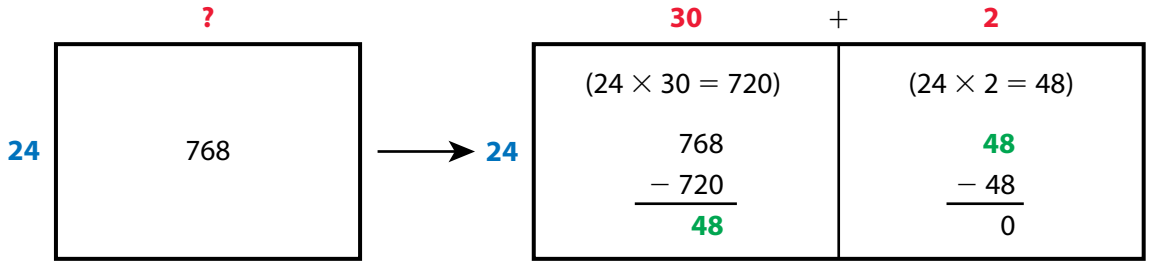
The quotient is between **30** and **40**.



MODEL IT

You can use an area model to solve a division problem with a two-digit divisor.

The area model breaks up the problem 768 ÷ 24 into parts.



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CONNECT IT

Now you will use the problem from the previous page to help you understand how to divide multi-digit numbers using estimation and area models.

1. In the first **Model It**, how do you know the quotient is between 30 and 40?

2. Look at the second **Model It**. The number 24 is multiplied by which estimate, 30 or 40, to start the area model work? Why do you think the other number was not used?

3. What does the expression 30 + 2 above the area model represent?

4. Explain why the numbers 30 and 2 can be called *partial quotients*.

5. Explain how an area model can help you break apart a division problem to make it easier to solve.

6. REFLECT

Look back at your **Try It**, strategies by classmates, and **Model Its**. Which models or strategies do you like best for dividing whole numbers? Explain.

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APPLY IT

Use what you just learned to solve these problems.

A factory produces 768 buses and puts them in 24 buildings. Each building has the same number of buses. How many buses are in each building? Estimate and then solve.

7 In the problem on the previous page, 768 ÷ 24, you first estimated and then used an area model to find the quotient.

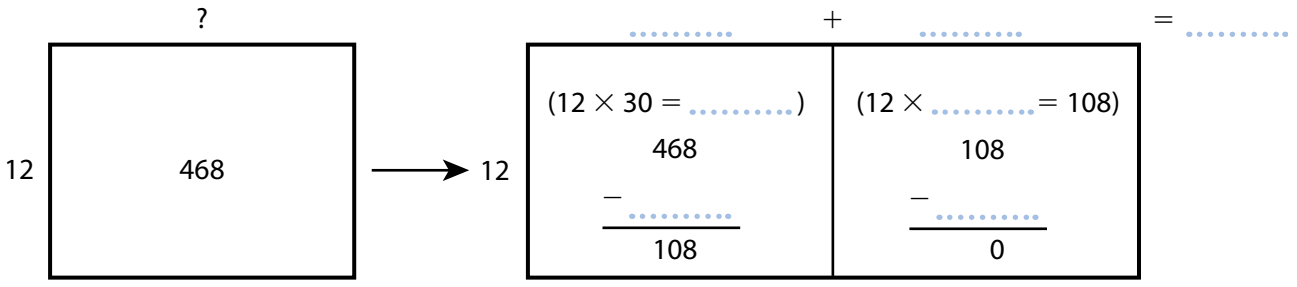
Describe how can you use multiplication to check that you have the correct quotient. Show your work to check.

8 Dante has 468 cards in his sports card collection. He buys cards in packages of 12. Complete the table and give an estimate for how many packages of cards Dante has bought.

Number of packages	10	20	30	40	50
Number of sports cards					

Solution .....

9 Refer to the situation in problem 8. Complete the area model to find the quotient 468 ÷ 12. How many packages of sports cards did Dante buy?



Solution .....

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Practice Using Estimation and Area Models to Divide

Study the Example showing how to estimate and use area models to divide. Then solve problems 1–4.

EXAMPLE

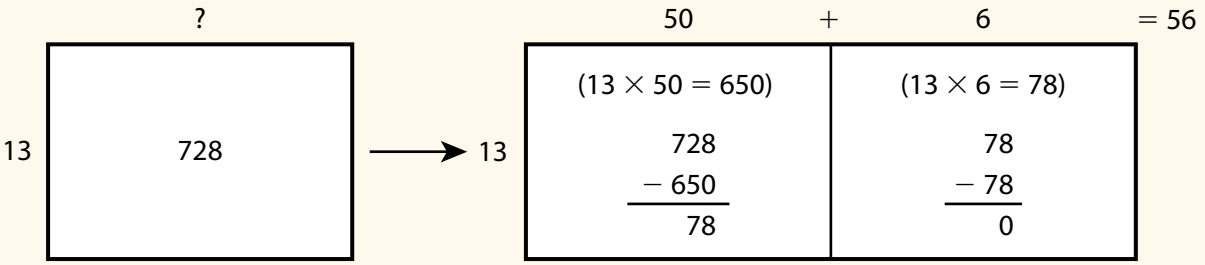
A donut shop sells donuts in boxes that each contain 13 donuts.
If 728 donuts were sold in one day, how many boxes of donuts were sold?

Multiply 13 by multiples of 10 to help you estimate the quotient. Make a table.

Number of boxes	10	20	30	40	50	60
Number of donuts	130	260	390	520	650	780

Because 728 is between 650 and 780, the quotient is between 50 and 60.

Use 50 as the first partial quotient in an area model for 728 ÷ 13.



728 ÷ 13 = 56. The donut shop sold 56 boxes of donuts.

1 The area model in the Example shows how to break apart the problem 728 ÷ 13 into parts.

a. What was 13 multiplied by first? .....

b. What equation in the area model shows this? .....

c. Why do you subtract 650 from 728?

d. What is the second partial quotient? .....

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2 The table can be used to estimate the quotient 851 ÷ 37. Which of the following is the best estimate of the quotient?

Multiple of 10	10	20	30	40
37 × Multiple of 10	370	740	1,110	1,480

Ⓐ a number between 30 and 40

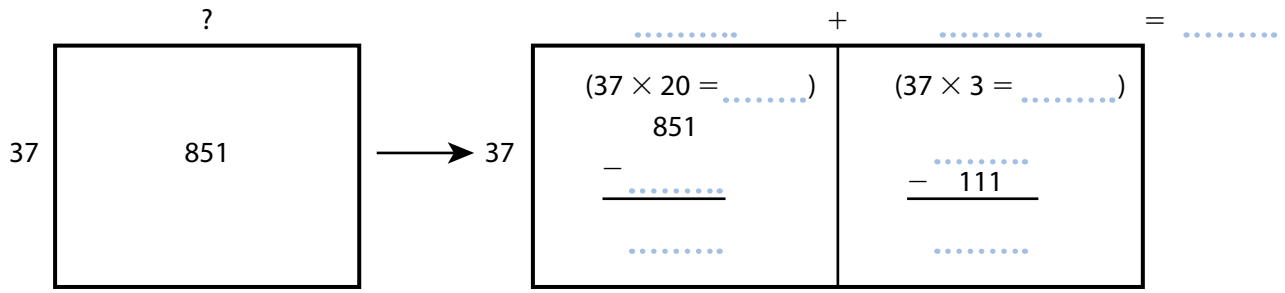
Ⓑ about 15

Ⓒ a number between 20 and 30

Ⓓ about 42

3 Complete the steps for using an area model to find the quotient 851 ÷ 37.

851 ÷ 37 is the same as ..... × ? = ...



851 ÷ 37 = ...

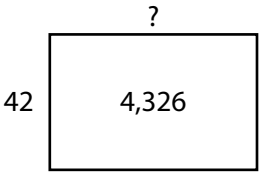
4 Which of the following equations cannot be used to represent the area model?

Ⓐ 42 × ? = 4,326

Ⓑ 42 + 4,326 = ?

Ⓒ 4,326 ÷ ? = 42

Ⓓ 4,326 ÷ 42 = ?



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Develop Using Area Models and Partial Quotients to Divide

Explore different ways to record partial products when dividing multi-digit whole numbers.

A grocery store only sells eggs by the dozen. There are 12 eggs in 1 dozen. If there are 1,248 eggs in stock, how many dozens of eggs are there?

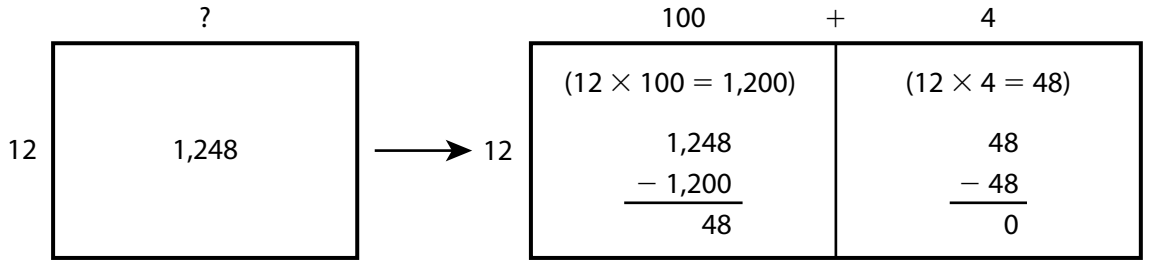
MODEL IT

You can use an area model to record partial quotients.

Estimate to determine the first partial quotient for 1,248 ÷ 12.

1,200 and 12 are compatible numbers close to the dividend and divisor.

12 × 100 = 1,200, so you can use 100 as the first partial quotient in an area model.



MODEL IT

You can use a vertical format to record partial quotients.

```
      4  ←— second partial quotient
    100  ←— first partial quotient
12)1,248  ←— How many groups of 12 in 1,200?
  − 1,200
     48  ←— How many groups of 12 in 48?
    − 48
      0
```

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CONNECT IT

Now you will use the problem from the previous page to help you understand how to record partial products in a vertical format.

1. Look at the second **Model It**. How many hundreds are in the dividend? .....

   How many groups of 12 are in 1,200? .....

   Notice that this first partial quotient is written above the bar.

2. After writing the first partial quotient above the bar, you write the number 1,200 under the dividend. What equation in the area model shows where the number 1,200 comes from? .....

3. Why is 1,200 subtracted from 1,248?

4. How does the area model relate to finding the second partial quotient?

5. Explain how to use the partial quotients to find 1,248 ÷ 12. How many dozens of eggs does the grocery store have?

6. Describe how to divide using partial quotients.

7. ### REFLECT

   Look back at your **Try It**, strategies by classmates, and **Model Its**. Which models or strategies do you like best for recording partial products? Explain.

   .....

   .....

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APPLY IT

Use what you just learned to solve these problems.

8 What is the quotient 583 ÷ 11? Show your work.

Solution

9 Carlos has 1,134 pennies. He puts an equal number of pennies into 27 different glass jars. How many pennies are in each jar? Show your work.

Solution

10 Which of the following pairs of numbers are partial quotients for 594 ÷ 18?

Ⓐ 50 and 5

Ⓑ 40 and 4

Ⓒ 30 and 3

Ⓓ 20 and 15

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Practice Using Area Models and Partial Quotients to Divide

Study the Example showing division with a two-digit divisor using partial quotients. Then solve problems 1–5.

EXAMPLE

Find 1,386 ÷ 22.

To divide using partial quotients, estimate a number that can be multiplied by the divisor to get a product less than or equal to the dividend. Then subtract the product from the dividend. Repeat these steps until you reach a number less than the divisor.

```
      3
     60
22)1,386  →  How many groups of 20 in 1,200? 60
 − 1,320  →  22 × 60
     66   →  How many groups of 22 in 66? 3
   − 66   →  22 × 3
      0
```

1,386 ÷ 22 = 63

1 Look at the Example. For the first step, Jaime thought: *How many groups of 20 in 1,400? There are 70*. If he continues with the division steps, when will he know that his first estimate of 70 is too high?

2 Multiply 14 by multiples of 10 to complete the table.

Multiple of 10	10	20	30	40	50	60
14 × Multiple of 10	140	280			700	

Write a multiple of 10 from the table to show the greatest partial quotient to start with for each division problem below.

a. ☐ 14)462 **b.** ☐ 14)350 **c.** ☐ 14)798 **d.** ☐ 14)588

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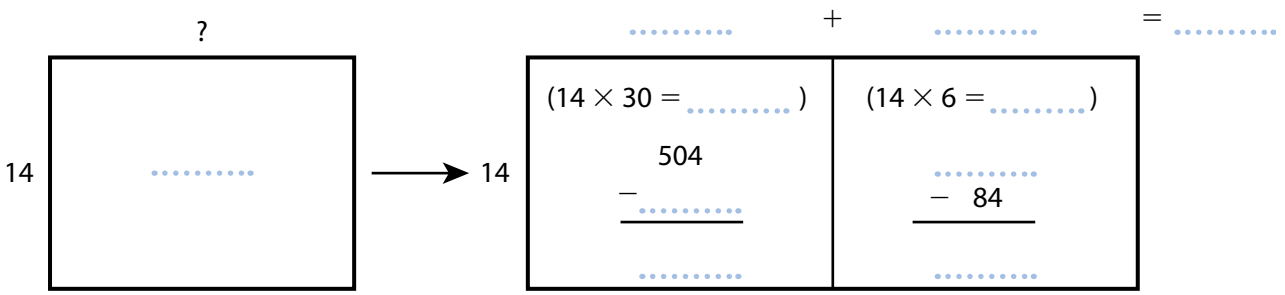
3 Use an area model to find the quotient 504 ÷ 14.



504 ÷ 14 = ...

4 A rectangular box has a volume of 504 cubic inches. The width of the box is 7 inches, and the height of the box is 6 inches. Use the partial quotient method shown in the example to find the length of the box. Show your work.

Solution .....

5 A hunger relief program ships boxes that hold 25 pounds of food. How many boxes will 2,350 pounds of food fill? Show your work.

Solution .....

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Dividing Multi-Digit Numbers

Complete the Example below. Then solve problems 1–8.

EXAMPLE

Each package has 21 pieces of chalk. How many packages can be made with 1,701 pieces of chalk?

Look at how you could show your work using partial quotients.

```
        1
       80
21)1,701
 – 1,680 ←— 21 × 80
       21
     – 21 ←— 21 × 1
        0
```

Solution .....

Why is 80 a good number to use as a first partial quotient?

PAIR/SHARE
How can you use multiplication to check that the quotient is correct?

APPLY IT

1 A water cooler holds 1,284 ounces of water. How many more 6-ounce glasses than 12-ounce glasses can be filled from a full cooler? Show your work.

You can first estimate how many glasses of each size can be filled.

Solution .....

PAIR/SHARE
Explain how you found your estimate.

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2 Each student needs 35 craft sticks for an art project. The art teacher has 7,140 craft sticks. The art teacher starts a division problem to determine how many students can get craft sticks from him. He was interrupted before he could complete the problem.

His partial work is shown below. Fill in the blanks to complete his work. Write your answers in the blanks.

```
        ..... ← quotient
        ..... ← partial quotient
        ..... ← partial quotient
35)7,140
  − 7,000
      140
    − 140
        0
```

What numbers can I use to estimate the quotient?

PAIR/SHARE
Explain how to check the answer to a division problem.

3 Harrison creates balloon animals for different events. He has 6,440 balloons. He wants to use the same number of balloons for each of 28 events. How many balloons can Harrison use at each event?

Ⓐ 23

Ⓑ 203

Ⓒ 230

Ⓓ 2,030

What will be the greatest place in the quotient?

Tina chose Ⓐ as the correct answer. How did she get that answer?

PAIR/SHARE
Does Tina's answer make sense?

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4 Mr. Kovich writes the problem $32 \times \triangle = 1{,}696$ on the board. Write a division equation that can be used to find the value of the triangle. Then find the value of the triangle. Show your work.

Solution

5 Vera makes a table to help her find the area of the base of a rectangular box with a volume of 672 cubic inches and a height of 16 inches.

10	20	30	40	50	60
160	320	480	640	800	960

Choose the correct option to fill in each blank below.

The area of the base is between _____

Ⓐ 20 Ⓑ 30 Ⓒ 40 Ⓓ 60

and _____ square inches.

Ⓐ 30 Ⓑ 40 Ⓒ 50 Ⓓ 60

6 Lisa's camera has 2,048 megabytes of memory for storing pictures. She has already used half this amount. A high-quality picture uses 16 megabytes of memory. How many high-quality pictures can Lisa store with the remaining memory?

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7 Mr. Sullivan is organizing teams for the middle school's annual field day. There are 8 classes at the school and 21 students in each class.

Part A What is the total number of students at the school?

..... students

Part B Mr. Sullivan wants to have 12 students on each team. How many teams will there be?

..... teams

Part C How many fewer students will be on each team if he decides to have 24 teams? Explain your answer using diagrams, pictures, mathematical expressions, and/or words.

..... fewer students

8 MATH JOURNAL

Explain what you would do first to divide 1,260 by 28. Tell why it would be your first step.

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JCPS NTI Grade 5 Reading Packet #3

Grade 5 Reading

Student At-Home Activity Packet

This At-Home Activity Packet is intended for a two-week period, and it includes lessons that your student may complete across more than one day.

Most lessons can be completed independently. However, there are some lessons that may benefit from the support of an adult. If there is not an adult available to help, don't worry! Just skip those lessons. A teacher will be in touch soon and your student can ask for help.

Encourage your student to do the best they can with this content. The most important thing is that they continue to work on their reading!

Flip to see the Grade 5 Reading activities included in this packet!

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Words that Connect Ideas

Introduction

Good writers use words and phrases to connect ideas in sentences and paragraphs. Writers who show these connections make their writing easier to understand. A word or phrase can signal an **addition**, a **cause and effect**, a **comparison**, or a **contrast**.

Connection	Words and Phrases	Examples
Addition	additionally, also, as well as, besides, furthermore, in addition, moreover	Marie Curie, a famous scientist, discovered radium. In addition, she used radium in an X-ray machine to see tissues and bones in the body.
Cause and Effect	as a result, because, consequently, due to, in order that, since	Because of this discovery, Marie saved lives during World War I with a portable X-ray machine.
Comparison	in the same way, likewise, similarly	Similarly, her work helped to fight against cancer.
Contrast	although, but, even so, however, nevertheless, still, yet	Marie' s husband, Pierre, was also a scientist. Although he died young, she continued their research and went on to win a Nobel Prize.

Guided Practice

Complete each sentence by writing a connecting word or phrase that signals the relationship described beneath the blank.

HINT Choose a connecting word that makes the type of connection specified. Use the chart above for examples of connecting words.

1. _____ math, Marie studied physics, which is
   addition
   the science of matter, energy, and motion.

2. Marie moved to France _____ women weren't
   cause and effect
   allowed to go to college in the 1800s in her home country of Poland.

3. Her sister _____ moved to France and studied
   comparison
   to become a doctor.

4. The family was poor and they struggled to pay for school.
   _____, they succeeded.
   contrast

For numbers 1–5, read each sentence. Then choose the connecting word or phrase that best completes it.

1 Marie Curie became a professor _____ a scientist.

Which word or phrase that signals **addition** completes the sentence?

A as well as

B likewise

C although

D still

2 Marie's research changed the way cancer is treated. There's been much progress in cancer research _____.

Which word or phrase that signals **cause and effect** completes the sentence?

A furthermore

B nevertheless

C as a result

D similarly

3 _____ Marie Curie became ill from the radiation, she continued working.

Which word or phrase that signals **contrast** completes the sentence?

A Because

B Although

C Nevertheless

D In addition

4 Working with radium can be dangerous, _____ today we know how to keep people safe.

Which word or phrase that signals **contrast** completes the sentence?

A because

B similarly

C besides

D but

5 Marie's daughter, Irene, also became a scientist and, _____ her mother, she won a Nobel Prize.

Which word or phrase that signals **comparison** completes the sentence?

A consequently

B nevertheless

C like

D as a result

Lesson 13

Comparing Text Structures, Part 2: Cause–Effect, Compare–Contrast

Learning Target

When you compare and contrast how the information in texts is structured, you will better understand the purpose of each text.

How is a house different from a skyscraper? They each have a different structure and purpose. Authors use different **text structures** for specific purposes, too.

- The purpose of a **cause–effect text structure** is to tell about events and explain why they happen. Words and phrases like *cause*, *effect*, *because*, and *as a result* are sometimes used in a cause–effect structure.
- The purpose of a **compare–contrast text structure** is to describe how two or more things are similar and different. A compare–contrast text structure will frequently use words like *both*, *unlike*, *similarly*, and *in contrast*.

Comparing texts can help you see their structures and purposes.

Read the passages below. Look for evidence of the structure and the purpose of each one.

Passage 1: Octopuses and squids have ink sacks. When threatened, they defend themselves by shooting a thick cloud of dark ink into the water. Because the ink is thick and dark, it hides octopuses and squids from their attackers. As a result, octopuses and squids have time to escape.

Passage 2: Octopuses and squids live in salt water. Both have blue blood, hard beaks, and eight arms lined with suckers. Octopuses live in dens on the sea floor where they hunt for clams, lobsters, and crabs. In contrast, squids live in the open ocean and eat fish and shrimp.

Think What have you learned about text structures? Use the chart below to help you compare and contrast the purposes and text structures of the passages on page 3. Include evidence of the structure of each passage.

Passage	Author's Purpose	Text Structure	Evidence of Structure
1			
2			

WRITE How did each text structure support the author's purpose for writing the passage?

Why Are THE OCEANS Salty?

by Anupa Desai

1 For much of history, it was a mystery why the oceans were salty. Different cultures, assuming that the oceans began as freshwater and only later became salty, came up with their own explanations. The Vikings related a story of a sailor dropping a magical salt grinder to the bottom of the ocean. People in the Philippines told of a giant who carried sacks of salt from island to island but then accidentally dropped them all into the sea. Other cultures had similar stories to explain the cause of the ocean's saltiness.

2 Scientists eventually figured out the truth. The stories were correct in one way: The amount of salt in the ocean has increased over time. Where did all the new salt come from? From the land. Most rocks contain salts, and over millions of years the forces of wind, rain, and ice break down the rocks and release the salts. Rainfall carries the salts to rivers, and the rivers carry the salts into the oceans. As a result, the ocean is salty.

OCEANS AND SEAS

by Richard Green

1 Some people use the words *ocean* and *sea* interchangeably, but these words refer to different things. An ocean is an enormous body of salt water, such as the Pacific or the Atlantic. In contrast, a sea is a smaller body of salt water, such as the Mediterranean Sea between Africa and Europe. Oceans are so large that people view them as surrounding the continents. The opposite is true for seas: They are surrounded by other, larger geographic features. Some seas are entirely encircled by ocean: The Sargasso Sea in the Northern Atlantic is an example of this. Other seas, such as Hudson Bay in Canada, are enclosed on some sides by ocean and other sides by land. Finally, a few seas, such as the Caspian in Asia, are completely landlocked within continents. Despite their differences, however, all seas have two things in common: They are made of salt water, and they are smaller than the oceans.

Close Reader Habits

When you reread the articles, **underline** details that tell what each passage is about, and **circle** words and phrases that suggest the text structure.

Explore **What text structure does the author of each passage mainly use to present information?**

Look for words that show cause and effect or comparison and contrast.

Think

1 Identify the purpose and text structure of each passage. Then tell what evidence helped you figure out the structure.

Passage	Author's Purpose	Text Structure	Evidence of Structure
"Why Are the Oceans Salty?"			
"Oceans and Seas"			

WRITE: **2.** How does each text structure support the author's purpose?

Write **Use the space below to write your answer to the question on page 6 .**

Why Are **THE OCEANS** Salty?

OCEANS AND SEAS

3 **Short Response** Explain how the text structure of each passage supports each author's purpose for writing. Use text evidence to support your response.

HINT Be sure to quote words and phrases from each passage as evidence of its text structure.

Don't forget to check your writing.

Check Your Writing

- ☐ Did you read the prompt carefully?
- ☐ Did you put the prompt in your own words?
- ☐ Did you use the best evidence from the text to support your ideas?
- ☐ Are your ideas clearly organized?
- ☐ Did you write in clear and complete sentences?
- ☐ Did you check your spelling and punctuation?

Read

Genre: Science Article

Read the next two articles on pages 8 and 9. Complete the activities on pages 10, 11, and 12.

TSUNAMIS and HURRICANES

by Tim Brown

1 Both tsunamis (soo NAHM eez) and hurricanes are powerful storms. They flood lands and damage property. Each kind of storm is extremely dangerous.

2 Tsunamis occur mostly in the Pacific Ocean. They form when a large amount of water is displaced, or moved, by an earthquake or another event that disturbs the floor of the ocean. Such a disturbance creates a series of massive waves. This "wave train" may travel up to 500 miles per hour, destroying everything in its path. Luckily, tsunamis are relatively rare. There are only about six every century.

3 In contrast, hurricanes may occur on any coastline. Hurricanes form over warm ocean waters during the hotter months of the year. During a hurricane, heavy rains fall, and strong winds blow with speeds of more than 74 miles per hour. The winds rotate around an "eye," which is the calm center of the storm. In the center, winds are low and skies are clear. On average, a hurricane travels at speeds of only about 15 to 20 miles per hour.

4 Both tsunamis and hurricanes have earned their names. The term *hurricane* comes from a Spanish word for "storm." The term *tsunami* comes from two Japanese words meaning "harbor" and "wave." Since 1979, weather agencies have given men's and women's names to specific hurricanes. In contrast, weather agencies do not normally give names to tsunamis. Regardless of their names or where the words come from, hurricanes and tsunamis alike are fierce storms that most people would rather not experience.

Close Reader Habits

How does Tim Brown structure his information about tsunamis and hurricanes? Reread the article. **Underline** any details that help you understand how Brown organized his information.

Tsunami: A WALL OF WATER

by Yuki Tanaka

1 A tsunami is a series of huge waves. Earthquakes cause many tsunamis. Erupting volcanoes or underwater landslides may also trigger tsunamis. Nearly all tsunamis occur in the Pacific Ocean within the "Ring of Fire."

2 Warning signs tell us when a tsunami is approaching. The first warning sign of an approaching tsunami is called *drawback*. The ocean suddenly recedes, or draws back, and then roars forward violently with a chain of extremely high waves. These surging waves can reach from 30 to 100 feet above sea level. They can crash onto land at speeds of 500 miles per hour, causing damage to buildings and injuring or killing animals and people.

3 There have been many record-breaking tsunamis throughout history. One of the largest tsunamis happened after Krakatoa, a volcano in Indonesia, erupted in 1883. The eruption caused some waves to rise more than 130 feet above sea level. As a result, about 36,000 people drowned.

4 The most deadly tsunami in modern times occurred in the Indian Ocean in 2004. People in India, Thailand, Indonesia, and other parts of Asia were taken by surprise when the tsunami slammed into the coast. This tsunami left millions homeless and killed more than 300,000 people.

5 More recently, a powerful earthquake rocked Japan on March 11, 2011. The earthquake caused 60-foot tsunami waves. This resulted in more than 15,000 deaths and more than 25,000 injuries. It destroyed buildings and damaged a nuclear power station. Although Japan has a good warning system, many Japanese could not escape from the dark wall of surging water.

Close Reader Habits

How does Yuki Tanaka structure her information about tsunamis? Reread the article. **Underline** any details that help you understand how Tanaka organized her information.

Think Use what you learned from reading the science articles on pages 8 and 9 to answer the following questions.

Some science articles tell what happened and why it happened. Others compare and contrast events, ideas, or concepts.

1 The box below gives details on how the articles by Tim Brown and Yuki Tanaka present information.

Details
• Describes how tsunamis and hurricanes are different
• Explains what causes tsunamis
• Explains what causes hurricanes
• Gives examples of what happens when storms reach land
• Explains what caused several tsunamis in the past
• Gives examples of deadly tsunamis

Write details from the list to complete the chart below. Use **each** detail **one** time.

Article by Tim Brown page 8	Article by Yuki Tanaka page 9	Both Articles

2 Select **one** sentence from **each** article that provides the **best** evidence of each article's text structure.

A "Such a disturbance creates a series of massive waves." ("Tsunamis and Hurricanes")

B "In the center, winds are low and skies are clear." ("Tsunamis and Hurricanes")

C "In contrast, weather agencies do not normally give names to tsunamis." ("Tsunamis and Hurricanes")

D "A tsunami is a series of huge waves." ("Tsunami: A Wall of Water")

E "There have been many record-breaking tsunamis throughout history." ("Tsunami: A Wall of Water")

F "This resulted in more than 15,000 deaths and more than 25,000 injuries." ("Tsunami: A Wall of Water")

3 In "Tsunami: A Wall of Water," how is paragraph 3 **different** from the ones that come before and after it?

A It is the first paragraph that describes a specific tsunami.

B It is the last paragraph that explains the causes of tsunamis.

C It is the last paragraph that describes famous tsunamis in history.

D It is the first paragraph that explains how tsunamis damage buildings.

TSUNAMIS and HURRICANES

Tsunami: A WALL OF WATER

4 **Use the chart below to organize your ideas and evidence.**

Passage	Author's Purpose	Text Structure	Evidence of Structure

Write **Use the space below to write your answer to the question on page 11.**

5 **Short Response** Compare and contrast the purpose and text structure of "Tsunamis and Hurricanes" with that of "Tsunami: A Wall of Water." Use details from **each** passage in your response.

HINT Briefly state how the passages are alike. Then discuss how their purposes and structures differ.

Read the two articles on pages 13-15. Complete the activities on pages 16-18.

Read

Genre: Journal Entry

WORDS TO KNOW
As you read, look inside, around, and beyond these words to figure out what they mean.

- **colonies**
- **structure**
- **habitats**

FLORIDA Keys

by Darrell Otis

1 *July 12*. So far, our summer vacation in Key Largo has been great. We went to Pennekamp Coral Reef State Park yesterday, took a tour on a glass-bottom boat, and saw some amazing coral reefs. Did you know that the Florida Keys have the only living coral barrier reef in North America?

2 Our guide told us that the reef is made of coral polyps. These tiny sea animals have soft bodies and live in warm, shallow waters. They form large colonies and are connected to one another. When coral polyps die, they leave behind a hard limestone skeleton. Over time, layers of skeletons build up to form a structure called a reef. A coral reef grows slowly upward from the ocean floor, and it may only grow one inch every year.

3 On top of the reef, there are thousands of living coral polyps. Because coral polyps are animals, they need to eat food. At night, they reach out their tentacles, or long feelers, to catch food that floats by. They also get their food from tiny algae that live inside them. The algae use the sun's energy to produce food.

Check out this close-up photo of a coral polyp! It clearly shows the tentacles (the long feelers) that they use to catch food.

I took this photo while scuba diving in a kelp forest off the coast of California. The bass at the upper left looks pretty cozy—this is his natural habitat, after all.

4 Many types of animals live in the coral reefs in Key Largo. They swim and hide among forty kinds of soft and hard corals. I saw colorful tropical fish, spiny lobsters, and sea urchins. Shrimps and crabs also live on coral reefs.

5 Last year, our family took a trip to California. There, I had a chance to look at kelp forests up close. Both kelp forests and coral reefs are underwater habitats.

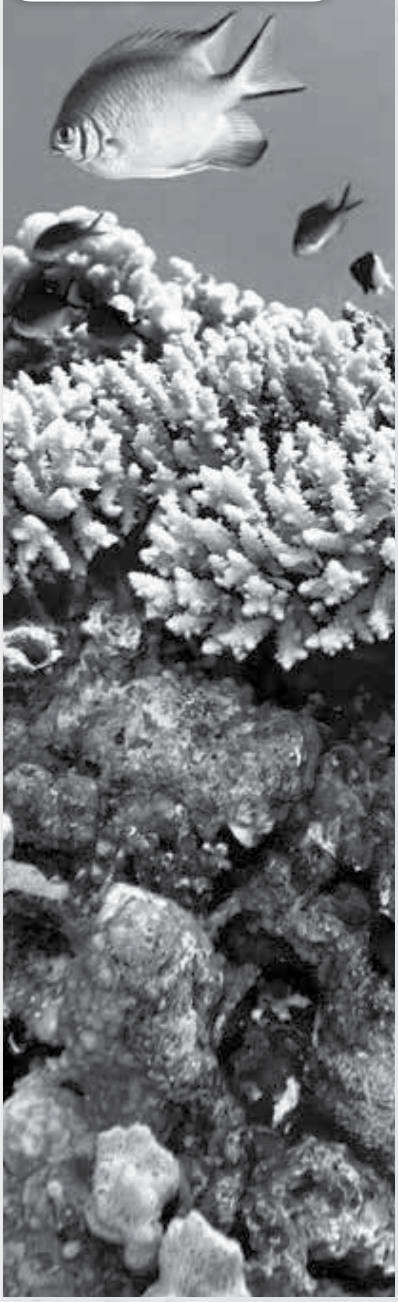
6 Kelp is long, brown algae that lives in cool, shallow waters. Similar to coral polyps, kelp needs sunlight and a hard surface in order to grow. Kelp has three parts: the holdfast, the stipe, and the blade. The holdfast is the part that attaches to the ocean floor; the stipe connects the holdfast to the blade; and the blade is the leafy part that takes in sunlight and converts it to food.

7 Kelp forests form when kelp grows closely in crowded groups. Like coral reefs, kelp forests provide homes for many kinds of sea life, including fish, jellyfish, sea urchins, and otters. These animals can hide in the long, swaying kelp.

8 Kelp can grow two feet a day! At Monterey Bay Aquarium, I saw kelp that grew 28 feet high, but some giant kelp reaches a height of 200 feet. I like going to places where I can learn while having fun.

WORDS TO KNOW
As you read, look inside, around, and beyond these words to figure out what they mean.

- **benefit**
- **fragile**
- **substances**



Keep Coral Reefs Healthy

by Mary Wilford

1 Coral reefs are extremely important. Known as the "rainforests of the sea," they provide homes to millions of different plants and animals. Coral reefs support roughly 25 percent of all the ocean's creatures. Furthermore, they benefit the economy by encouraging tourism and the fishing industry. Also, they provide ingredients to make new medicines. We must try to protect our fragile coral reefs.

2 Coral reefs are made of small animals called coral polyps (PAH lips). Coral polyps are sensitive. They often react to changes in their environment. For example, one change that causes harm to coral reefs is a rise in the water temperature. Usually, corals live in water that is 70°F to 85°F. If the temperature rises by only one or two degrees, coral polyps become stressed. As a result, they will expel, or push out, the tiny plants called algae that live inside their bodies. However, coral polyps need these algae to survive. The algae provide oxygen and food. Without algae, coral polyps cannot get enough food. Therefore, they may starve and die.

3 If algae are expelled, coral polyps change color. They turn chalky white because their brilliant colors came from the algae in their tissues. This process is known as coral bleaching. Bleached coral reefs can sometimes recover. However, a large number of coral polyps may die as a result of bleaching. One of the worst examples of coral bleaching happened in 1998. About 16 percent of the coral reefs around the world were damaged or died.

4 Another threat to coral reefs is pollution. Acid rain, oil spills, and chemical fertilizers cause water pollution. These substances poison coral polyps and other animals that live in coral reefs. Coral polyps can only grow in very clear, clean water with plenty of sunlight. The algae that live in coral polyps use sunlight to make food. But water pollution makes the water cloudy. There is less sunlight, so algae cannot make food for the coral polyps.

5 We can help preserve and protect our precious coral reefs. First, we need to reduce air and water pollution. One way to do this is walk or ride a bike instead of using a car. Another way is to stop littering and dumping harmful chemicals into the ocean. You don't have to live near the ocean to help the coral reefs. Let's start today!

Think

Use what you learned from reading the journal entry and the editorial to answer the following questions.

1 This question has two parts. First, answer Part A. Then answer Part B.

Part A

Which statement **best** describes a major difference between the text structures of "Florida Keys" and "Keep Coral Reefs Healthy"?

A "Florida Keys" tells why it is more important to save the kelp than the coral reefs, while "Keep Coral Reefs Healthy" tells about events in the history of coral reefs.

B "Florida Keys" explains the similarities and differences between coral reefs and kelp, while "Keep Coral Reefs Healthy" tells about causes and effects of damage to coral reefs.

C "Florida Keys" is a personal account of seeing life in the ocean, while "Keep Coral Reefs Healthy" compares the different types of damage that pollution does to the coral.

D "Florida Keys" presents inspiring reasons for learning more about ocean life, while "Keep Coral Reefs Healthy" presents inspiring reasons for saving the reefs.

Part B

Choose **one** sentence from **each** passage that supports the answer in Part A.

A "Our guide told us that the reef is made of coral polyps." ("Florida Keys")

B "The algae use the sun's energy to produce food." ("Florida Keys")

C "Similar to coral polyps, kelp needs sunlight and a hard surface in order to grow." ("Florida Keys")

D "Coral reefs are extremely important." ("Keep Coral Reefs Healthy")

E "For example, one change that causes harm to coral reefs is a rise in the water temperature." ("Keep Coral Reefs Healthy")

F "Let's start today!" ("Keep Coral Reefs Healthy")

2 The box below gives details about how the journal entry by Darrell Otis and the editorial by Mary Wilford present information.

Details
• Explains how coral grow
• Explains why it is important to take care of ocean life
• Describes what kelp looks like
• Describes the effects of pollution on ocean life
• Describes the topic with emotional language
• Describes the difference between kelp and coral

Write details from the list to complete the chart below. Use **each** detail **one** time.

Journal Entry by Darrell Otis	Editorial by Mary Wilford	Both Passages

3 In paragraph 6 of "Florida Keys," what is the meaning of converts?

A reaches

B attaches

C digests

D changes

Write

4 **Short Response** Identify the text structures of "Florida Keys" and "Keep Coral Reefs Healthy." Describe how each structure helps the author present his or her ideas. Use details from **each** text to support your response.

Learning Target

In this lesson, you compared and contrasted how information in texts is structured. Explain how these skills can help you better understand informational texts you read.