GRADE 4

MATHEMATICS PRACTICE WORKBOOK

2nd TRIMESTER

Academic Year

2024 – 2025

INDEX

Another Look!

When dividing numbers that end in zero, use basic division facts and place value to help divide mentally.

Find 210 ÷ 7.

What is the basic fact?

21 ÷ 7 = 3

21 tens ÷ **7** = 3 tens or 30.

210 ÷ 7 = 30

Find 4,200 ÷ 6.

What is the basic fact?

42 ÷ 6 = 7

42 hundreds ÷ **6** = 7 hundreds or 700.

4,200 ÷ 6 = 700

Leveled Practice For **1–20**, use basic facts, patterns, or mental math to divide.

1. 25 ÷ 5 = _____

250 ÷ 5 = _____

2,500 ÷ 5 = _____

2. 14 ÷ 2 = _____

140 ÷ 2 = _____

1,400 ÷ 2 = _____

3. 30 ÷ 5 = _____

300 ÷ 5 = _____

3,000 ÷ 5 = _____

4. 16 ÷ 4 = _____

160 ÷ 4 = _____

1,600 ÷ 4 = _____

5. 120 ÷ 6

6. 720 ÷ 9

7. 200 ÷ 4

8. 2,800 ÷ 7

9. 5,000 ÷ 5

10. 240 ÷ 8

11. 3,600 ÷ 4

12. 1,600 ÷ 2

13. 4,200 ÷ 7

14. 640 ÷ 8

15. 2,000 ÷ 5

16. 320 ÷ 8

17. 810 ÷ 9

18. 270 ÷ 3

19. 1,200 ÷ 2

20. 300 ÷ 6

21. Barry charged $4 for each copy of *Return of the Dinosaurs*. How many copies did Barry sell?

22. Barry charged $9 for each copy of *America's National Parks*. How many copies did Barry sell?

23. Barry charged $7 for each copy of *Musa the Great*. How many copies did Barry sell?

Barry's Best Sellers
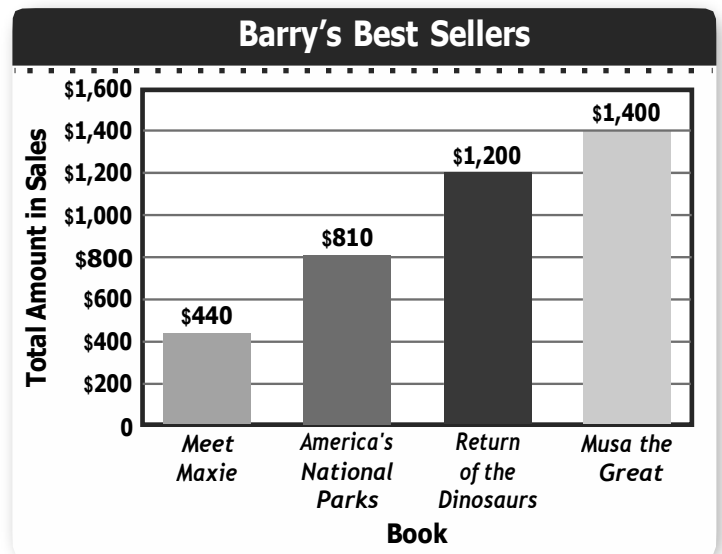
24. Construct Arguments Explain why the following quotient is incorrect: $1,000 \div 5 = 2,000$.

25. Higher Order Thinking The band boosters collected $2,400 from the sale of hamburgers and hot dogs. The amounts earned from hamburgers and hot dogs were equal. A hamburger sold for $3, and a hot dog sold for $2. How many of each were sold?

✓ **Assessment Practice**

26. Select all the expressions that are equal to 30.

☐ $180 \div 6$

☐ $1,800 \div 3$

☐ $210 \div 7$ `

☐ $120 \div 4$

☐ $240 \div 4$

27. Which division equation is NOT correct?

A $5,600 \div 8 = 700$

B $4,900 \div 7 = 70$

Ⓒ $360 \div 4 = 90$

Ⓓ $4,500 \div 9 = 500$

Name _____

Another Look!

Estimate 460 ÷ 9.

Here are two ways to estimate quotients.

One Way

Use compatible numbers.

What number close to 460 can be easily divided by 9? Try 450.

$450 \div 9 = 50$

460 ÷ 9 is about 50.

Another Way

Use multiplication.

Nine times what number is about 460?

$9 \times 5 = 45$, so $9 \times 50 = 450$.

460 ÷ 9 is about 50.

For **1–20**, estimate each quotient. Show your work.

1. 165 ÷ 4

2. 35 ÷ 4

3. 715 ÷ 9

4. 490 ÷ 8

5. 512 ÷ 5

6. 652 ÷ 8

7. 790 ÷ 9

8. 200 ÷ 7

9. 311 ÷ 6

10. 162 ÷ 2

11. 418 ÷ 6

12. 554 ÷ 7

13. 92 ÷ 3

14. 351 ÷ 7

15. 497 ÷ 5

16. 61 ÷ 2

17. 202 ÷ 2

18. 153 ÷ 3

19. 98 ÷ 9

20. 174 ÷ 9

21. Franny has 5 pages left in the album. About how many pictures can she place on each remaining page?

22. Franny plans to spend 4 hours reading. About how many pages would she need to read each hour to finish the book?

23. Franny wants to spend an equal amount of money on the presents for her friends. If she has $62, about how much money can she spend on each present?

Franny's To-Do List

Put 64 pictures in a photo album.

Finish reading 113 pages of a book.

Buy presents for Kate, Wendy, and Tia.

Put shoes on rack.

24. **Model with Math** The veterinarian has seen 47 dogs, 19 cats, 7 exotic birds, and 3 horses this week. Complete the bar diagram and find the total number of animals seen by the veterinarian this week.

a

dogs   cats   birds   horses
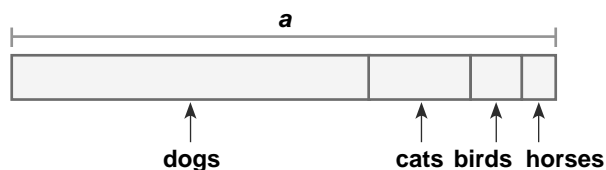
25. Wayne has 303 marbles. If he gives away 123 of the marbles equally to 3 friends, about how many marbles will Wayne give each friend? How many marbles does Wayne have left?

26. **Higher Order Thinking** Tessa wants to separate 187 ears of corn into bags of 6 ears each. She has 35 bags. Estimate to find whether Tessa has enough bags. Explain.

☑ **Assessment Practice**

27. Deon set a goal to ride his bicycle 310 miles in a month. He has biked 145 miles so far. If there are 4 days left in the month, about how many miles should Deon ride each day to reach his goal? Explain.

Name _____

Practice Video Tools Games

Additional
Practice 5-3
Mental Math:
Estimate Quotients
for Greater
Dividends

Another Look!

Estimate 2,946 ÷ 5.

You can use mental math strategies to estimate quotients.

Use rounding.

2,946 rounds to 3,000.

$3,000 \div 5 = 600$

So, 2,946 ÷ 5 is about 600.

Use patterns.

$5 \times 6 = 30$
$5 \times 600 = 3,000$
So, 2,946 ÷ 5 is about 600.

Leveled Practice For **1–18**, estimate each quotient.

1. 1,561 ÷ 8

What is 8×2? _____

What is 8×20? _____

What is 8×200? _____

What is 1,600 ÷ 8? _____

So, 1,561 ÷ 8 is about_____.

2. 2,008 ÷ 7

What is 7×3? _____

What is 7×30? _____

What is 7×300? _____

What is 2,100 ÷ 7? _____

So, 2,008 ÷ 7 is about_____.

3. 461 ÷ 9

4. 2,356 ÷ 6

5. 5,352 ÷ 9

6. 279 ÷ 9

7. 2,449 ÷ 8

8. 3,124 ÷ 6

9. 4,519 ÷ 5

10. 915 ÷ 3

11. 2,120 ÷ 5

12. 423 ÷ 4

13. 3,305 ÷ 7

14. 1,803 ÷ 2

15. 8,167 ÷ 9

16. 1,216 ÷ 6

17. 1,007 ÷ 2

18. 4,170 ÷ 8

19. Bob and Kate are making bracelets to sell at a craft fair. Determine about how many bracelets Bob and Kate can make with each color of bead. Complete the table.

Color	Number of Beads	Beads per Bracelet	Estimated Number of Bracelets
Blue	258	6	
Silver	428	9	
Rose	102	3	
White	258	7	

20. About how many bracelets can they make before they run out of at least one color of bead? Which color of bead will they run out of first?

21. There is a special-rush order for 7 bracelets of each color. How many beads are needed for 7 bracelets of each color?

This table shows how many beads Bob and Kate have of each color. A table helps organize data.

22. **Reasoning** The students who run the school store ordered 1,440 pencils. They are putting them in packages of 6 pencils. About how many packages can they make? Will the exact answer be more or less than the estimate? Explain.

23. **Higher Order Thinking** Find two estimates for 4,396 ÷ 4 by rounding the dividend to the nearest hundred and also to the nearest thousand. Compare the estimates.

✓ **Assessment Practice**

24. Gary's father needs to save $3,705 in 6 months to pay for insurance. Which is the best estimate of the amount he should save each month?

   A   About $700

   B   About $600

   Ⓒ   About $70

   Ⓓ   About $60

25. The local school district has 1,795 elementary students. They want to put the same number of students in each of 5 schools. Which is the best estimate of the number of students they should put in each school?

   A   About 200

   B   About 300

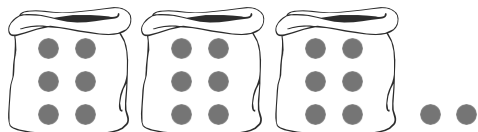   Ⓒ   About 2,000

   Ⓓ   About 3,000

Another Look!

Jamal has 20 marbles to put into bags. He plans to put 6 marbles in each bag. How many bags will Jamal be able to fill?

Find $20 \div 6$.

The remainder is the number left after the division is complete. Remember, the remainder should be less than the divisor.

Jamal can fill 3 bags with 6 marbles.
There will be 2 marbles left over.

There are 3 ways to interpret a remainder.

The remainder can be ignored.	The remainder can be the answer.	You need to add 1 to the quotient.
How many bags did Jamal fill? 3 bags	*How many marbles are not in the bags?* 2 marbles	*How many bags are needed for all of the marbles to be in bags?* 4 bags

For **1–4**, find the number of equal groups and the number left over.

1. $66 \div 5 =$ _____ with _____ left over

2. $94 \div 6 =$ _____ with _____ left over

3. $29 \div 9 =$ _____ with _____ left over

4. $46 \div 8 =$ _____ with _____ left over

For **5–6**, divide. Then interpret the remainder.

5. 77 apples
3 apples in each bag
$77 \div 3 =$ _____ with _____ left over

How many apples are not in bags? _____

6. 71 cards
5 cards in each box
$71 \div 5 =$ _____ with _____ left over

How many boxes are needed for all the cards? _____

7. Why should the remainder be less than the divisor?

8. There are 25 students in Ms. Morris's class. She wants to divide the class into 3, 4, or 5 equal teams with all students on a team. Which number of teams can Ms. Morris make? Explain.

9. Tammy decorated her art project with 12 different colors of sequins. If she used 15 of each color, how many sequins did Tammy use?

10. **Number Sense** There are 14 girls trying out for volleyball. Each team will have 6 players. How many full teams will be made? How many girls will not make a team?

11. **Model with Math** How many strings are used to make 4 guitars like the ones in the picture? Draw a bar diagram to show how you found your answer.

Tejano musicians use 12-string guitars.
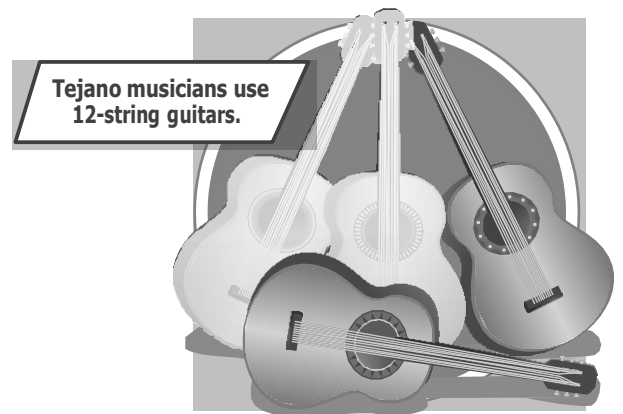
12. There are 26 students in Dante's class. One student is out sick today. The students want to split into teams of six for a game. How many full teams can they make?

13. **Higher Order Thinking** Carl has 98 pictures to put in an album. He can put 8 pictures on each page. How many pictures will Carl put on the last page? Explain.

✓ **Assessment Practice**

14. Jada bought an art kit with 58 colored pencils. She and her 3 sisters will share the pencils equally. How many pencils will each person receive? Will there be any pencils left over? If so, how many?

Practice Video Tools Games

Another Look!

On City Clean-Up Day, 48 people volunteered to clean up the city park. The volunteers worked in groups of 3. How many groups cleaned up the city park?

```
    6 }
   10 } 16
  3)48      Estimate: How many 3s are in 48? Try 10.
  − 30
    18      Estimate: How many 3s are in 18? 6
  − 18
     0
```

You can use partial quotients to divide. 10 and 6 are partial quotients. 16 is the quotient.

16 groups cleaned up the city park.

For **1–12**, use partial quotients to divide.
You may use counters or draw pictures to help.

1. $4\overline{)92}$

2. $2\overline{)36}$

3. $5\overline{)75}$

4. $3\overline{)72}$

5. $6\overline{)78}$

6. $4\overline{)96}$

7. $7\overline{)91}$

8. $3\overline{)99}$
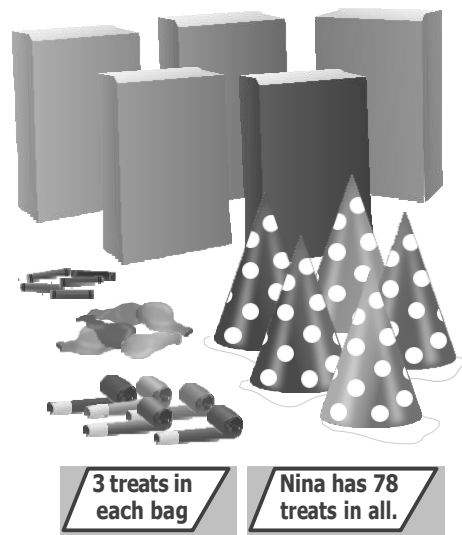
9. $3\overline{)57}$

10. $5\overline{)80}$

11. $4\overline{)68}$

12. $6\overline{)84}$

13. Number Sense For her party, can Nina fill fewer than 10 bags with treats, between 10 and 20 bags, between 20 and 30 bags, or more than 30 bags? Explain.

| 3 treats in each bag | Nina has 78 treats in all. |

14. Model with Math Eight laps of a pool is equal to one mile. Victor swam 96 laps last week. How many miles, m, did Victor swim? Use the bar diagram to write and solve an equation.

96 laps

m miles

8

laps in each mile
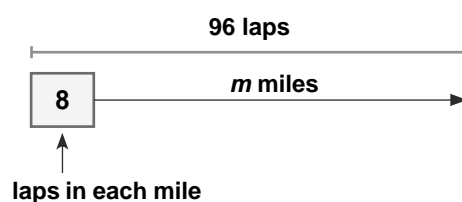
15. Make Sense and Persevere Georgena has 84 pictures she wants to organize in a photo album. How many more pages of the album will be used if Georgena puts 4 pictures on each page than if she puts 6 pictures on each page?

16. Higher Order Thinking Ryan has a total of 85 pennies. Will he be able to give away his pennies equally to 4 of his friends? Explain.

✓ Assessment Practice

17. Select all correct combinations of partial quotients which can be used to find $74 \div 2$.

☐ 10, 10, 10, 2

☐ 20, 10, 7

☐ 30, 2

☐ 30, 7

☐ 30, 10, 7

18. Use the Distributive Property to find $95 \div 5$. Which is the missing number?

$$95 \div 5 = (50 + \square) \div 5$$
$$= (50 \div 5) + (\square \div 5)$$
$$= 10 + 9$$
$$= 19$$

A   5

B   15

Ⓒ   35

Ⓓ   45

Name _____

Practice Video Tools Games

Additional
Practice 5-6
**Use Partial
Quotients to Divide:
Greater Dividends**

Another Look!

A honeybee can travel 2,925 feet in
3 minutes. How many feet would that
be each minute?

```
       5
70 v 975
   900
3⟌2,925
  −2,700
     225
    −210
      15
     −15
       0
```

	900	70	5
3	2,700	210	15

You can estimate and
use partial quotients
to divide.

The honeybee can travel 975 feet each minute.

For **1–16**, use partial quotients to divide.

1. 9⟌126

2. 7⟌474

3. 2⟌179

4. 6⟌237

5. 4⟌3,264

6. 8⟌3,349

7. 3⟌6,334

8. 5⟌8,248

9. 6⟌5,769

10. 3⟌441

11. 7⟌4,999

12. 6⟌4,272

13. 3⟌3,791

14. 9⟌756

15. 5⟌4,271

16. 4⟌1,847

17. Algebra Abigail is planning a 90-meter sack-relay race for field day. Each team member will hop 6 meters. How many members, m, does Abigail need on each team? Write and solve an equation.

18. enVision® STEM The function of a hydroelectric plant is to change the energy from the motion of water into electricity. How long does it take the hydroelectric plant shown to produce 384-kilowatt hours of electricity?
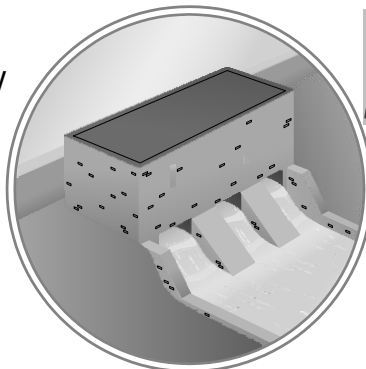
> A hydroelectric plant can produce 8 kilowatt hours of electricity each hour.

19. Critique Reasoning Tell whether Miranda's or Jesse's reasoning is correct. Explain.

Miranda
$6,050 \div 5 = (6,000 + 50) \div 5$
$= (6,000 \div 5) + (50 \div 5)$
$= 1,200 + 10$
$= 1,210$

Jesse
$6,050 \div 5 = (6,000 + 50) \div (3+2)$
$= (6,000 \div 3) + (50 \div 2)$
$= 2,000 + 25$
$= 2,025$

20. Kelli signed up for 38 gymnastics lessons. Each lesson lasts for 2 hours. How many hours of lessons did Kelli sign up for?

21. Higher Order Thinking How could you use the Distributive Property to find $1,484 \div 7$?

22. Select all correct combinations of partial quotients and a remainder which can be used to find $4,306 \div 9$.

- ☐ 300, 100, 60, 2, R8
- ☐ 300, 100, 70, 8 R4
- ☐ 400, 60, 10, 8 R4
- ☐ 400, 60, 2 R 8
- ☐ 400, 70, 8, R4

Name _____

Another Look!

Find 78 ÷ 5.

You can draw pictures to help solve division problems.

First, divide the tens.	Then, unbundle the 2 tens for 20 ones.	Finally, divide the ones.
There is 1 ten in each of the 5 groups.	20 ones and 8 ones are equal to 28 ones.	Each of the 5 groups has 1 ten and 5 ones. There are 3 ones remaining.
78 ÷ 5 = 15 R3		
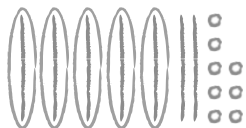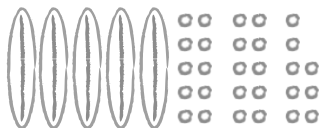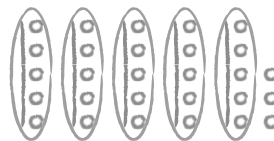
For **1–8**, Use place-value blocks or a drawing to divide. Record remainders.

1. 66 ÷ _____ = _____ R2
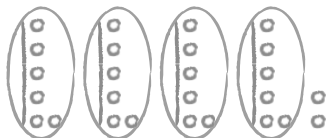
2. 136 ÷ 4 = _____
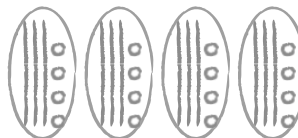
3. 131 ÷ _____ = _____ R1
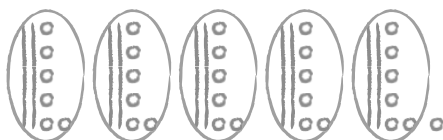
4. 76 ÷ _____ = _____ R _____
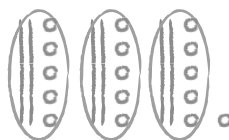
5. 140 ÷ 6

6. 95 ÷ 2

7. 96 ÷ 8

8. 51 ÷ 2

9. Marcos has 78 toy cars. He arranges the toy cars into 6 equal groups. How many toy cars are in each group? Complete the diagram started below to show your work.


Pictures can help you solve problems.
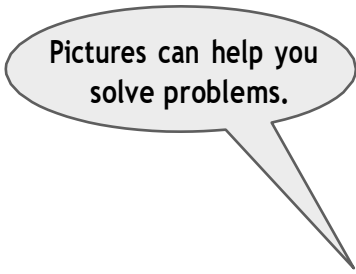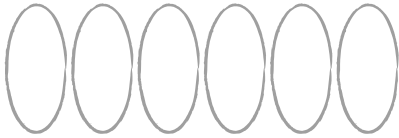
10. Number Sense A family is going on a trip for 3 days. The total cost for the hotel is $336. One hundred dollars a day was budgeted for food. How much will each day of the trip cost?

11. There are 37 chairs and 9 tables in a classroom. Mrs. Kensington wants to put an equal number of chairs at each table. How many chairs can she put at each table? Will there be any chairs left over?

12. Higher Order Thinking Mrs. Dryson divided her collection of 52 glass bears into equal groups. She had 1 bear left over. How many groups did Mrs. Dryson make? How many bears are in each group?

13. Ben has 165 pictures from his summer trip to Austria. He put 6 pictures on each page of a photo album. How many pages of the album did Ben fill? How many pages did Ben use?

14. Adrian used the drawing shown to solve a division sentence. What is the division sentence? Explain.
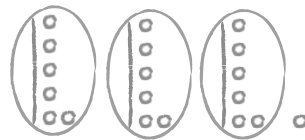
15. What is $59 \div 4$?

   A   5 R4

   B   6 R1

   Ⓒ   14 R3

   Ⓓ   7 R2

16. What is the missing divisor?
$966 \div n = 161$

   A   5

   B   6

   Ⓒ   7

   Ⓓ   8

Name _____

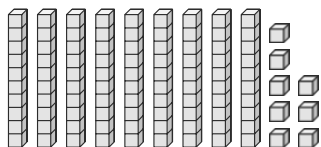Practice · Video · Tools · Games

Additional Practice 5-8
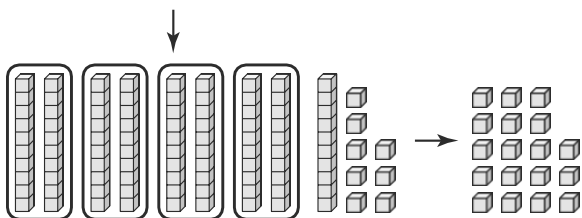**Continue Sharing to Divide**

Another Look!

Find $98 \div 4$.

Estimate: $100 \div 4 = 25$

Use place-value blocks to help visualize sharing.

Show 98 with tens and ones blocks.

Share 8 of the tens equally in 4 groups. Break the remaining ten into ones. Now you have 18 ones.
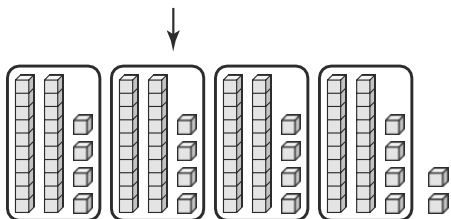
Share the 18 ones equally into the 4 groups. Each group now has 2 tens and 4 ones with 2 ones left over.

$98 \div 4 = 24 \text{ R2}$

24 is close to 25, so the answer is reasonable.

For **1–8**, divide. Use place-value blocks or draw pictures as needed.

1. $4\overline{)334}$

2. $6\overline{)148}$

3. $7\overline{)948}$

4. $4\overline{)179}$

5. $5\overline{)125}$

6. $8\overline{)418}$

7. $2\overline{)587}$

8. $8\overline{)747}$

9. Reasoning Using hundreds, tens, and ones, what are three different ways the number 352 can be represented other than the way shown at the right?

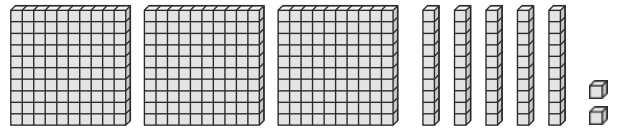**10.** A toy store received a shipment of 17 cases of teddy bears. Use compatible numbers to estimate the total number of teddy bears in the shipment.
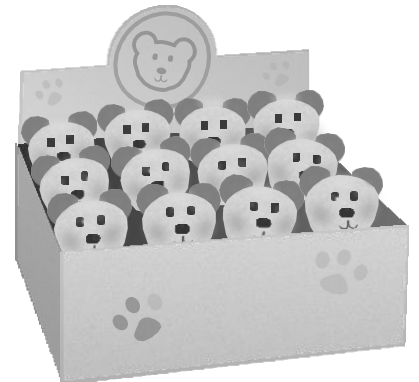
11. How many bears are in the shipment?

12 bears per case

12. Algebra What is the unknown number in the equation?

$$5 \times n = 3,000$$

13. Higher Order Thinking Tammy invited 144 guests to her wedding. Tammy is renting tables that seat 8 guests at each table. If each table costs $5 to rent, how much will Tammy spend to rent the tables?

14. Find 72 ÷ 6.

   A   9

   B   11

   Ⓒ   12

   Ⓓ   24

15. What is the remainder for the problem below?

$$83 \div 6 = 13 \text{ R?}$$

   A   4

   B   5

   Ⓒ   3

   Ⓓ   0

Name _____

Another Look!
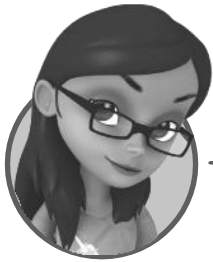
You can use different strategies to divide.

Find 617 ÷ 5.

You can use partial quotients.

```
        3
      20 v 123
      100
   5⌐617
   − 500
     117
   − 100
      17
   − 15
       2
```

617 ÷ 5 = 123 R2

Find 85 ÷ 3.

You can use place-value blocks or drawings.
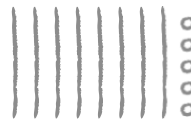
Think: 8 tens divided into 3 equal groups. Trade the extra 2 tens for 20 ones. The 2 tens and 5 ones make 25 ones.

There are 8 ones in each group and 1 one left over.

```
     28
   3⌐85
   − 60
     25
   − 24
      1
```

85 ÷ 3 = 28 R1
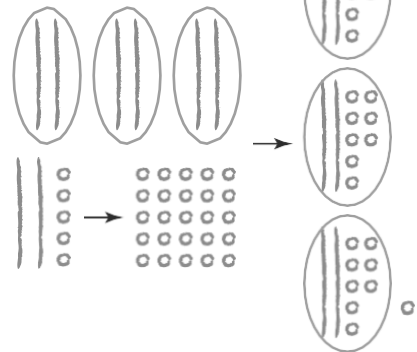
For **1–9**, divide.

1. 318 ÷ 7

2. 4,826 ÷ 5

3. 375 ÷ 7

4. 8⌐437

5. 9⌐7,192

6. 6⌐2,750

7. 4⌐6,208

8. 7⌐202

9. 5⌐9,490

10. enVision® STEM Sound travels in waves. In dry air at 20° Celsius, sound travels about 343 meters in one second. How many meters will sound travel in 7 seconds?

11. Construct Arguments Lilly estimated a quotient of 120 and found an actual quotient of 83. What should she do next? Explain.

12. At the airport, there are a total of 1,160 seats in the waiting areas. There are 8 separate, same-size, waiting areas. How many seats are in each waiting area?

1,160 seats

s	s	s	s	s	s	s	s

↑
seats per area
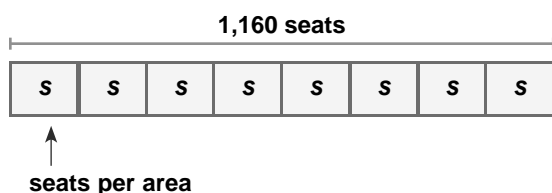
13. A fence around the school football field is 1,666 feet long. Seven teams of students will paint the fence. Each team will paint an equal length of the fence. What length of the fence will each team paint?

14. Higher Order Thinking Mr. Conners put a fence around the outside of his rectangular yard shown at the right. Each section of fence was 8 feet long. How many sections did he use?

330 ft

102 ft   102 ft

330 ft
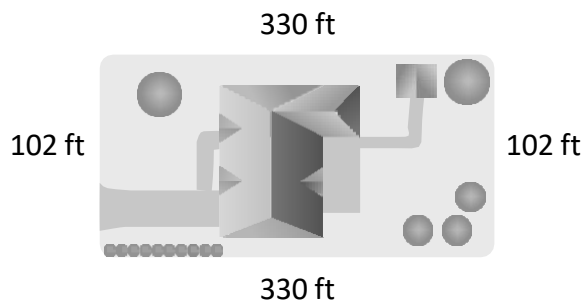
✓ **Assessment Practice**

15. Select all correct equations.

☐ 648 ÷ 9 = 72
☐ 3,616 ÷ 4 = 904
☐ 745 ÷ 3 = 245 R1
☐ 1,279 ÷ 5 = 252 R4
☐ 7,474 ÷ 8 = 934 R2

16. Find 2,075 ÷ 7.

Ⓐ 295
Ⓑ 296 R1
Ⓒ 296 R3
Ⓓ 304 R5

Name _____

Another Look!

Molly is making tissue-paper flowers. She has 240 sheets of pink tissue paper and 260 sheets of yellow tissue paper. How many flowers will Molly be able to make with all her tissue paper?

7 sheets of any color tissue paper to make each flower
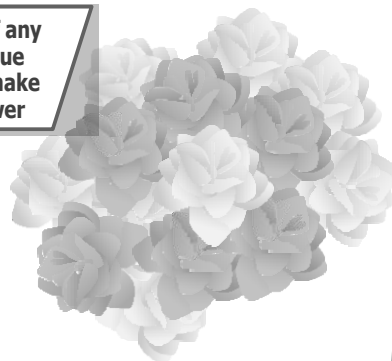
How can you model with math?

• I can use pictures, objects, and equations to show how to solve this problem.

• I can improve my math model if needed.

Find the hidden question and use equations to answer it.

How much tissue paper does Molly have in all?

t, tissue paper	
240	260

$240 + 260 = t$
$t = 500$
Molly has 500 sheets of tissue paper.

Use equations and the answer to the hidden question to answer the original question.

How many flowers, f, will Molly be able to make?

$f = 500 \div 7$.

$f = 71 \text{ R}3$

Molly can make 71 tissue-paper flowers.

Model with Math

A school baseball team raised $810 for new uniforms. Each player on the team sold one book of tickets. There were 10 tickets in a book and each ticket cost $3. How many tickets were sold?

1. What equation can you write and solve to find the cost, b, of each book of tickets sold?

2. Write and solve an equation to find the number of tickets, t, sold. Explain.

3. Write and solve an equation to find the number of players, p, on the baseball team.

Yoga

Yoga classes are offered 2 days a week for 6 weeks at both the community center and the local gym. The cost for the classes at the community center is $72, plus an additional one-time fee of $12 to rent the yoga equipment used in class. The cost at the local gym is $8 a class. Regina wants to know which class she can take for less money.

Yoga Equipment $12
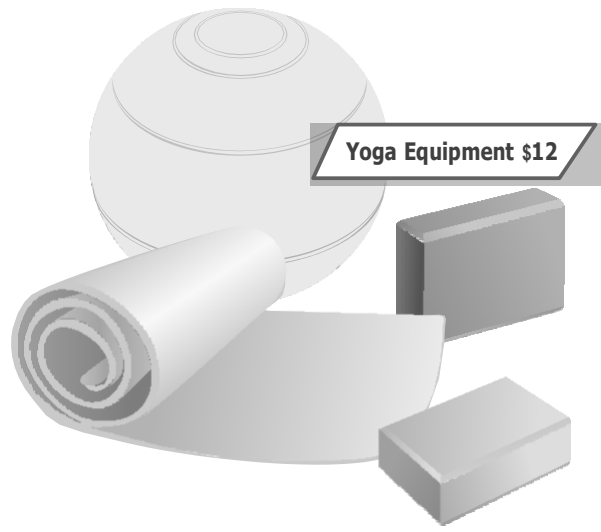
4. **Reasoning** What are the quantities given in the problem, and how are they related?

5. **Make Sense and Persevere** What is a good plan for solving the problem? Explain your strategy.

When you model with math, you use equations to model the problem.

6. **Model with Math** Write and solve equations to find which class Regina can take for less money. Tell what each variable represents.

Name _____

Practice · Video · Tools · Games

Additional
Practice 6-1
Solve Comparison
Problems

Another Look!

Write an equation to represent each comparison problem.
Find the value of the variable that makes the equation true.

Addition

The Bucks practice 13 hours a week.
The Tigers practice h hours, which
is 26 hours a week more than the
Bucks. How many hours a week do
the Tigers practice?

$13 + 26 = h$

$h = 39$ hours

The Tigers practice 39 hours
each week.

Multiplication

The Bucks practice 13 hours a week.
The Cougars practice c hours a week,
which is 2 times as many as the Bucks.
How many hours a week do the
Cougars practice?

$2 \times 13 = c$

$c = 26$ hours

The Cougars practice 26 hours
each week.

For **1–6**, write a comparison sentence.
For **1–4**, find the value of the variable that
makes the sentence true.

You can use *times as
many as* or *more than* to
compare quantities.

1. Jessica cleaned 7 times as many paint
brushes as Mike. Mike cleaned 14 paint
brushes. Let p = the number of paint
brushes Jessica cleaned.

p is _____

$p =$ _____

2. Karin has 461 songs downloaded. Joe has
123 more songs downloaded than Karin.
Let s = the number of songs Joe has
downloaded.

s is _____

$s =$ _____

3. David collected 617 cards. Sam collected
3 times as many cards as David. Let
c = the number of cards Sam has.

c is _____

$c =$ _____

4. Brandon bought 192 balloons. Adam
bought 118 more balloons than Brandon.
Let b = the number of balloons Adam
bought.

b is _____

$b =$ _____

5. Tammy's dad worked 618 hours in half a
year. Louie's mom worked 487 hours in
half a year.

_____

_____

6. Stella saved $81. Her sister saved $9.

_____

_____

7. Algebra Martin has 10 times as many baseball cards as Josie. Josie has 29 more cards than Kal. How many baseball cards does Martin have? Write and solve equations.

8. Matt has 9 times as many cards as Kal. How many cards does Matt have?

Kal has 28 baseball cards.

For **9–10**, use the table at the right.

9. A marching band has 3 times as many trumpet players as tuba players. How many trumpet players, *t*, are there? Write and solve an equation.

	t			
trumpets	16	16	16	3 times as many
tubas	16			

Brass Section	
Trombones	18
French horns	12
Trumpets	*t*
Tubas	16

DATA

10. Higher Order Thinking The percussion section has four times as many musicians as the trombones and French horns combined. How many musicians, *m*, are in the percussion section? Write and solve equations.

✅ **Assessment Practice**

11. Select all the sentences that show a comparison using addition.

☐ *j* is 60 more than 17.

☐ 8 times as many as 50 is *w*.

☐ A watermelon costs $4 more than a bag of apples. A bag of apples costs $5. How much does a watermelon cost?

☐ Sharif has 8 yen in his money collection. He has twice as many pesos. How many pesos does Sharif have?

☐ 12 more than 20 is *j*.

12. Select all the sentences that can be represented by the equation $4 \times 8 = v$.

☐ 8 more than 4 is *v*.

☐ 4 times as many as 8 is *v*.

☐ Linda had 8 violets and Carrie had *v* violets, which was 4 times as many.

☐ Ben takes 8 pictures. Ella takes *v* pictures, which is 4 more.

☐ 4 less than 8 is *v*.

Name _____

Another Look!

Bella bakes 3 batches of homemade dog treats one day and 4 batches the next. Each batch has 24 treats. She sells bags with 6 treats in each. How many bags can she fill?

You usually can solve multi-step problems in more than one way.

One Way

t = the number of treats Bella made
$t = (3 + 4) \times 24$
$t = 168$

b = the number of bags Bella can fill
$b = 168 \div 6$
$b = 28$

Bella can fill 28 bags.

Another Way

b = the number of bags Bella can fill from each batch
$b = 24 \div 6$
$b = 4$

t = the total number of bags Bella can fill
$t = (3 + 4) \times 4$
$t = 28$

Bella can fill 28 bags

For **1–2**, draw bar diagrams, and write equations to solve each problem. Use variables to represent unknown quantities and tell what each variable represents.

1. Four people at Pia's Pottery Shop each make 29 mugs and 18 pottery bowls. Three people at Jason's Craft Shop each make the same number of mugs and twice as many bowls. How many objects did the seven people make in all?

2. The third-grade class collected 148 books to donate to the library. The fourth-grade class collected 175 books. The students need to pack the books into boxes. Each box holds 9 books. How many boxes do they need to hold all the books?

3. Brendan, Zach, and their father have $30 to spend at the county fair. Brendan and Zach qualify for a child's price. How many times can all 3 go on the boat rides? Draw bar diagrams and write one or more equations to show how you solve. Tell what your variables represent.

County Fair		
Kind of Ticket	Adult	Child
Admission	$8	$4
Boat Rides	$2	$1

DATA

4. **Higher Order Thinking** Izzy and Ela both solve the problem below correctly. Explain how each solve.

   How much does it cost for 2 adults and 4 children to go to the fair and take a boat ride?

   Izzy

   $8 + 2 = 10$
   $4 + 1 = 5$
   $C = cost$
   $C = (2 \times 10) + (4 \times 5)$

   $C = \$40$

   It costs $40.

   Ela

   $A = cost\ for\ admission$
   $A = (2 \times 8) + (4 \times 4)$
   $A = \$32$
   $B = cost\ for\ boat\ ride$
   $B = (2 \times 2) + (4 \times 1)$
   $B = \$8$
   $T = the\ total\ cost$
   $T = 32 + 8 = \$40$

☑ **Assessment Practice**

5. Kate's dad gives each of his 5 children an equal part of $340 to buy gifts. Kate adds $28 to her portion. She finds classic DVDs for $8 each. How many DVDs can Kate buy? Explain how you solve. Use one or more equations and bar diagrams in your explanation. Tell what your variables represent.
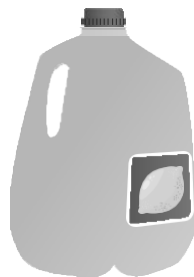
Another Look!

A family brought 20 gallons of lemonade to a community picnic. People drank 98 one-pint servings. How many whole gallons of lemonade did the family have left?

> Use equations to help answer the hidden questions and the original question.

1 gallon = 8 one-pint servings

|		
Find and solve the first hidden question.	Find and solve the second hidden question.	Use the answers to the hidden questions to answer the original question.
Hidden Question: How many one-pint servings did the family bring?	**Hidden Question:** How many one-pint servings of lemonade did the family have left?	**Original Question:** How many whole gallons of lemonade did the family have left?
b = servings brought $b = 20 \times 8$ $b = 160$	s = servings left $160 - 98 = s$ $s = 62$	g = gallons left $62 \div 8 = g$ $g = 7$ R6
The family brought 160 one-pint servings.	The family had 62 one-pint servings left.	The family had 7 whole gallons of lemonade left.

For **1–2**, solve each multi-step problem. Write equations to show how you solve. Use estimation to decide if your answer is reasonable. You may draw bar diagrams to help.

1. Kareem has 216 role-playing game cards. His goal is to collect all 15 sets of cards. There are 72 cards in a set. How many more cards does Kareem need to reach his goal?

2. Nicole has 144 role-playing cards and $9 to buy more cards. She and her friends buy another set that costs $27. They evenly split the cost and the cards in the set. How many cards does Nicole have after she buys part of a set with her friends?

3. Bert has $50 to spend at The Book Nook. He buys 2 magazines. How many $9 books can Bert buy? Write one or more equations to show how you solve. Tell what your variables represent.

THE
BOOK
NOOK

Today's Specials
Magazines
$6 each
Selected books
$9 each
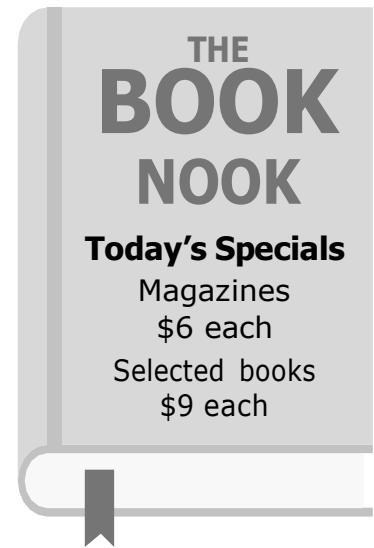
4. Generalize Tina practiced piano for 15 hours last month and 45 hours this month.

a. Use multiplication to write a statement comparing the hours Tina practiced during the two months.

b. Use addition to write a statement comparing the hours Tina practiced during the two months.

5. Higher Order Thinking Jenny washed the dishes 4 times as many times as her brother did last month. Her brother washed dishes 8 times. Jenny said she could multiply 3 times 8 to find how many more times she washed dishes than her brother. Is Jenny correct? Explain.

✓ Assessment Practice

6. Raj collected 17 leaves during the field trip. His goal is to collect 5 times as many leaves. His friend Jackson gave him 19 leaves. How many more leaves does Raj need? Explain how you solve. Use one or more equations in your explanation. Tell what your variables represent.

Another Look!

> A museum director would like to display butterflies and dragonflies in 5 cases with about the same number of insects in each case. How many insects should go in each case?

Identify the hidden questions.

· How many butterflies are there?

· How many insects are there?

Write and solve equations to solve the hidden questions and the main question.

Let b = the number of butterflies.
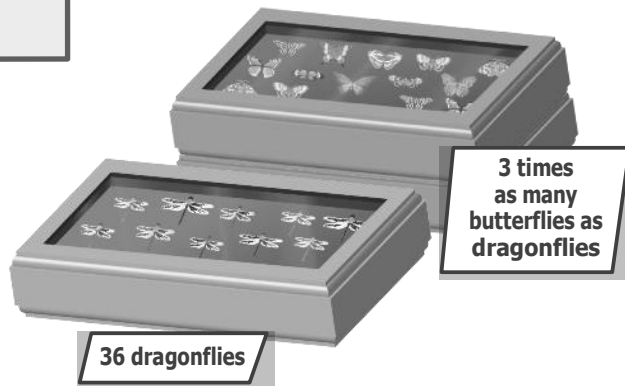
$b = 3 \times 36$, $b = 108$ butterflies.

Let i = the number of insects.

$i = 36 + 108$, $i = 144$ insects

Let c = the number of cases.

$c = 144 \div 5$, $c = 28$ R4

28 insects should go in one display case and 29 insects should go in each of the other 4 cases.

3 times as many butterflies as dragonflies

36 dragonflies

> You can make sense of problems by finding the hidden questions.

Make Sense and Persevere

The diagram shows how many laps three friends swim each week. How can you determine the number of miles Ariel swam?

1. Write the hidden question(s) you need to answer before you answer the original question. Use equations to solve.

MacKenzie: 28 laps

June: 3 times as many laps as MacKenzie

Ariel: 20 more laps than June
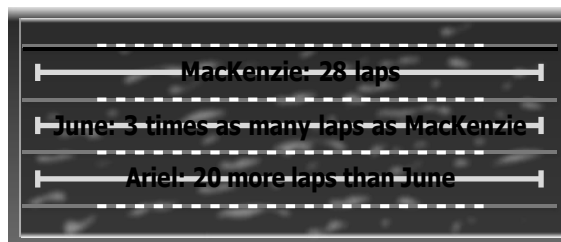
8 laps equal a mile

2. Use your answers to the hidden question(s) and an equation to determine how many miles, m, Ariel swam.

Selling Potatoes

Ms. Sacksteader owns a grocery store. She buys 272 pounds of potatoes for $99. She wants to sell them for twice as much. She makes 9 bags containing 10 pounds each and puts the rest in 5-pound bags. Her family will eat any of the leftover potatoes. Ms. Sacksteader wants to know how many 5-pound bags of potatoes she can sell.
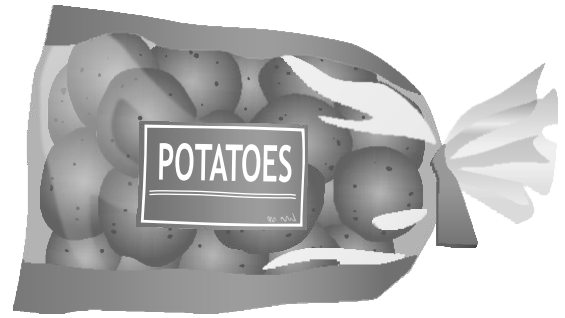
3. Make Sense and Persevere What hidden questions do you need to answer first? Use equations to solve each.

Each 5-pound bag of potatoes sells for $4.

Be sure to tell what each variable represents.

4. Model with Math How many 5-pound bags of potatoes can Ms. Sacksteader sell? Use equations to solve. Explain your answer.

5. Be Precise How much money will Ms. Sacksteader make for the 5-pound bags? Write and solve an equation to show how to solve.

Practice Video Tools Games
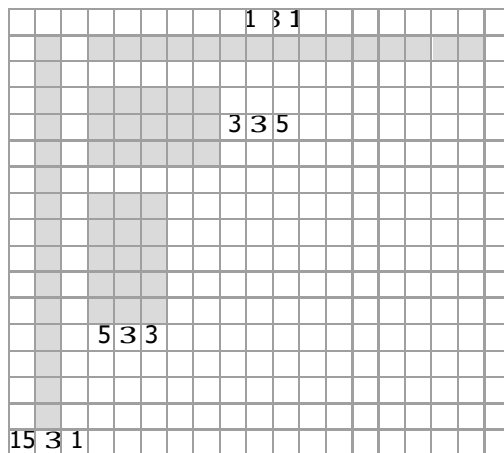
Another Look!

Mark is rearranging 15 desks in his classroom. Use the grid to show all the ways the desks could be arranged in a rectangular array. What are the factor pairs of 15?

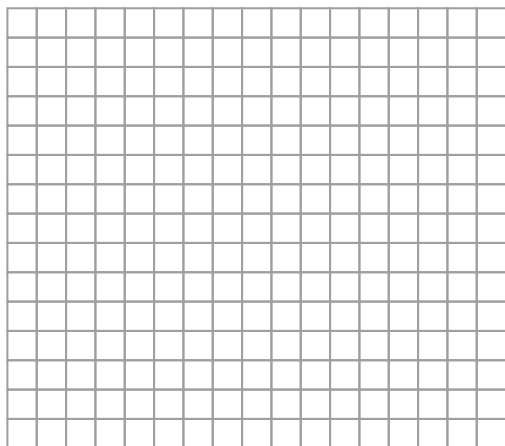A grid can help you find the factors of a number.

1 3 1

3 3 5

5 3 3

15 3 1

Mark can arrange the desks in 4 different ways.

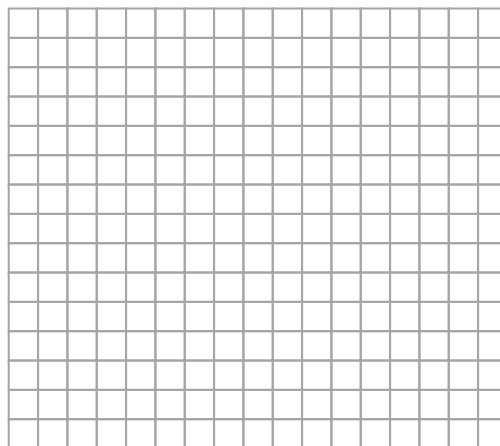The factor pairs of 15 are 1×15 and 3×5.

For **1–2**, find all the possible arrays for each number. Use the arrays to help write the factor pairs.

1. 13

2. 10

For **3–8**, use grids to find the factor pairs for each number.

3. 17

4. 37

5. 42

6. 29

7. 33

8. 48

---

9. **enVision® STEM** Solar panels use the sun's energy to generate power. A town wants to install 28 solar panels in an array. What are all the possible ways the panels could be installed?

10. Use grids to draw all the possible arrays for 5, 7, and 11. What do you notice about the arrays for these numbers?

11. **Critique Reasoning** Rob says all numbers have an even number of factors. Marcia says some numbers have an odd number of factors. Who is correct? Explain.

12. **Higher Order Thinking** Find all the factors of 38, 39, and 40. Do they have any factors in common? Explain how you can tell if some numbers have factors in common without finding the factors.

✓ Assessment Practice

13. Randall has 18 framed photos of African animals that he wants to hang on the family-room wall. What are all the ways Randall can hang the pictures in an array?

Rows	Pictures in Each Row
☐	☐
☐	☐
☐	☐
☐	☐
☐	☐
☐	☐

14. Molly has 20 tomato plants to arrange in her garden. What are all the ways Molly can arrange the tomato plants in an array?
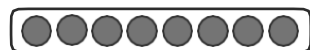
Rows	plants in Each Row
☐	☐
☐	☐
☐	☐
☐	☐
☐	☐
☐	☐

Name _____

Another Look!

Find the factors and factor pairs for 8.

1 group of 8   or   8 groups of 1

⬤⬤⬤⬤⬤⬤⬤⬤
1×8
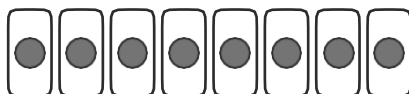
⬤⬤⬤⬤⬤⬤⬤⬤
8×1

When multiplying two numbers, both numbers are factors of the product.

2 groups of 4   or 4 groups of 2

⬤⬤⬤⬤ ⬤⬤⬤⬤
2×4

⬤⬤ ⬤⬤ ⬤⬤ ⬤⬤
4×2

The factor pairs are 1 and 8, 2 and 4.
The factors of 8 are 1, 2, 4, and 8.

For **1–6**, write the factor pairs for each number.

1. 75
   1 and _____
   _____ and 25
   _____ and 15

2. 28
   _____ and 28
   _____ and 14
   4 and _____

3. 46
   _____ and 46
   _____ and 23

4. 47

5. 77

6. 23

For **7–15**, write the factors of each number. Use counters to help as needed.

7. 74

8. 58

9. 44

**10.** 72

11. 57

12. 10

13. 7

14. 60

15. 66

16. Mr. Matthews purchases 22 boxes of pencils for 5 fourth-grade classes. Each box contains 45 pencils. How many pencils will each class receive?

17. Damita wants to read a 257-page book in one week. She plans to read 36 pages each day. Will she reach her goal? Explain.

18. Algebra Crystal has 81 buttons arranged equally in 3 rows. Write and solve an equation to find the number of buttons in each row.

19. Sal has 13 stamps arranged in an array. Describe Sal's array.

20. As part of her science project, Shay is making a model of a wind farm. She wants to put 24 turbines in her model. What arrays can Shay make using 24 turbines?

4 is a factor of 24.
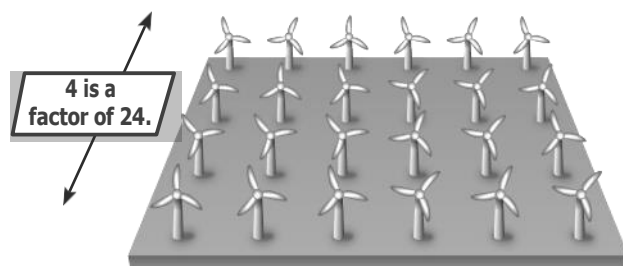
21. Mrs. Fisher has 91 watches on display at her store. She says she can arrange them into rows and columns without any watches left over. Mr. Fisher says she can only make 1 row with all 91 watches. Who is correct? Explain.

22. Higher Order Thinking Mr. Deets is making an array to display 9 pictures. For each pair of different factors, there are two arrays he can make. How many different arrays can Mr. Deets make? Is the number of arrays odd or even? Explain.

✅ **Assessment Practice**

23. Which number is not a factor of both 36 and 84?

    A   2

    B   3

    Ⓒ   5

    Ⓓ   6

24. Dana has some coins. She wants to display them in an array. Which of the following numbers of coins provides only 2 arrays for Dana to choose from?

    A   10

    B   16

    Ⓒ   25

    Ⓓ   29

Practice Video Tools Games

Another Look!

Silvia has 45 cans of paint to put on shelves. Each shelf can hold up to 15 cans of paint. Each row must have the same number of cans on the shelf. How many different ways might Silvia put the cans on the shelves?

Tell how you can generalize to find how many different ways Silvia can put the cans of paint on the shelves.

- I can look for things that repeat in a problem.
- I can look for shortcuts.
- I can generalize from an example.

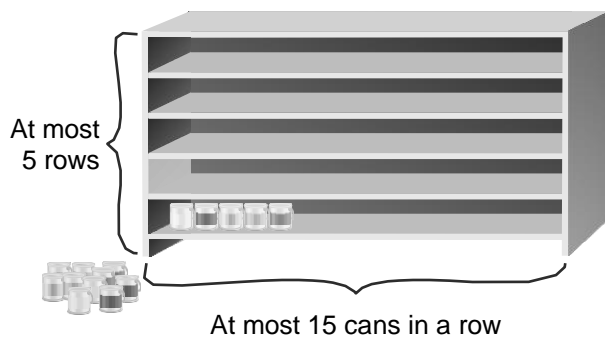**Find the factors of 45.**

$1 \times 45 = 45$ and $45 \times 1 = 45$
$3 \times 15 = 45$ and $15 \times 3 = 45$
$5 \times 9 = 45$ and $9 \times 5 = 45$
2, 4, 6, 7, and 8 are not factors.

The factors of 45 are 1, 3, 5, 9, 15, and 45.

Silvia can put the cans of paint on 5 shelves with 9 cans on each shelf or 3 shelves with 15 cans on each shelf.

At most 5 rows

At most 15 cans in a row

When you generalize, you look for steps that repeat.

Generalize

An auditorium has rows of seats with 8 seats in each row. Kayla knows there are at least 70 seats but fewer than 150 seats in the auditorium. How many rows of seats can there be in the auditorium? Use Exercises 1–3 to answer the question.

1. Explain how you would find the least possible number of rows in the auditorium.

2. How would you find all the possible numbers of rows, without having to check if 8 is a factor of every number between 70 and 150?

3. Name all the possible numbers of rows in the auditorium.

County Fair

At the county fair, animals are judged for the quality of their breeding and health. The animal pens are arranged in an array, with one animal in each pen. A barn can hold at most 10 rows of pens and at most 6 pens in each row, with room for people to walk around them. What different ways can the planners of the county fair arrange the pens for the horses and cows in the same barn?

18 horses

22 cows

57 chickens
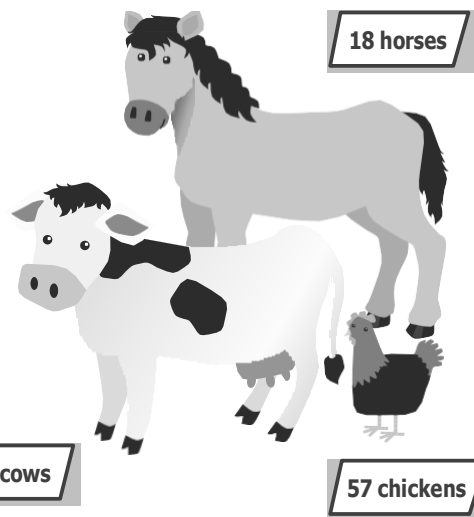
4. Reasoning How do the quantities given in the problem relate to each other?

5. Make Sense and Persevere What steps do you need to do first? Explain.

When you generalize, you find an efficient method for solving a problem, which can be used to solve similar problems.

6. Model with Math What are all the factor pairs for the sum of the horses and cows? Represent the factors with a diagram to show how you found all the factor pairs.

7. Be Precise What are all the different ways the planners can arrange the pens for the horses and cows in the barn?

Practice   Video   Tools   Games

Another Look!

You can look for factors to help you tell whether a number is prime or composite.

Is 15 a prime or a composite number? Find all the factors of 15.

Factors of 15: 1, 3, 5, 15

15 is a composite number because it has more than two factors.

Is 29 a prime or a composite number? Find all the factors of 29.

Factors of 29: 1, 29

29 is a prime number because it only has two factors, 1 and the number itself.

For **1–4**, use or draw arrays to tell whether each number is prime or composite.

1. 7

2. 9

3. 8

4. 4

For **5–16**, tell whether each number is prime or composite.

5. 81

6. 43

7. 72

8. 93

9. 53

10. 87

11. 13

12. 27

13. 88

14. 19

15. 69

16. 79

17. Use Structure Create a list of prime numbers from 1 to 100.

- Write all the numbers from 1 to 100.
- Draw a triangle around 1; it is neither prime nor composite.
- Circle 2 and cross out all other multiples of 2.
- Circle 3 and cross out all other multiples of 3.
- Circle 5 and cross out all other multiples of 5.
- Continue in the same way. The circled numbers are prime.

How many prime numbers are between 1 and 100?

18. Number Sense Are all odd numbers prime numbers? Explain.

19. Some plants have thorns for protection. Ben is a florist and cuts thorns from flowers. On Monday, he cut 267 thorns. On Tuesday, he cut 381 thorns. On Wednesday, he cut 522 thorns. How many thorns did Ben cut?

20. **A-Z Vocabulary** Use *prime* and *composite* to complete the definitions.

A _____ number is a whole number greater than 1 that has more than 2 factors. A _____ number is a whole number greater than 1 that has exactly two factors, 1 and itself.

21. Higher Order Thinking Larry says all numbers that have a 2 in the ones place are composite numbers. Explain if Larry is correct or incorrect.

☑ **Assessment Practice**

22. Which of the following digits might composite numbers greater than 10 have in the ones place? Select all that apply.

☐ 1
☐ 2
☐ 3
☐ 4
☐ 5

23. Which of the following digits might prime numbers greater than 10 have in the ones place? Select all that apply.

☐ 0
☐ 2
☐ 3
☐ 7
☐ 9

Name _____

Another Look!

What are some multiples of 7?

You can use a multiplication chart to find multiples.

Step 1 Find the column (or row) for 7.

Step 2 All the numbers in that column (or row) are multiples of 7.

In the chart, the multiples of 7 are 7, 14, 21, 28, 35, 42, 49, 56, and 63.

7, 14, 21, 28, 35, 42, 49, 56, and 63 are multiples of 7 because $1 \times 7 = 7$, $2 \times 7 = 14$, $3 \times 7 = 21$, and so on.

×	1	2	3	4	5	6	7	8	9
1	1	2	3	4	5	6	7	8	9
2	2	4	6	8	10	12	14	16	18
3	3	6	9	12	15	18	21	24	27
4	4	8	12	16	20	24	28	32	36
5	5	10	15	20	25	30	35	40	45
6	6	12	18	24	30	36	42	48	54
7	7	14	21	28	35	42	49	56	63
8	8	16	24	32	40	48	56	64	72
9	9	18	27	36	45	54	63	72	81

For **1–8**, write five multiples of each number.

1. 12

2. 18

3. 40

4. 16

5. 100

6. 25

7. 50

8. 63

For **9–20**, tell whether the first number is a multiple of the second number.

9. 21, 7

10. 28, 3

11. 17, 3

12. 20, 4

13. 55, 5

14. 15, 5

15. 26, 4

16. 32, 8

17. 48, 7

18. 60, 2

19. 79, 4

20. 81, 3

21. Is 6 a multiple or a factor of 12?

22. Is 8 a multiple or a factor of 4?

23. What number has factors of 2 and 3 and 12 and 18 as multiples?

24. What numbers have 12, 24, and 36 as multiples?

Make a list of the numbers that can be divided evenly by 2 and 3.

Make a list of the numbers that divide evenly into 12, 24, and 36.

For **25** and **26**, use the table at the right.

25. Paulo's family arrived at the reunion at 8:30 A.M. How long do they have before the trip to Scenic Lake Park?

26. How much longer is dinner than the slide show?

Suarez Family Reunion Schedule	
Trip to Scenic Lake Park	10:15 A.M. to 2:30 P.M.
Slide show	4:15 P.M. to 5:10 P.M.
Dinner	5:30 P.M. to 7:00 P.M.
Campfire	7:55 P.M. to 9:30 P.M.

27. Carmen listed the multiples of 24 as 1, 2, 3, 4, 6, 8, 12, and 24. Is she correct? Explain why or why not.

28. **Higher Order Thinking** What is the least multiple 6 and 8 have in common? Explain.

✓ Assessment Practice

29. Which numbers are **NOT** multiples of 6? Write all the numbers that are **NOT** multiples of 6.

1	2	6
18	26	36

NOT Multiples of 6
☐
☐
☐

30. Which multiples do 3 and 5 have in common? Write all the common multiples of 3 and 5.

3	5	15
30	33	35

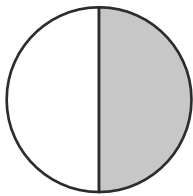| Common Multiples of 3 and 5 |
|---|
| ☐ |
| ☐ |

Name _____

Another Look!

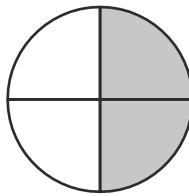Use an area model to find two fractions equivalent to $\frac{1}{2}$.

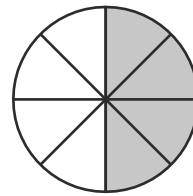**Many fractions are equivalent to $\frac{1}{2}$.**

The circle is divided into 2 equal parts. The shaded part represents $\frac{1}{2}$.

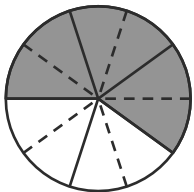Divide the circle into 4 equal parts. The shaded part represents $\frac{2}{4}$.

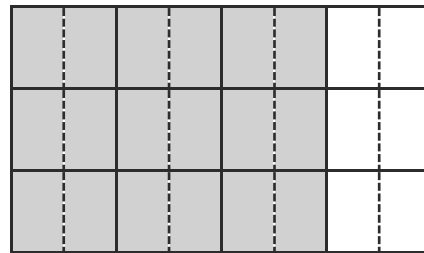Divide the circle into 8 equal parts. The shaded part represents $\frac{4}{8}$.

$\frac{1}{2}$, $\frac{2}{4}$, and $\frac{4}{8}$ are equivalent fractions.

1. Write a fraction equivalent to $\frac{3}{5}$.

2. Write two fractions equivalent to $\frac{9}{12}$.

For **3–10**, draw an area model or use fraction strips to solve each problem.

3. $\frac{3}{5} = \frac{\square}{10}$

4. $\frac{3}{6} = \frac{\square}{12}$

5. $\frac{4}{10} = \frac{\square}{5}$

6. $\frac{3}{4} = \frac{\square}{8}$
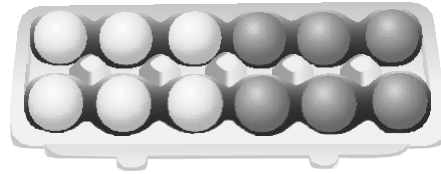
7. $\frac{5}{10} = \frac{1}{\square}$

8. $\frac{4}{6} = \frac{\square}{12}$

9. $\frac{5}{5} = \frac{\square}{10}$

10. $\frac{1}{2} = \frac{6}{\square}$

11. Write two equivalent fractions to describe the portion of the eggs that are dark gray.

For **12–13**, use the table at the right.

12. The results of an election for mayor are shown at the right. Which candidate received the most votes and which received the least votes?

Candidate	Number of Votes
Leonard Hansen	12,409
Margaret O'Connor	12,926
Jillian Garcia	12,904

DATA

**13.** How many people voted for the three candidates?

14. Tell what operations are needed to solve the following problem. Then solve the problem.

The school auditorium has 22 rows with 28 seats each. At a school concert, 19 seats were empty. How many seats were filled?

15. **Higher Order Thinking** Barbara is tiling her craft room floor with square tiles. She wants $\frac{6}{10}$ of the square tiles to be red. If she uses 18 red tiles, how many square tiles will be used to cover the floor? Draw an area model to help solve.
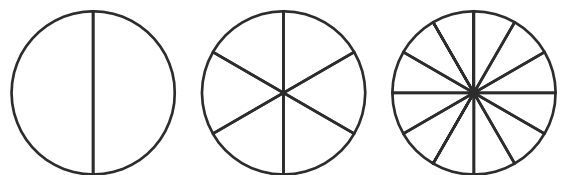
☑ **Assessment Practice**

16. Select all the fractions that are equivalent to $\frac{3}{4}$. Use the area models to help.

☐ $\frac{6}{6}$

☐ $\frac{2}{8}$

☐ $\frac{9}{12}$
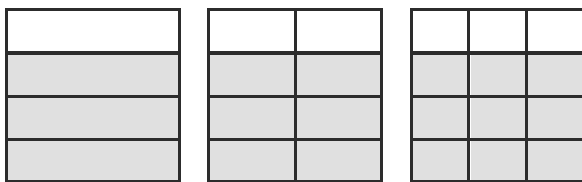
☐ $\frac{8}{1}$

☐ $\frac{}{2}$

17. Select all the pairs that are equivalent fractions. Use the area models to help.

☐ $\frac{1}{6}, \frac{3}{12}$

☐ $\frac{2}{6}, \frac{4}{12}$

☐ $\frac{3}{6}, \frac{1}{2}$

☐ $\frac{1}{}, \frac{6}{}$

☐ $\frac{6}{6}, \frac{12}{12}$

6' 12