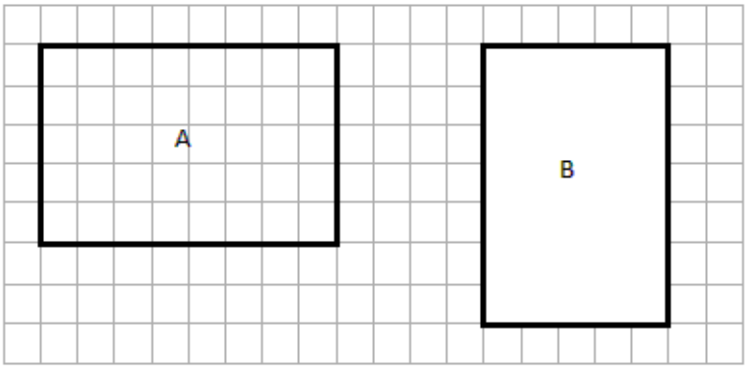
Name _____ Date _____

1. Determine the perimeter and area of rectangles A and B.

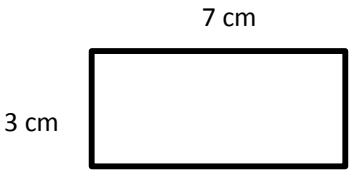


a. A = _____ A = _____

b. P = _____ P = _____

2. Determine the perimeter and area of each rectangle.

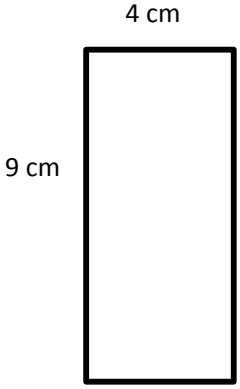
a.



P = _____

A = _____

b.



P = _____

A = _____

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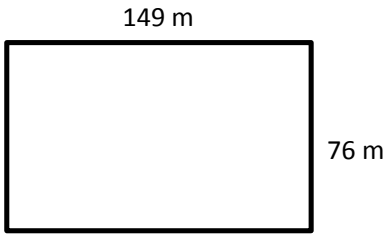
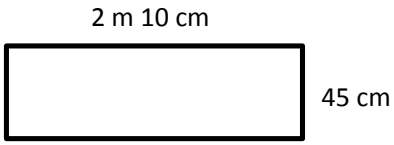
3. Determine the perimeter of each rectangle.

a.



P = _____

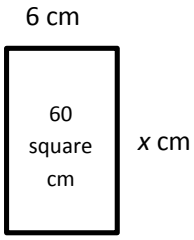
b.



P = _____

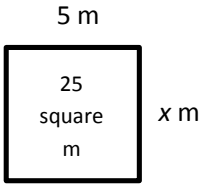
4. Given the rectangle's area, find the unknown side length.

a.



x = _____

b.



x = _____

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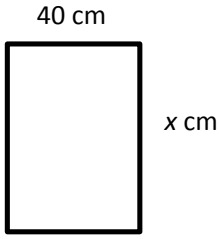
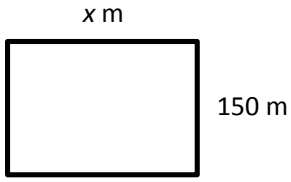
5. Given the rectangle's perimeter, find the unknown side length.

a. P = 180 cm



x = _____

b. P = 1,000 m

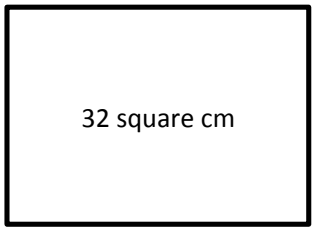


x = _____

6. Each of the following rectangles has whole number side lengths. Given the area and perimeter, find the length and width.

a. A = 32 square cm
P = 24 cm

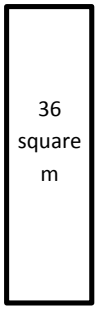
l = _____



w = _____

b. A = 36 square m
P = 30 m

w = _____



l = _____

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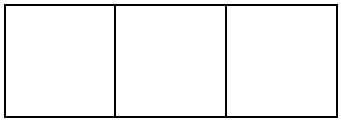
Name _____ Date _____

1. A rectangular pool is 7 feet wide. It is 3 times as long as it is wide.

   a. Label the diagram with the dimensions of the pool.



   b. Find the perimeter of the pool.

2. A poster is 3 inches long. It is 4 times as wide as it is long.

   a. Draw a diagram of the poster, and label its dimensions.

   b. Find the perimeter and area of the poster.

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3. The area of a rectangle is 36 square centimeters, and its length is 9 centimeters.

   a. What is the width of the rectangle?

   b. Elsa wants to draw a second rectangle that is the same length but is 3 times as wide. Draw and label Elsa's second rectangle.

   c. What is the perimeter of Elsa's second rectangle?

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4. The area of Nathan's bedroom rug is 15 square feet. The longer side measures 5 feet. His living room rug is twice as long and twice as wide as the bedroom rug.

   a. Draw and label a diagram of Nathan's bedroom rug. What is its perimeter?

   b. Draw and label a diagram of Nathan's living room rug. What is its perimeter?

   c. What is the relationship between the two perimeters?

   d. Find the area of the living room rug using the formula $A = l \times w$.

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e. The living room rug has an area that is how many times that of the bedroom rug?

f. Compare how the perimeter changed with how the area changed between the two rugs. Explain what you notice using words, pictures, or numbers.

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Name _____ Date _____

Solve the following problems. Use pictures, numbers, or words to show your work.

1. Katie cut out a rectangular piece of wrapping paper that was 2 times as long and 3 times as wide as the box that she was wrapping. The box was 5 inches long and 4 inches wide. What is the perimeter of the wrapping paper that Katie cut?

2. Alexis has a rectangular piece of red paper that is 4 centimeters wide. Its length is twice its width. She glues a rectangular piece of blue paper on top of the red piece measuring 3 centimeters by 7 centimeters. How many square centimeters of red paper will be visible on top?

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3. Brinn's rectangular kitchen has an area of 81 square feet. The kitchen is 9 times as many square feet as Brinn's pantry. If the rectangular pantry is 3 feet wide, what is the length of the pantry?

4. The length of Marshall's rectangular poster is 2 times its width. If the perimeter is 24 inches, what is the area of the poster?

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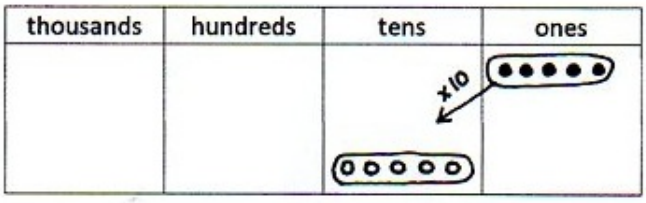
Name _____ Date _____

Example:

5 × 10 = 50

5 ones × 10 = 5 tens



Draw place value disks and arrows as shown to represent each product.

1. 7 × 100 = _____

   7 × 10 × 10 = _____

   7 ones × 100 = _____

thousands	hundreds	tens	ones

2. 7 × 1,000 = _____

   7 × 10 × 10 × 10 = _____

   7 ones × 1,000 = ____

   _____

thousands	hundreds	tens	ones

3. Fill in the blanks in the following equations.

   a. 8 × 10 = _____ b. _____ × 8 = 800 c. 8,000 = _____ × 1,000

   d. 10 × 3 = _____ e. 3 × _____ = 3,000 f. _____ × 3 = 300

   g. 1,000 × 4 = _____ h. _____ = 10 × 4 i. 400 = _____ × 100

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Draw place value disks and arrows to represent each product.

4. 15 × 10 = _____

   (1 ten 5 ones) × 10 = _____

thousands	hundreds	tens	ones

5. 17 × 100 = _____

   17 × 10 × 10 = _____

   (1 ten 7 ones) × 100 = _____

thousands	hundreds	tens	ones

6. 36 × 1,000 = _____

   36 × 10 × 10 × 10 = _____

   (3 tens 6 ones) × 1,000 = _____

ten thousands	thousands	hundreds	tens	ones

Decompose each multiple of 10, 100, or 1000 before multiplying.

7. 2 × 80 = 2 × 8 × _____

   = 16 × _____

   = _____

8. 2 × 400 = 2 × _____ × _____

   = _____ × _____

   = _____

9. 5 × 5,000 = _____ × _____ × _____

   = _____ × _____

   = _____

10. 7 × 6,000 = _____ × _____ × _____

    = _____ × _____

    = _____

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Name _____ Date _____

Draw place value disks to represent the value of the following expressions.

1. 5 × 2 = _____

   5 times _____ ones is _____ ones.

thousands	hundreds	tens	ones

2. 5 × 20 = _____

$$\begin{array}{r} 2 \\ \times \quad 5 \\ \hline \end{array}$$

   5 times _____ tens is _____.

thousands	hundreds	tens	ones

$$\begin{array}{r} 2\,0 \\ \times \quad 5 \\ \hline \end{array}$$

3. 5 × 200 = _____

   5 times _____ is _____.

thousands	hundreds	tens	ones

$$\begin{array}{r} 2\,0\,0 \\ \times \quad 5 \\ \hline \end{array}$$

4. 5 × 2,000 = _____

   ____ times _____ is _____ .

thousands	hundreds	tens	ones

$$\begin{array}{r} 2,0\,0\,0 \\ \times \quad 5 \\ \hline \end{array}$$

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5. Find the product.

a. 20 × 9	b. 6 × 70	c. 7 × 700	d. 3 × 900
e. 9 × 90	f. 40 × 7	g. 600 × 6	h. 8 × 6,000
i. 5 × 70	j. 5 × 80	k. 5 × 200	l. 6,000 × 5

6. At the school cafeteria, each student who orders lunch gets 6 chicken nuggets. The cafeteria staff prepares enough for 300 kids. How many chicken nuggets does the cafeteria staff prepare altogether?

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7. Jaelynn has 30 times as many stickers as her brother. Her brother has 8 stickers. How many stickers does Jaelynn have?

8. The flower shop has 40 times as many flowers in one cooler as Julia has in her bouquet. The cooler has 120 flowers. How many flowers are in Julia's bouquet?

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Name _____ Date _____

Represent the following problem by drawing disks in the place value chart.

1. To solve 30 × 60, think

hundreds	tens	ones

(3 tens × 6) × 10 = _____

30 × (6 × 10) = _____

30 × 60 = _____

2. Draw an area model to represent 30 × 60.

3 tens × 6 tens = _____ _____

3. Draw an area model to represent 20 × 20.

2 tens × 2 tens = _____ _____

20 × 20 = _____

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4. Draw an area model to represent 40 × 60.

4 tens × 6 tens = _____ _____

40 × 60 = _____

Rewrite each equation in unit form and solve.

5. 50 × 20 = _____

5 tens × 2 tens = _____ hundreds

6. 30 × 50 = _____

3 tens × 5 _____ = ____ hundreds

7. 60 × 20 = _____

_____ tens × _____ tens = 12 _____

8. 40 × 70 = _____

____ _____ × ____ _____ = _____ hundreds

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9. There are 60 seconds in a minute and 60 minutes in an hour. How many seconds are in one hour?

10. To print a comic book, 50 pieces of paper are needed. How many pieces of paper are needed to print 40 comic books?

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Name _____ Date _____

1. Represent the following expressions with disks, regrouping as necessary, writing a matching expression, and recording the partial products vertically.

   a. 3 × 24

tens	ones

   b. 3 × 42

hundreds	tens	ones

   c. 4 × 34

hundreds	tens	ones

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2. Represent the following expressions with disks, regrouping as necessary. To the right, record the partial products vertically.

   a. 4 × 27

hundreds	tens	ones

   b. 5 × 42

hundreds	tens	ones

3. Cindy says she found a shortcut for doing multiplication problems. When she multiplies 3 × 24, she says, "3 × 4 is 12 ones, or 1 ten and 2 ones. Then, there's just 2 tens left in 24, so add it up, and you get 3 tens and 2 ones." Do you think Cindy's shortcut works? Explain your thinking in words, and justify your response using a model or partial products.

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Name _____ Date _____

1. Represent the following expressions with disks, regrouping as necessary, writing a matching expression, and recording the partial products vertically as shown below.

   a. 2 × 424

hundreds	tens	ones
●●●●	●●	●●●●

```
    4   2   4
×           2
_____________
                → 2 × ___ ones
                → 2 × ___ _____
+               → ___ × ___ _____
_____________
```

2 × ___ _____ + 2 × ___ _____ + 2 × ___ ones

   b. 3 × 424

hundreds	tens	ones

   c. 4 × 1,424

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2. Represent the following expressions with disks, using either method shown in class, regrouping as necessary. To the right, record the partial products vertically.
   a. 2 × 617

   b. 5 × 642

   c. 3 × 3,034

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3. Every day, Penelope jogs three laps around the playground to keep in shape. The playground is rectangular with a width of 163 m and a length of 320 m.
   a. Find the total amount of meters in one lap.

   b. Determine how many meters Penelope jogs in three laps.

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Name _____ Date _____

1. Solve using each method.

Partial Products	Standard Algorithm
a. 4 6 × 2	4 6 × 2

Partial Products	Standard Algorithm
b. 3 1 5 × 4	3 1 5 × 4

2. Solve using the standard algorithm.

a. 2 3 2 × 4	b. 1 4 2 × 6	c. 3 1 4 × 7
d. 4 4 0 × 3	e. 5 0 7 × 8	f. 3 8 4 × 9

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3. What is the product of 8 and 54?

4. Isabel earned 350 points while she was playing Blasting Robot. Isabel's mom earned 3 times as many points as Isabel. How many points did Isabel's mom earn?

5. To get enough money to go on a field trip, every student in a club has to raise $53 by selling chocolate bars. There are 9 students in the club. How much money does the club need to raise to go on the field trip?

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6. Mr. Meyers wants to order 4 tablets for his classroom. Each tablet costs $329. How much will all four tablets cost?

7. Amaya read 64 pages last week. Amaya's older brother, Rogelio, read twice as many pages in the same amount of time. Their big sister, Elianna, is in high school and read 4 times as many pages as Rogelio did. How many pages did Elianna read last week?

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Name _____ Date _____

1. Solve using the standard algorithm.

a. 3 × 41	b. 9 × 41
c. 7 × 143	d. 7 × 286
e. 4 × 2,048	f. 4 × 4,096
g. 8 × 4,096	h. 4 × 8,192

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2. Robert's family brings six gallons of water for the players on the football team. If one gallon of water contains 128 fluid ounces, how many fluid ounces are in six gallons?

3. It takes 687 Earth days for the planet Mars to revolve around the sun once. How many Earth days does it take Mars to revolve around the sun four times?

4. Tammy buys a 4-gigabyte memory card for her camera. Dijonea buys a memory card with twice as much storage as Tammy's. One gigabyte is 1,024 megabytes. How many megabytes of storage does Dijonea have on her memory card?

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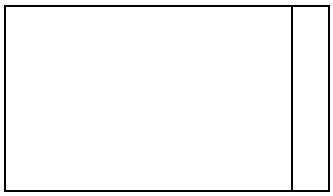
1. Solve the following expressions using the standard algorithm, the partial products method, and the area model.

a. 302 × 8



8 (300 + 2)

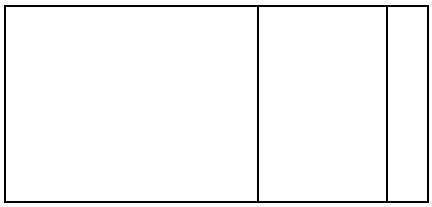
(8 × _____) + (8 × _____)

b. 216 × 5

5 (____ + ____ + ____)

(__ × _____) + (__ × _____) + (__ × ____)

c. 593 × 9



__ (____ + ____ + ____)

(__ × _____) + (__ × _____) + (__ × ____)

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2. Solve using the partial products method.

   On Monday, 475 people visited the museum. On Saturday, there were 4 times as many visitors as there were on Monday. How many people visited the museum on Saturday?

3. Model with a tape diagram and solve.

   6 times as much as 384

Solve using the standard algorithm, the area model, the distributive property, or the partial products method.

4. 6,253 × 3

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5. 7 times as many as 3,073

6. A cafeteria makes 2,516 pounds of white rice and 608 pounds of brown rice every month. After 6 months, how many pounds of rice does the cafeteria make?

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Use the RDW process to solve the following problems.

1. The table shows the number of stickers of various types in Chrissy's new sticker book. Chrissy's six friends each own the same sticker book. How many stickers do Chrissy and her six friends have altogether?

Type of Sticker	Number of Stickers
flowers	32
smiley faces	21
hearts	39

2. The small copier makes 437 copies each day. The large copier makes 4 times as many copies each day. How many copies does the large copier make each week?

3. Jared sold 194 Boy Scout chocolate bars. Matthew sold three times as many as Jared. Gary sold 297 fewer than Matthew. How many bars did Gary sell?

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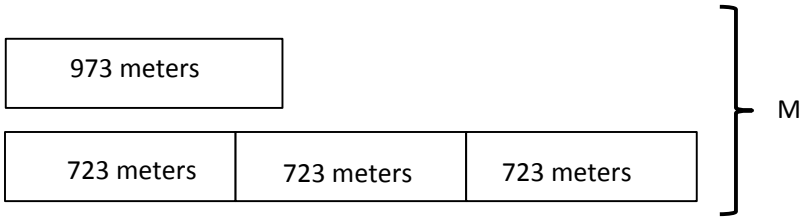
4. a. Write an equation that would allow someone to find the value of M.



b. Write your own word problem to correspond to the tape diagram, and then solve.

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Solve using the RDW process.

1. A pair of jeans costs $89. A jean jacket costs twice as much. What is the total cost of a jean jacket and 4 pairs of jeans?

2. Sarah bought a shirt on sale for $35. The original price of the shirt was 3 times that amount. Sarah also bought a pair of shoes on sale for $28. The original price of the shoes was 5 times that amount. Together, how much money did the shirt and shoes cost before they went on sale?

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3. All 3,000 seats in a theater are being replaced. So far, 5 sections of 136 seats and a sixth section containing 348 seats have been replaced. How many more seats do they still need to replace?

4. Computer Depot sold 762 reams of paper. Paper Palace sold 3 times as much paper as Computer Depot and 143 reams more than Office Supply Central. How many reams of paper were sold by all three stores combined?

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Name _____ Date _____

Use the RDW process to solve the following problems.

1. Linda makes booklets using 2 sheets of paper. She has 17 sheets of paper. How many of these booklets can she make? Will she have any extra paper? How many sheets?

2. Linda uses thread to sew the booklets together. She cuts 6 inches of thread for each booklet. How many booklets can she stitch with 50 inches of thread? Will she have any unused thread after stitching up the booklets? If so, how much?

3. Ms. Rochelle wants to put her 29 students into groups of 6. How many groups of 6 can she make? If she puts any remaining students in a smaller group, how many students will be in that group?

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4. A trainer gives his horse, Caballo, 7 gallons of water every day from a 57-gallon container. How many days will Caballo receive his full portion of water from the container? On which number day will the trainer need to refill the container of water?

5. Meliza has 43 toy soldiers. She lines them up in rows of 5 to fight imaginary zombies. How many of these rows can she make? After making as many rows of 5 as she can, she puts the remaining soldiers in the last row. How many soldiers are in that row?

6. Seventy-eight students are separated into groups of 8 for a field trip. How many groups are there? The remaining students form a smaller group of how many students?

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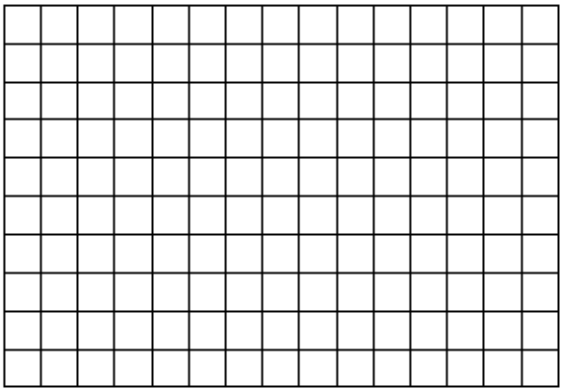
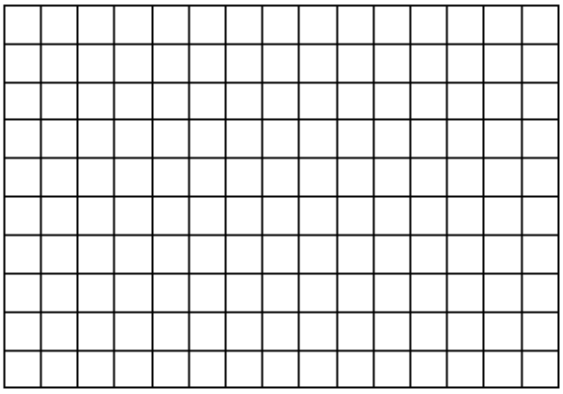
Name _____ Date _____

Show division using an array.	Show division using an area model.
1. 24 ÷ 4 Quotient = _____ Remainder = _____	 Can you show 24 ÷ 4 with one rectangle? _____
2. 25 ÷ 4 Quotient = _____ Remainder = _____	 Can you show 25 ÷ 4 with one rectangle? _____ Explain how you showed the remainder:

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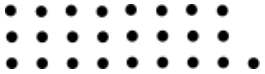
Solve using an array and area model. The first one is done for you.

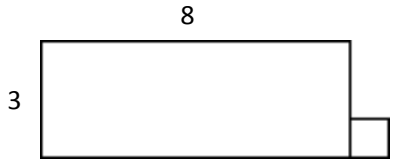
Example: 25 ÷ 3

a.



Quotient = 8 Remainder = 1

b.



3. 44 ÷ 7

a.

b.

4. 34 ÷ 6

a.

b.

5. 37 ÷ 6

a.

b.

6. 46 ÷ 8

a.

b.

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Name _____ Date _____

Show the division using disks. Relate your work on the place value chart to long division. Check your quotient and remainder by using multiplication and addition.

1. 7 ÷ 3

Ones

3 ⟌ 7

quotient = _____

remainder = _____

Check Your Work

2

× 3

2. 67 ÷ 3

Tens	Ones

3 ⟌ 6 7

quotient = _____

remainder = _____

Check Your Work

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3. 5 ÷ 2

Ones

2 ⟌ 5

quotient = _____

remainder = _____

Check Your Work

4. 85 ÷ 2

Tens	Ones

2 ⟌ 8 5

quotient = _____

remainder = _____

Check Your Work

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5. 5 ÷ 4

Ones

4 | 5

quotient = _____

remainder = _____

Check Your Work

6. 85 ÷ 4

Tens	Ones

4 | 8 5

quotient = _____

remainder = _____

Check Your Work

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Name _____ Date _____

Show the division using disks. Relate your model to long division. Check your quotient and remainder by using multiplication and addition.

1. 7 ÷ 2

Ones

2 ⟌ 7

quotient = _____

remainder = _____

Check Your Work

2. 73 ÷ 2

Tens	Ones

2 ⟌ 7 3

quotient = _____

remainder = _____

Check Your Work

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3. 6 ÷ 4

Ones

4 ⟌ 6

quotient = _____

remainder = _____

Check Your Work

4. 62 ÷ 4

Tens	Ones

4 ⟌ 6 2

quotient = _____

remainder = _____

Check Your Work

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5. 8 ÷ 3

Ones

3 ⟌ 8

quotient = _____

remainder = _____

Check Your Work

6. 84 ÷ 3

Tens	Ones

3 ⟌ 8 4

quotient = _____

remainder = _____

Check Your Work

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Name _____ Date _____

Solve using the standard algorithm. Check your quotient and remainder by using multiplication and addition.

1. 84 ÷ 2	2. 84 ÷ 4
3. 48 ÷ 3	4. 80 ÷ 5
5. 79 ÷ 5	6. 91 ÷ 4

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7. 91 ÷ 6	8. 91 ÷ 7
9. 87 ÷ 3	10. 87 ÷ 6
11. 94 ÷ 8	12. 94 ÷ 6

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Name _____ Date _____

1. When you divide 86 by 4, there is a remainder of 2. Model this problem with place value disks. In the place value disk model, how can you see that there is a remainder?

2. Francine says that 86 ÷ 4 is 20 with a remainder of 6. She reasons this is correct because (4 × 20) + 6 = 86. What mistake has Francine made? Explain how she can correct her work.

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3. The place value disk model is showing 67 ÷ 4. Complete the model. Explain what happens to the 2 tens that are remaining in the tens column.

10 10 10 10 10 10	1 1 1 1 1 1 1
10	
10	
10	
10	

4. Two friends share 76 blueberries.

   a. To count the blueberries, they put them into small bowls of 10 blueberries. Draw a picture to show how the blueberries can be shared equally. Will they have to split apart any of the bowls of 10 blueberries when they share them?

   b. Explain how the friends can share the blueberries fairly.

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5. Imagine you are drawing a comic strip showing how to solve the problem 72 ÷ 4 to new fourth graders. Create a script to explain how you can keep dividing after getting a remainder of 3 tens in the first step.

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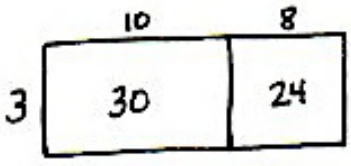
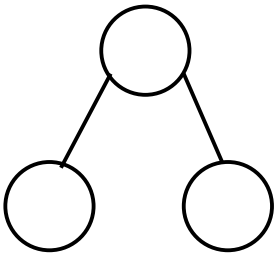
Name _____ Date _____

1. Maria solved a division problem by drawing an area model.

   a. Look at the area model. What division problem did Maria solve?



   b. Show a number bond to represent Maria's area model. Start with the total, and then show how the total is split into two parts. Below the two parts, represent the total length using the distributive property, and then solve.



(___÷___) + (___÷___)

= ____ + ____

= _____

2. Solve 42 ÷ 3 using an area model. Draw a number bond, and use the distributive property to solve for the unknown length.

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3. Solve 60 ÷ 4 using an area model. Draw a number bond to show how you partitioned the area, and represent the division with a written method.

4. Solve 72 ÷ 4 using an area model. Explain, using words, pictures, or numbers, the connection of the distributive property to the area model.

5. Solve 96 ÷ 6 using an area model and the standard algorithm.

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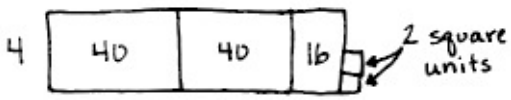
Name _____ Date _____

1. Solve 35 ÷ 2 using an area model. Use long division and the distributive property to record your work.

2. Solve 79 ÷ 3 using an area model. Use long division and the distributive property to record your work.

3. Paulina solved the following division problem by drawing an area model.



   a. What division problem did she solve?

   b. Show how Paulina's model can be represented using the distributive property.

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Solve the following problems using the area model. Support the area model with long division or the distributive property.

4. 42 ÷ 3	5. 43 ÷ 3
6. 52 ÷ 4	7. 54 ÷ 4
8. 61 ÷ 5	9. 73 ÷ 3

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10. Ninety-seven lunch trays were placed equally in 4 stacks. How many lunch trays were in each stack? How many lunch trays will be left over?

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Name _____ Date _____

1. Record the factors of the given numbers as multiplication sentences and as a list in order from least to greatest. Classify each as prime (P) or composite (C). The first problem is done for you.

	Multiplication Sentences	Factors	P or C
a.	8 $1 \times 4 = 8$ $2 \times 4 = 8$	The factors of 8 are: 1, 2, 4, 8	C
b.	10	The factors of 10 are:	
c.	11	The factors of 11 are:	
d.	14	The factors of 14 are:	
e.	17	The factors of 17 are:	
f.	20	The factors of 20 are:	
g.	22	The factors of 22 are:	
h.	23	The factors of 23 are:	
i.	25	The factors of 25 are:	
j.	26	The factors of 26 are:	
k.	27	The factors of 27 are:	
l.	28	The factors of 28 are:	

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2. Find all factors for the following numbers, and classify each number as prime or composite. Explain your classification of each as prime or composite.

Factor Pairs for 19	

Factor Pairs for 21	

Factor Pairs for 24	

3. Bryan says that only even numbers are composite.

   a. List all of the odd numbers less than 20 in numerical order.

   b. Use your list to show that Bryan's claim is false.

4. Julie has 27 grapes to divide evenly among 3 friends. She thinks there will be no leftovers. Use what you know about factor pairs to explain whether or not Julie is correct.

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Name _____ Date _____

1. Explain your thinking or use division to answer the following.

a. Is 2 a factor of 72?	b. Is 2 a factor of 73?
c. Is 3 a factor of 72?	d. Is 2 a factor of 60?
e. Is 6 a factor of 72?	f. Is 4 a factor of 60?
g. Is 5 a factor of 72?	h. Is 8 a factor of 60?

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2. Use the associative property to find more factors of 12 and 30.

a. $12 = 6 \times 2$

$= (___ \times 2) \times 2$

$= ___ \times (2 \times 2)$

$= ___ \times ___$

$= ___$

b. $30 = ____ \times 5$

$= (____ \times 3) \times 5$

$= ____ \times (3 \times 5)$

$= ____ \times 15$

$= ____$

3. In class, we used the associative property to show that when 6 is a factor, then 2 and 3 are factors, because $6 = 2 \times 3$. Use the fact that $10 = 5 \times 2$ to show that 2 and 5 are factors of 70, 80, and 90.

$70 = 10 \times 7$ $80 = 10 \times 8$ $90 = 10 \times 9$

4. The first statement is false. The second statement is true. Explain why, using words, pictures, or numbers.

If a number has 2 and 6 as factors, then it has 12 as a factor.
If a number has 12 as a factor, then both 2 and 6 are factors.

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Name _____ Date _____

1. For each of the following, time yourself for 1 minute. See how many multiples you can write.

   a. Write the multiples of 5 starting from 75.

   b. Write the multiples of 4 starting from 40.

   c. Write the multiples of 6 starting from 24.

2. List the numbers that have 30 as a multiple.

3. Use mental math, division, or the associative property to solve. (Use scratch paper if you like.)

   a. Is 12 a multiple of 3? _____ Is 3 a factor of 12? _____

   b. Is 48 a multiple of 8? _____ Is 48 a factor of 8? _____

   c. Is 56 a multiple of 6? _____ Is 6 a factor of 56? _____

4. Can a prime number be a multiple of any other number except itself? Explain why or why not.

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5. Follow the directions below.

1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30
31	32	33	34	35	36	37	38	39	40
41	42	43	44	45	46	47	48	49	50
51	52	53	54	55	56	57	58	59	60
61	62	63	64	65	66	67	68	69	70
71	72	73	74	75	76	77	78	79	80
81	82	83	84	85	86	87	88	89	90
91	92	93	94	95	96	97	98	99	100

a. Underline the multiples of 6. When a number is a multiple of 6, what are the possible values for the ones digit?

b. Draw a square around the multiples of 4. Look at the multiples of 4 that have an odd number in the tens place. What values do they have in the ones place?

c. Look at the multiples of 4 that have an even number in the tens place. What values do they have in the ones place? Do you think this pattern would continue with multiples of 4 that are larger than 100?

d. Circle the multiples of 9. Choose one. What do you notice about the sum of the digits? Choose another one. What do you notice about the sum of the digits?

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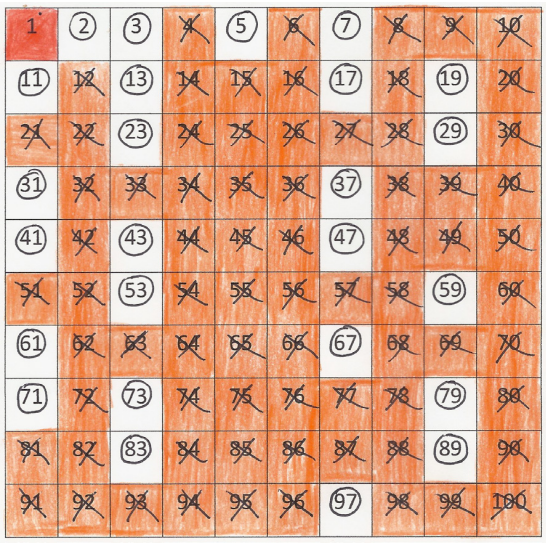
Name _____ Date _____

1. A student used the sieve of Eratosthenes to find all prime numbers less than 100. Create a step-by-step set of directions to show how it was completed. Use the word bank to help guide your thinking as you write the directions. Some words may be used just once, more than once, or not at all.



Word Bank	
composite	cross out
number	shade
circle	X
multiple	prime

Directions for completing the sieve of Eratosthenes activity:

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2. What do all of the numbers that are crossed out have in common?

3. What do all of the circled numbers have in common?

4. There is one number that is neither crossed out nor circled. Why is it treated differently?

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Name _____ Date _____

1. Draw place value disks to represent the following problems. Rewrite each in unit form and solve.

   a. 6 ÷ 3 = _____

   (1)(1) (1)(1) (1)(1)

   6 ones ÷ 3 = _____ones

   b. 60 ÷ 3 = _____

   6 tens ÷ 3 = _____

   c. 600 ÷ 3 = _____

   _____ ÷ 3 =_____

   d. 6,000 ÷ 3 = _____

   _____ ÷ 3 = _____

2. Draw place value disks to represent each problem. Rewrite each in unit form and solve.

   a. 12 ÷ 4 = _____

   12 ones ÷ 4 = _____ones

   b. 120 ÷ 4 = _____

   _____ ÷ 4 = _____

   c. 1,200 ÷ 4 = _____

   _____ ÷ 4 = _____

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3. Solve for the quotient. Rewrite each in unit form.

a. 800 ÷ 4 = 200 8 hundreds ÷ 4 = 2 hundreds	b. 900 ÷ 3 = _____	c. 400 ÷ 2 = _____	d. 300 ÷ 3 = _____
e. 200 ÷ 4 = _____ 20 tens ÷ 4 = ____ tens	f. 160 ÷ 2 = _____	g. 400 ÷ 5 = _____	h. 300 ÷ 5 = _____
i. 1,200 ÷ 3 = _____ 12 hundreds ÷ 3 = ____ hundreds	j. 1,600 ÷ 4 = _____	k. 2,400 ÷ 4 = _____	l. 3,000 ÷ 5 = _____

4. A fleet of 5 fire engines carries a total of 20,000 liters of water. If each truck holds the same amount of water, how many liters of water does each truck carry?

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5. Jamie drank 4 times as much juice as Brodie. Jamie drank 280 milliliters of juice. How much juice did Brodie drink?

6. A diner sold $2,400 worth of French fries in June, which was 4 times as much as was sold in May. How many dollars' worth of French fries were sold at the diner in May?

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Name _____ Date _____

1. Divide. Use place value disks to model each problem.

a. 346 ÷ 2

b. 528 ÷ 2

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c. 516 ÷ 3

d. 729 ÷ 3

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2. Model using place value disks, and record using the algorithm.

a. 648 ÷ 4 Disks Algorithm
b. 755 ÷ 5 Disks Algorithm
c. 964 ÷ 4 Disks Algorithm

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Divide Three-Digit Numbers by 2 (4 minutes)

Materials: (S) Personal white board, thousands place value chart for dividing (Lesson 26 Template)

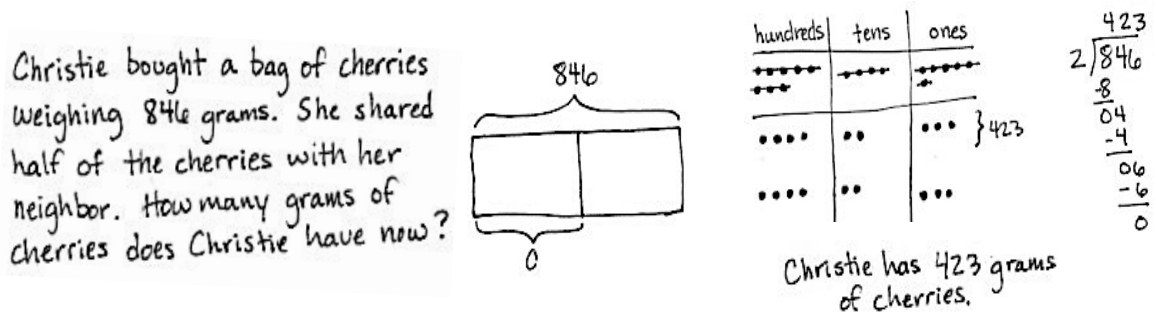
Note: This fluency activity reviews Lesson 27's Concept Development.

T: (Write 546 ÷ 2.) Show 546 ÷ 2 by drawing place value disks in two different groups.
S: (Draw place value disks.)
T: Solve the same problem using the algorithm.
S: (Solve.)

Repeat the process using the following possible sequence: 368 ÷ 2 and 846 ÷ 2.

Application Problem (6 minutes)

Use 846 ÷ 2 to write a word problem. Then, draw an accompanying tape diagram and solve.



Note: This Application Problem connects to Lesson 27's halving discussion in the Student Debrief. It also reinforces the use of inverse operations to check calculations. It uses the division problem from the fluency activity Divide Three-Digit Numbers. Encourage students to revise their word problems to use the word *half*.

Concept Development (30 minutes)

Materials: (T) Thousands place value chart for dividing (Lesson 26 Template) (S) Personal white board, thousands place value chart for dividing (Lesson 26 Template)

Problem 1: 297 ÷ 4

T: (Write 297 ÷ 4.) Set up 297 ÷ 4 in your thousands place value chart, and write the problem to solve using long division.
T: Divide 2 hundreds by 4.
S: There aren't enough hundreds to put them into 4 groups. I need to break them apart.

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T: Correct. 2 hundreds is the same as how many tens?
S: 20 tens.
T: 20 tens plus 9 tens is 29 tens. Divide 29 tens by 4. What is the quotient?
S: 7 tens.
T: Where do we record 7 tens?
S: Above the 9.
T: Why?
S: Because the 9 is in the tens place. It represents the number of tens.
T: Record 7 tens. When we distribute 29 tens into 4 groups, there are 7 tens in each group. Say the multiplication sentence that tells how many of the tens were distributed.
S: 7 tens times 4 equals 28 tens.

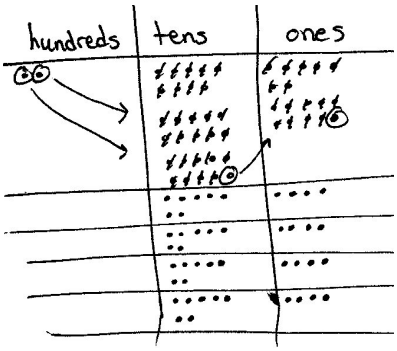
NOTES ON MULTIPLE MEANS OF ENGAGEMENT:

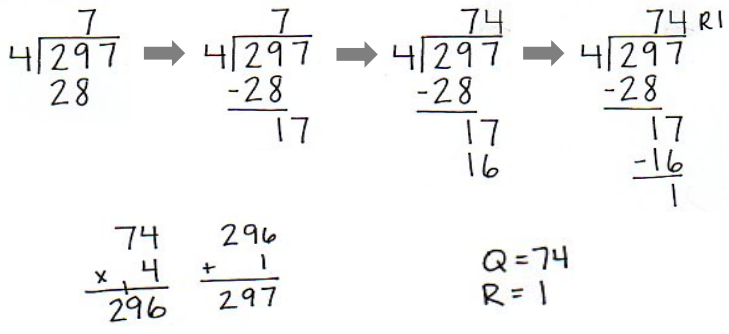
This vignette supports students step by step when using it in combination with Lesson 27. Consider enhancing the experience for learners who have limited executive functioning by guiding students to set appropriate individual goals. Goals may include effort, efficiency, timing, organization, and persistence. In addition, consider adjusting the numbers to challenge students working above grade level or offer alternatives such as developing a game to practice the skill.

As students are reciting the multiplication sentence, point to the 7 tens, then to the divisor, and then record the 28. Be sure students are also recording.

T: We began with 29 tens, but we distributed 28 of them. How many tens are remaining? Say the subtraction sentence that will show that.
S: 29 tens minus 28 tens equals 1 ten.
T: Continue dividing with your partner.

Allow time for students to divide.





T: What is the quotient and the remainder?
S: The quotient is 74 and the remainder is 1.
T: How can we use multiplication and addition to check if our quotient is correct?
S: We can multiply 74 by 4, and then add the remainder 1. If we get 297, then we are correct.
T: Check your quotient using multiplication.
T: What was the new complexity for this division problem?
S: We didn't have enough hundreds to divide, so we decomposed them as tens and divided by tens first.

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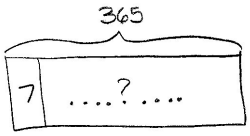
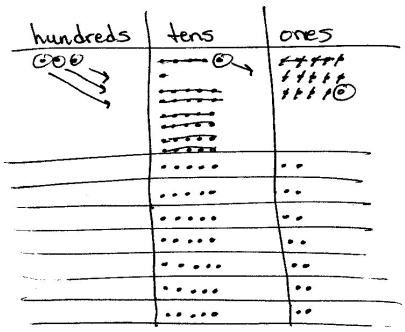
Problem 2

How many weeks are there in one year?

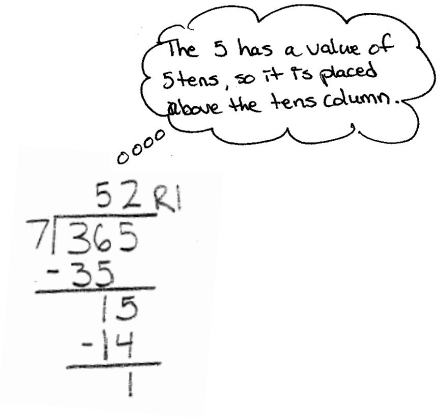


- T: What do we need to know in order to solve this problem?
- S: The number of days in one year.
- T: How many days are in one year?
- S: 365. → Sometimes 366.
- T: Good! Let's use 365 days. What other information is necessary?
- S: There are 7 days in a week.
- T: Okay, use a tape diagram to represent this problem. Show your partner how you set up your tape diagram. Solve and then check your work.



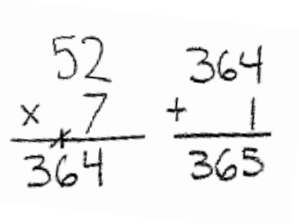
Allow students time to work independently. Circulate and offer assistance as necessary.

- T: Did you find that 365 could be divided by 7 evenly?
- S: No, there was a remainder of 1.
- T: In this problem, what does the remainder mean?
- S: It means that there is one extra day.
- T: Talk to your partner. How did you know it was an extra day?
- S: Our whole, or total, represented the number of days in a year, 365, so our remainder is days. → 365 minus 52 groups of 7 leaves 1 day remaining. → 1 one is one day. 365 ones, or days, is one year.
- T: So, what would be a good sentence to write?
- S: We can say, "There are 52 weeks and 1 day in one year."



Problem Set (10 minutes)

Students should do their personal best to complete the Problem Set within the allotted 10 minutes. For some classes, it may be appropriate to modify the assignment by specifying which problems they work on first. Some problems do not specify a method for solving. Students should solve these problems using the RDW approach used for Application Problems.



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Student Debrief (9 minutes)

Lesson Objective: Represent and solve three-digit dividend division with divisors of 2, 3, 4, and 5 numerically.

The Student Debrief is intended to invite reflection and active processing of the total lesson experience.

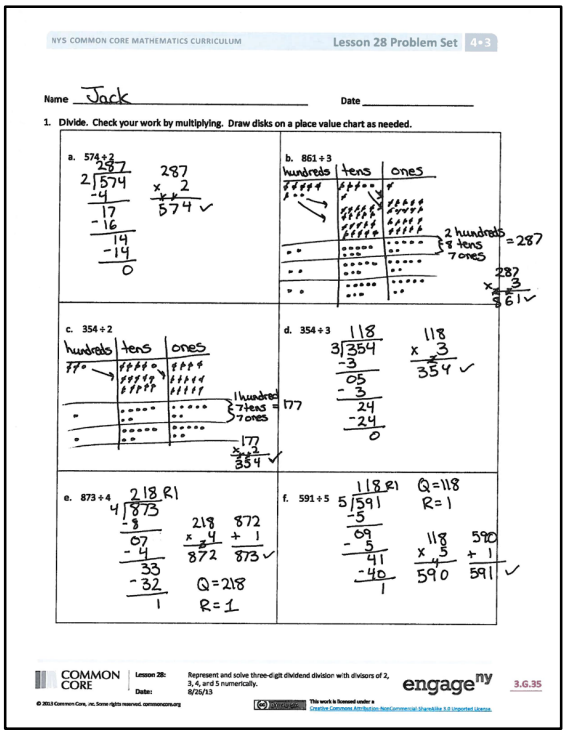
Invite students to review their solutions for the Problem Set. They should check work by comparing answers with a partner before going over answers as a class. Look for misconceptions or misunderstandings that can be addressed in the Debrief. Guide students in a conversation to debrief the Problem Set and process the lesson.

Any combination of the questions below may be used to lead the discussion.

- Look at all of the problems with 4 as a divisor. They all have a remainder of 1, 2, or 3. If you were dividing by 4 and came up with a remainder of 4, 5, or 6, what would you know?
- Problems 1(a) and 1(b) have the same quotient. How can the same quotient come from two different whole amounts? Let's draw a tape diagram for each to show how that could be true.
- Problems 1(c) and 1(d) have the same whole. Which quotient is larger? Why?
- How did the Application Problem connect to today's lesson?

Exit Ticket (3 minutes)

After the Student Debrief, instruct students to complete the Exit Ticket. A review of their work will help with assessing students' understanding of the concepts that were presented in today's lesson and planning more effectively for future lessons. The questions may be read aloud to the students.


NYS COMMON CORE MATHEMATICS CURRICULUM Lesson 28 Problem Set 4•3

Name Jack Date

1. Divide. Check your work by multiplying. Draw disks on a place value chart as needed.

a. 574÷2 = 287

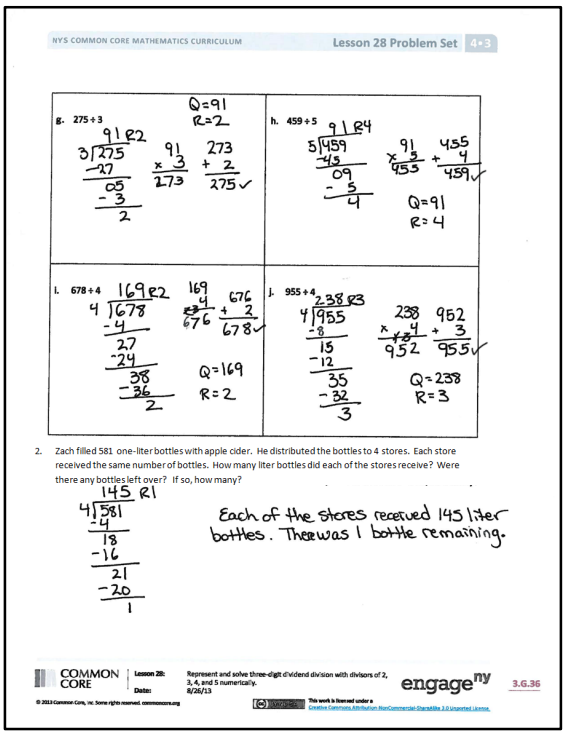
b. 861÷3 = 287

c. 354÷2 = 177

d. 354÷3 = 118

e. 873÷4 = 218 R1

f. 591÷5 = 118 R1, Q=118, R=1


NYS COMMON CORE MATHEMATICS CURRICULUM Lesson 28 Problem Set 4•3

g. 275÷3 = 91 R2, Q=91, R=2

h. 459÷5 = 91 R4, Q=91, R=4

i. 678÷4 = 169 R2, Q=169, R=2

j. 955÷4 = 238 R3, Q=238, R=3

2. Zach filled 581 one-liter bottles with apple cider. He distributed the bottles to 4 stores. Each store received the same number of bottles. How many liter bottles did each of the stores receive? Were there any bottles left over? If so, how many?

145 R1

Each of the stores received 145 liter bottles. There was 1 bottle remaining.

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Name _____ Date _____

1. Divide. Check your work by multiplying. Draw disks on a place value chart as needed.

a. 574 ÷ 2

b. 861 ÷ 3

c. 354 ÷ 2

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d. $354 \div 3$

e. $873 \div 4$

f. $591 \div 5$

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g. 275 ÷ 3

h. 459 ÷ 5

i. 678 ÷ 4

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j. 955 ÷ 4

2. Zach filled 581 one-liter bottles with apple cider. He distributed the bottles to 4 stores. Each store received the same number of bottles. How many liter bottles did each of the stores receive? Were there any bottles left over? If so, how many?

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Name _____ Date _____

1. Divide. Check your work by multiplying. Draw disks on a place value chart as needed.

a. 776 ÷ 2	b. 596 ÷ 3

2. A carton of milk contains 128 ounces. Sara's son drinks 4 ounces of milk at each meal. How many 4-ounce servings will one carton of milk provide?

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Name _____ Date _____

1. Divide. Check your work by multiplying. Draw disks on a place value chart as needed.

a. 378 ÷ 2

b. 795 ÷ 3

c. 512 ÷ 4

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d. 492 ÷ 4

e. 539 ÷ 3

f. 862 ÷ 5

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g. 498 ÷ 3

h. 783 ÷ 5

i. 621 ÷ 4

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j. 531 ÷ 4

2. Selena's dog completed an obstacle course that was 932 meters long. There were 4 parts to the course, all equal in length. How long was 1 part of the course?

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Name _____ Date _____

1. Divide, and then check using multiplication.

a. 2,464 ÷ 4

b. 1,848 ÷ 3

c. 9,426 ÷ 3

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d. 6,587 ÷ 2

e. 5,445 ÷ 3

f. 5,425 ÷ 2

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g. 8,467 ÷ 3

h. 8,456 ÷ 3

i. 4,937 ÷ 4

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j. 6,173 ÷ 5

2. A truck has 4 crates of apples. Each crate has an equal number of apples. Altogether, the truck is carrying 1,728 apples. How many apples are in 3 crates?

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Name _____ Date _____

Divide. Check your solutions by multiplying.

1. 409 ÷ 5

2. 503 ÷ 2

3. 831 ÷ 4

4. 602 ÷ 3

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5. 720 ÷ 3

6. 6,250 ÷ 5

7. 2,060 ÷ 5

8. 9,031 ÷ 2

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9. 6,218 ÷ 4

10. 8,000 ÷ 4

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Name _____ Date _____

Solve the following problems. Draw tape diagrams to help you solve. Identify if the group size or the number of groups is unknown.

1. 500 milliliters of juice was shared equally by 4 children. How many milliliters of juice did each child get?

2. Kelly separated 618 cookies into baggies. Each baggie contained 3 cookies. How many baggies of cookies did Kelly make?

3. Jeff biked the same distance each day for 5 days. If he traveled 350 miles altogether, how many miles did he travel each day?

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4. A piece of ribbon 876 inches long was cut by a machine into 4-inch long strips to be made into bows. How many strips were cut?

5. Five Martians equally share 1,940 Groblarx fruits. How many Groblarx fruits will 3 of the Martians receive?

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Name _____ Date _____

Solve the following problems. Draw tape diagrams to help you solve. If there is a remainder, shade in a small portion of the tape diagram to represent that portion of the whole.

1. Meneca bought a package of 435 party favors to give to the guests at her birthday party. She calculated that she could give 9 party favors to each guest. How many guests is she expecting?

2. 4,000 pencils were donated to an elementary school. If 8 classrooms shared the pencils equally, how many pencils did each class receive?

3. 2,008 kilograms of potatoes were packed into sacks weighing 8 kilograms each. How many sacks were packed?

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4. A baker made 7 batches of muffins. There was a total of 252 muffins. If there was the same number of muffins in each batch, how many muffins were in a batch?

5. Samantha ran 3,003 meters in 7 days. If she ran the same distance each day, how far did Samantha run in 3 days?

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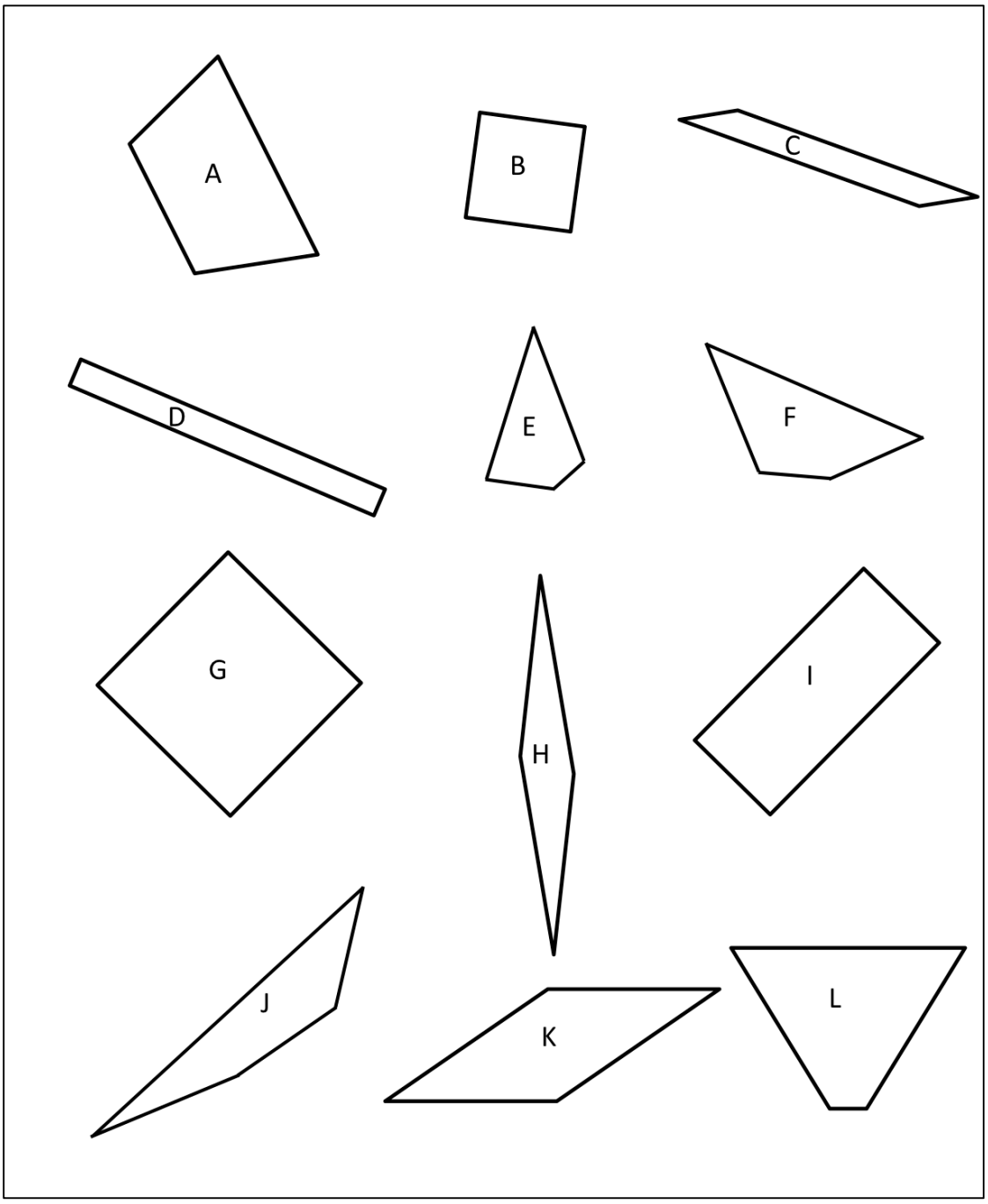

shapes

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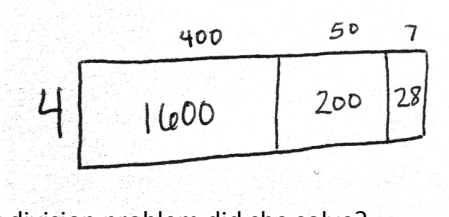
Name _____ Date _____

1. Arabelle solved the following division problem by drawing an area model.



   a. What division problem did she solve?

   b. Show a number bond to represent Arabelle's area model, and represent the total length using the distributive property.

---

2. a. Solve 816 ÷ 4 using the area model. There is no remainder in this problem.

   b. Draw a number bond and use a written method to record your work from Part (a).

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3. a. Draw an area model to solve 549 ÷ 3.

b. Draw a number bond to represent this problem.

c. Record your work using the long division algorithm.

4. a. Draw an area model to solve 2,762 ÷ 2.

b. Draw a number bond to represent this problem.

c. Record your work using the long division algorithm.

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Name _____ Date _____

1. Use the associative property to rewrite each expression. Solve using disks, and then complete the number sentences.

a. 20×34

= (____ × 10) × 34

= ____ × (10 × 34)

= _____

hundreds	tens	ones

b. 30×34

= (3 × 10) × _____

= 3 × (10 × ___)

= _____

thousands	hundreds	tens	ones

c. 30×42

= (3 × ____) × _____

= 3 × (10 × _____)

= _____

thousands	hundreds	tens	ones

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2. Use the associative property and place value disks to solve.
   a. 20 × 16
   b. 40 × 32

3. Use the associative property without place value disks to solve.
   a. 30 × 21
   b. 60 × 42

4. Use the distributive property to solve the following. Distribute the second factor.
   a. 40 × 43
   b. 70 × 23

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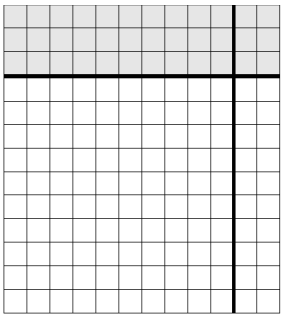
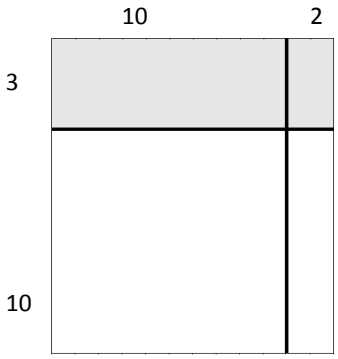
Name _____ Date _____

1. a. In each of the two models pictured below, write the expressions that determine the area of each of the four smaller rectangles.



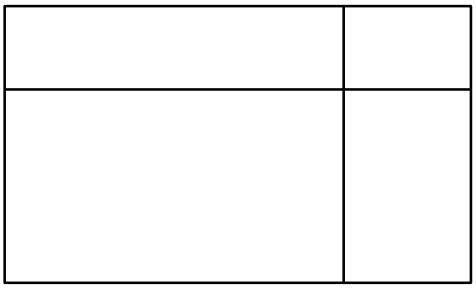


b. Using the distributive property, rewrite the area of the large rectangle as the sum of the areas of the four smaller rectangles. Express first in number form, and then read in unit form.

13 × 12 = (3 × _____) + (3 × _____) + (10 × _____) + (10 × _____)

Use an area model to represent the following expression. Record the partial products and solve.

2. 17 × 34



$$\begin{array}{r} 3\ 4 \\ \times\ 1\ 7 \\ \hline \\ \hline \\ \hline \\ + \\ \hline \end{array}$$

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Draw an area model to represent the following expressions. Record the partial products vertically and solve.

3. 45 × 18

4. 45 × 19

Visualize the area model and solve the following numerically using four partial products. (You may sketch an area model if it helps.)

5. 12 × 47

6. 23 × 93

7. 23 × 11

8. 23 × 22

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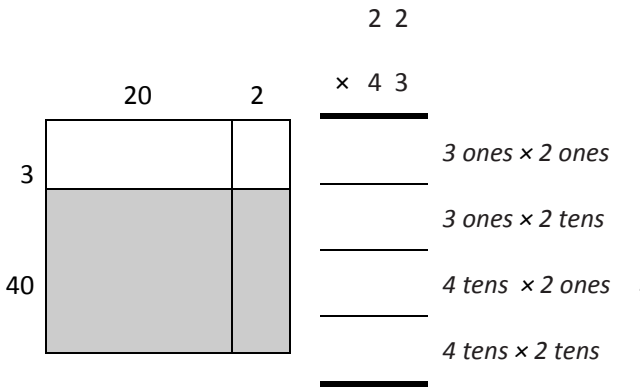
Name _____ Date _____

1. Solve 43 × 22 using 4 partial products and 2 partial products. Remember to think in terms of units as you solve. Write an expression to find the area of each smaller rectangle in the area model.



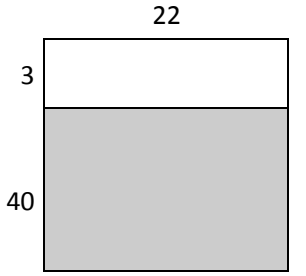
2 2
× 4 3

3 ones × 2 ones

3 ones × 2 tens

4 tens × 2 ones

4 tens × 2 tens

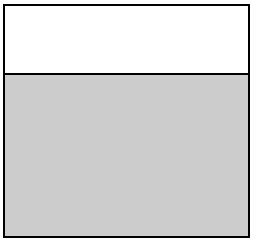


2 2
× 4 3

3 ones × 22 ones

4 tens × 22 ones

2. Solve the following using 2 partial products.



6 4
× 1 5

5 ones × 64 ones

1 ten × 64 ones

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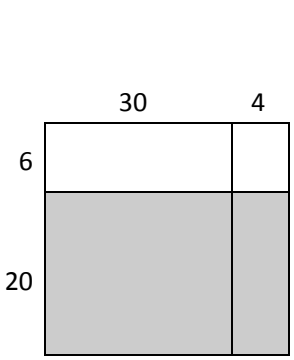
Name _____ Date _____

1. Solve 26 × 34 using 4 partial products and 2 partial products. Remember to think in terms of units as you solve. Write an expression to find the area of each smaller rectangle in the area model.



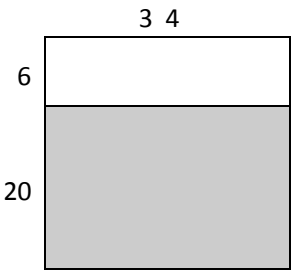
3 4
× 2 6

6 ones × 4 ones

6 ones × 3 tens

2 tens × 4 ones

2 tens × 3 tens

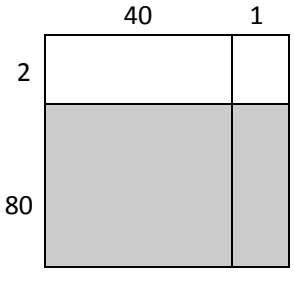


3 4
× 2 6

6 ones × 34 ones

2 tens × 34 ones

2. Solve using 4 partial products and 2 partial products. Remember to think in terms of units as you solve. Write an expression to find the area of each smaller rectangle in the area model.



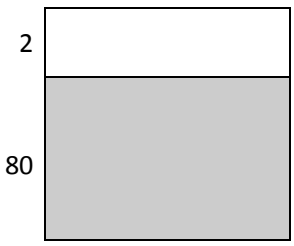
4 1
× 8 2

2 ones × 1 one

2 ones × 4 tens

8 tens × 1 one

8 tens × 4 tens



4 1
× 8 2

2 ones × 41 ones

8 tens × 41 ones

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3. Solve 52 × 26 using 2 partial products and an area model. Match each partial product to its area on the model.

4. Solve the following using 2 partial products. Visualize the area model to help you.

a.
$$\begin{array}{r} 68 \\ \times\ 23 \\ \hline \end{array}$$

_____ × _____

_____ × _____

b.
$$\begin{array}{r} 49 \\ \times\ 33 \\ \hline \end{array}$$

_____ × _____

_____ × _____

c.
$$\begin{array}{r} 16 \\ \times\ 25 \\ \hline \end{array}$$

d.
$$\begin{array}{r} 54 \\ \times\ 71 \\ \hline \end{array}$$

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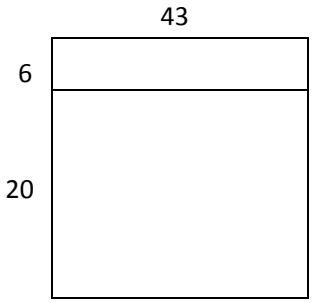
Name _____ Date _____

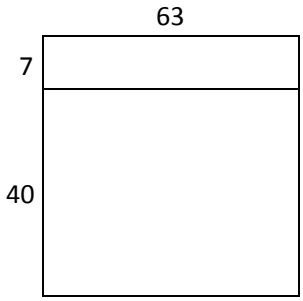
1. Express 26 × 43 as two partial products using the distributive property. Solve.



26 × 43 = (_____ forty-threes) + (____ forty-threes)

$$\begin{array}{r} 4\ 3 \\ \times\ 2\ 6 \\ \hline _____ \quad 6 \times _____ \\ _____ \quad 20 \times _____ \\ \hline \end{array}$$

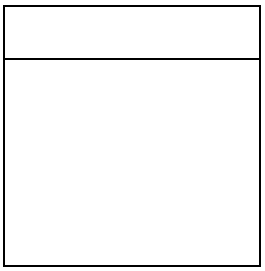
2. Express 47 × 63 as two partial products using the distributive property. Solve.



47 × 63 = (____ sixty-threes) + (____ sixty-threes)

$$\begin{array}{r} 6\ 3 \\ \times\ 4\ 7 \\ \hline _____ \quad _____ \times _____ \\ _____ \quad _____ \times _____ \\ \hline \end{array}$$

3. Express 54 × 67 as two partial products using the distributive property. Solve.



54 × 67 = (___ × ____) + (___ × ____)

$$\begin{array}{r} 6\ 7 \\ \times\ 5\ 4 \\ \hline _____ \quad _____ \times _____ \\ _____ \quad _____ \times _____ \\ \hline \end{array}$$

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4. Solve the following using two partial products.

$$\begin{array}{r} 5\ 2 \\ \times\ 3\ 4 \\ \hline \\ \hline \\ \hline \end{array}$$

_____ × _____

_____ × _____

5. Solve using the multiplication algorithm.

$$\begin{array}{r} 8\ 6 \\ \times\ 5\ 6 \\ \hline \\ \hline \\ \hline \end{array}$$

_____ × _____

_____ × _____

6. 54 × 52

7. 44 × 76

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8. 63 × 63

9. 68 × 79

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