GOLD EDITION
PRACTICE COACH PLUS

Mathematics 4

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Contents

Distributive Property of Multiplication

Coached Instruction

▶ **Compare Riley's and Samantha's methods for solving the problem below.**

Multiply.

7×26

RILEY'S METHOD

I drew a model to help me solve.

	20	+	6
7	$7 \times 20 = 140$		$7 \times 6 = 42$
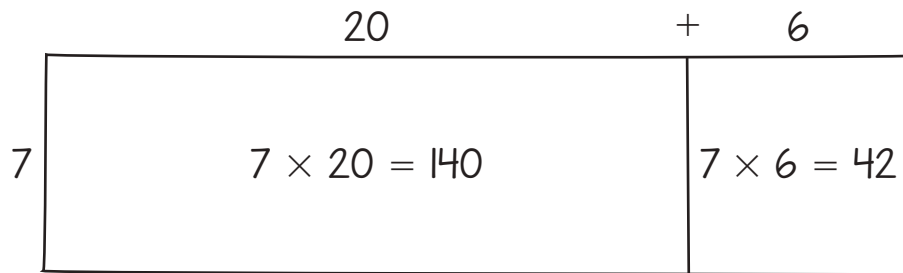
I added the partial products: $140 + 42 = 182$.

So, $7 \times 26 = 182$.

SAMANTHA'S METHOD

I rewrote 26 in expanded form. I used partial products to solve.

$$
\begin{array}{r}
2\,6 \leftarrow (20 + 6)\\
\times \quad 7 \\
\hline
4\,2 \leftarrow 7 \times 6 \\
+\ 1\,4\,0 \leftarrow 7 \times 20 \\
\hline
1\,8\,2
\end{array}
$$

So, $7 \times 26 = 182$.

DISCUSS

Are the products in Riley's area model the same as the partial products in Samantha's method?

What does that tell you about the two methods used to solve the problem?

APPLY

Multiply 3 × 135. Draw a model or write a multiplication sentence. Show your work.

▶ **Understand Quinn's method for solving the problem below.**

Students from 22 states will participate in a math competition. There will be 18 students chosen from each state. How many students in all will be chosen for the math competition? Use the area model to help you solve.

$$10 \ + \ 8$$
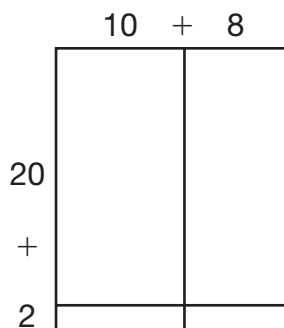
A. 216   **B.** 240   **C.** 360   **D.** 396

QUINN'S METHOD

I used the model to find each partial product.

$$10 \ + \ 8$$

$20 \times 10 = 200$

$20 \times 8 = 160$

$2 \times 8 = 16$

$2 \times 10 = 20$
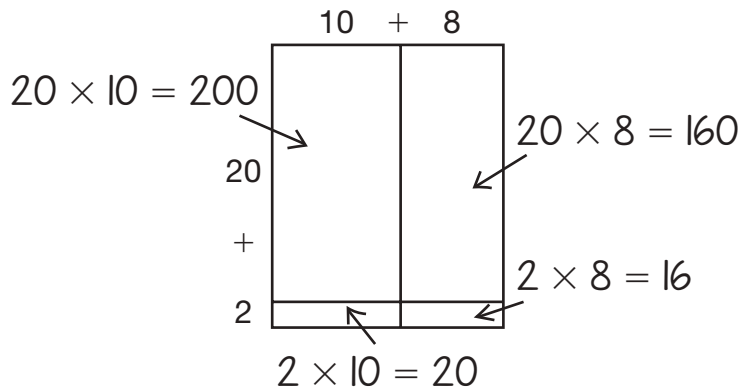
I added the partial products.

$200 + 160 + 20 + 16 = 396$ students

Choice D is correct.

DISCUSS

Could you multiply 18 × 22 by decomposing the factor 22 into (10 + 12)?

How do the partial products differ from Quinn's method?

APPLY

Pat rewrote 23 × 19 below.

   23 × 19 = (20 + 3) × (10 + 9)

Which is **not** one of the partial products?

A. 209

B. 180

C. 30

D. 27

Show how you know with a picture or calculations.

▶ **Miranda corrected Darryl's mistake in the problem below. Analyze their work.**

Use the distributive property to find the product of 16 × 27.

DARRYL'S METHOD

I decomposed 16 and 27 into tens and ones.

There is 1 ten in 16 and 2 tens in 27.

There are 6 ones in 16 and 7 ones in 27.

$16 \times 27 = (10 \times 20) + (6 \times 7) = 200 + 42 = 242$

The product is 242.

Miranda realizes that Darryl made a mistake.

MIRANDA'S CORRECTION

I drew area models to show 16 × 27.
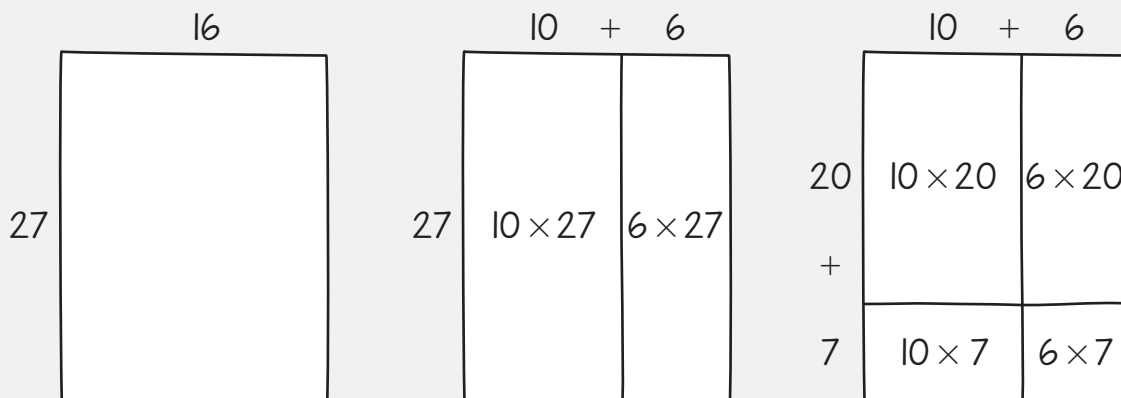
Then I found each partial product.

$(10 \times 20) + (6 \times 20) + (10 \times 7) + (6 \times 7) = 200 + 120 + 70 + 42 = 432$

The product is 432.

DISCUSS

What was Darryl's mistake?

How did Miranda's model help her avoid making that mistake?

APPLY

Which does **not** show the correct use of the distributive property to multiply 12×43?

A. $(10 \times 43) + (2 \times 43)$

B. $(12 \times 40) + (12 \times 3)$

C. $(10 \times 40) + (2 \times 40) + (10 \times 3) + (2 \times 3)$

D. $(10 \times 40) + (2 \times 3)$

Show your work and explain your answer.

Lesson Practice | Part 1

Choose the correct answer.

1. Which is true?

    A. $3 \times 78 = (3 \times 70) \times (3 \times 8)$

    B. $3 \times 78 = (3 \times 70) + (3 \times 8)$

    C. $3 \times 78 = (3 + 70) \times (3 + 8)$

    D. $3 \times 78 = (3 + 70) + (3 + 8)$

2. Which is true?

    A. $64 \times 14 = (64 \times 10) \times (64 \times 4)$

    B. $64 \times 14 = (64 \times 10) + (64 \times 4)$

    C. $64 \times 14 = (64 + 10) \times (64 + 4)$

    D. $64 \times 14 = (64 + 10) + (64 + 4)$

3. Which is true?

    A. $52 \times 23 = (52 \times 20) + (52 \times 3)$

    B. $52 \times 23 = (50 \times 20) + (2 \times 3)$

    C. $52 \times 23 = (52 \times 20) + (2 \times 3)$

    D. $52 \times 23 = (52 \times 20) \times (52 \times 3)$

4. Multiply.

$$16 \times 24 = \boxed{}$$

    A. 96

    B. 324

    C. 326

    D. 384

5. Multiply.

$$23 \times 23 = \boxed{}$$

    A. 115

    B. 246

    C. 529

    D. 1,024

6. A club charges $26 for a one-year membership. The club has 62 members. How much does the club collect in membership fees each year?

    A. $208

    B. $1,560

    C. $1,612

    D. $2,408

7. Rosa bought 15 cases of water for a school fair. Each case has 24 bottles. How many bottles of water did Rosa buy?

   A. 200

   B. 260

   C. 300

   D. 360

8. A manatee's heart normally beats about 55 times a minute. How many times does a manatee's heart beat in 60 minutes?

   A. 33,000

   B. 3,300

   C. 3,000

   D. 330

9. The art teacher bought 32 boxes of crayons. Each box has 64 crayons.
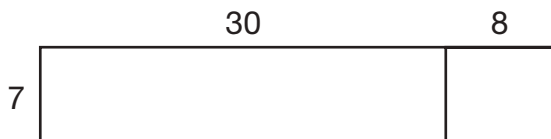
   A. Write a number sentence to find how many crayons the art teacher bought in all.

   _____

   B. Use the distributive property of multiplication to find the total number of crayons. Show your work.

   _____

   _____

   _____

Lesson Practice | Part 2

Choose the correct answer.

1. Use the area model to find the product.

30	8

7

A. 216

B. 256

C. 266

D. 276

2. Which number makes this sentence true?

$$54 \times 9 = (50 \times 9) + (\boxed{} \times 9)$$

A. 4

B. 9

C. 50

D. 54

3. Which correctly shows the distributive property?

A. $42 \times 26 = (40 \times 20) + (2 \times 6)$

B. $42 \times 26 = (42 \times 20) + (42 \times 6)$

C. $42 \times 26 = (40 \times 20) + (42 \times 6)$

D. $42 \times 26 = (40 \times 26) + (42 \times 26)$

4. Use the area model to find the product.

50	6

40

8
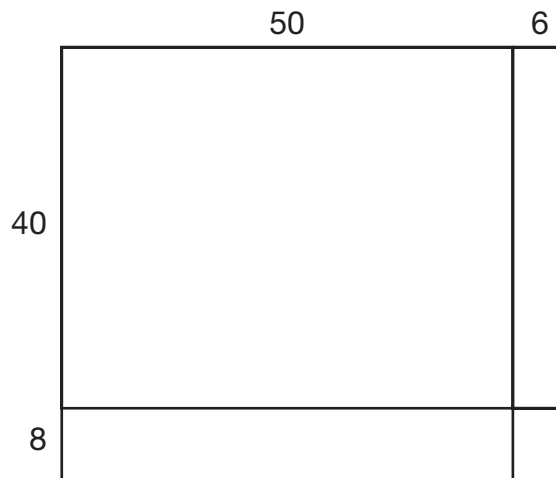
A. 2,688

B. 2,648

C. 2,488

D. 2,448

5. Tracy is using an area model to multiply 72×63. Which is not one of the correct partial products that she will find by using the area model?

A. 6

B. 120

C. 240

D. 4,200

6. Which explains one way to find the product of 38 × 27?

   A. Multiply 38 × 20, multiply 38 × 7, and multiply the products.

   B. Multiply 30 × 20, multiply 8 × 7, and add the products.

   C. Multiply 30 × 20, multiply 8 × 7, and multiply the products.

   D. Multiply 38 × 20, multiply 38 × 7, and add the products.

7. Which number makes this sentence true?

   77 × 86 = (70 × 86) + (☐ × 86)

   A. 7   **C.** 74

   B. 70   **D.** 86

8. Jimmy is going to multiply 52 × 34. Which is **not** a way that he can use the distributive property to find the product?

   A. 52 × 34 = (50 × 34) + (2 × 34)

   B. 52 × 34 = (52 × 30) + (52 × 4)

   C. 52 × 34 = (50 × 30) + (50 × 4) + (2 × 30) + (2 × 4)

   D. 52 × 34 = (52 × 30) + (2 × 34)

9. There are 28 rows of seats on the bottom floor of an auditorium. Each row on the bottom floor contains 46 seats. There are 16 rows of seats on the top floor. Each row on the top floor contains 32 seats.

   A. How many seats are on the first floor? Show your work.

   _____

   _____

   B. How many seats are on the second floor? Show your work.

   _____

   _____

10. Multiply 6×53. Write the method you chose and show your work.

11. A crate of pasta contains 42 boxes. Each box is 12 ounces. Write the partial products to find the number of ounces of pasta in the crate. Use area models.

12. Melody incorrectly used the distributive property to set up the multiplication problem below.

$$21 \times 45 = (20 \times 40) + (1 \times 5) = 800 + 5 = 805$$

What is Melody's error? Explain your answer.

What is the product of 21 × 45? Draw a model to show the partial products.