

# Homework & Practice 4-4

Estimate: Use Compatible Numbers

## Another Look!

A roller coaster has 38 seats for passengers. The roller coaster runs 24 times each hour. About how many passengers can ride the roller coaster each hour?

Choose numbers close to 38 and 24 that you can multiply mentally.

### Step 1

Choose compatible numbers.

24 is close to 25.      $24 \times 38$   
                                   ↓     ↓  
 38 is close to 40.      $25 \times 40$

### Step 2

Multiply the compatible numbers.

$$25 \times 40 = 1,000$$

So,  $24 \times 38$  is about 1,000.

About 1,000 passengers can ride the roller coaster each hour.



For 1–16, estimate each product.

1.  $23 \times 12$

23 is close to 25.

12 is close to \_\_\_\_\_.

$25 \times \underline{\hspace{2cm}} = \underline{\hspace{2cm}}$

2.  $24 \times 31$

24 is close to 25.

31 is close to \_\_\_\_\_.

$\underline{\hspace{2cm}} \times \underline{\hspace{2cm}} = \underline{\hspace{2cm}}$

3.  $19 \times 24$

4.  $51 \times 17$

5.  $82 \times 78$

6.  $12 \times 26$

7.  $24 \times 62$

8.  $48 \times 29$

9.  $53 \times 39$

10.  $51 \times 23$

11.  $53 \times 54$

12.  $68 \times 39$

13.  $29 \times 43$

14.  $62 \times 87$

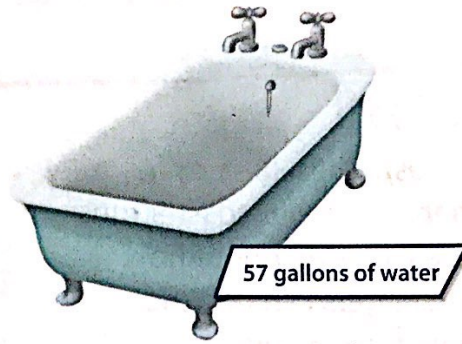
15.  $36 \times 42$

16.  $91 \times 77$



There is more than one way to estimate a product.

17. About how many gallons of water are used to refill the bathtub everyday for 31 days? Explain.



18. **AZ Vocabulary** Use a vocabulary term to complete the definition.

\_\_\_\_\_ are numbers that are easy to compute mentally.

19. A store sells about 45 gadgets a day, 7 days a week. About how many gadgets might the store sell in 4 weeks? Explain.

20. **Number Sense** Nathan estimates  $67 \times 36$  by finding  $70 \times 40$ . Will Nathan's estimate be greater than or less than the actual product? Explain.

21. **Higher Order Thinking** What might you consider when deciding whether to use rounding or compatible numbers to estimate? Explain.

## Common Core Assessment

22. A tour guide leads groups of 26 people through a museum. She led 42 groups last year. Choose compatible numbers from the box to write two different estimates for the total number of people she led last year. Use each number one time.

$26 \times 42$

\_\_\_\_\_  $\times$  \_\_\_\_\_ = \_\_\_\_\_

\_\_\_\_\_  $\times$  \_\_\_\_\_ = \_\_\_\_\_

25 30 40 45 1,000 1,350

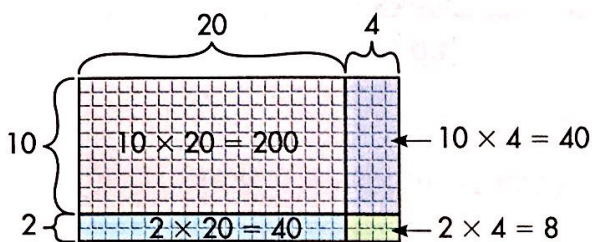
# Homework & Practice 4-5

## Arrays and Partial Products

### Another Look!

One way to find the product of  $12 \times 24$  is to use an array.

Draw an array on a grid. Divide the array into tens and ones for each factor. Find the number of squares in each smaller rectangle. Then add the numbers of squares in the four smaller rectangles.



$$\begin{array}{r}
 8 \\
 40 \\
 40 \\
 + 200 \\
 \hline
 288
 \end{array}$$

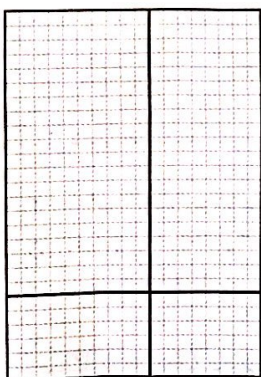
So,  $12 \times 24 = 288$ .

The array shows the four partial products.

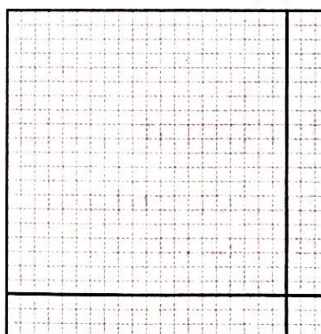


For 1-4, find each product. Use the arrays drawn on grids to help.

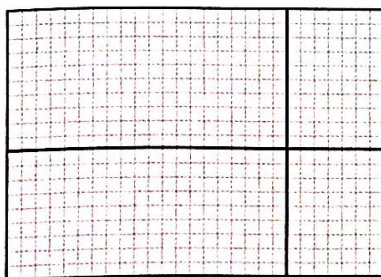
1.  $26 \times 18$



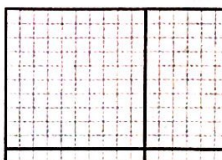
2.  $23 \times 23$



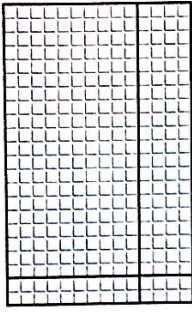
3.  $19 \times 27$



4.  $11 \times 16$



5. Barb exercises for 22 hours each week. How many hours does she exercise in 14 weeks? Use the array drawn on the grid to help multiply.



6. Teri used an algorithm to find the product below. Is Teri's answer reasonable? Explain.

$$\begin{array}{r}
 4,296 \\
 \times \quad 7 \\
 \hline
 42 \\
 630 \\
 1,400 \\
 \hline
 2,800 \\
 \hline
 4,872
 \end{array}$$

7. **Higher Order Thinking** The prices at Nolan's Novelties store are shown at the right. If 27 boxes of neon keychains and 35 boxes of glow-in-the-dark pens were sold, what were the total sales in dollars?

Item	Price per Box
Neon keychains	\$15
Glow-in-the-dark pens	\$10

**Common Core Assessment**

8. Write to explain how you can break apart  $16 \times 34$  into four simpler multiplication problems.

A large rectangular box with a black border, intended for the student to write their explanation for breaking apart  $16 \times 34$ .

9. Write to explain how you can use an array to break apart  $18 \times 12$  to find the product and check if the product is reasonable.

A large rectangular box with a black border, intended for the student to write their explanation for using an array to break apart  $18 \times 12$ .