

Homework & Practice 3-2
Mental Math: Round to Estimate Products

Week 8 Homework
Due Monday 10/7/19

Another Look!



To estimate, round 3-digit numbers to the nearest hundred and round 4-digit numbers to the nearest thousand.

Use rounding to estimate 7×215 .

First, round 215 to the nearest hundred.
 215 rounds to 200.

Then, multiply.
 $7 \times 200 = 1,400$

So, 7×215 is about 1,400.

Check if $2,885 \times 4 = 11,540$ is reasonable.

First round 2,885 to the nearest thousand.
 2,885 rounds to 3,000.

Then, multiply.
 $3,000 \times 4 = 12,000$

So, $2,885 \times 4$ is about 12,000.
 11,540 is a reasonable answer.

For 1-6, estimate the product.

1. 4×279
 Round 279 to 300
 $4 \times 300 = 1,200$

2. $9 \times 4,720$
 Round 4,720 to 5,000
 $9 \times 5,000 = 45,000$

3. 8×89
 Round 89 to 90
 $8 \times 90 = 720$

4. 183×4
 $200 \times 4 = 800$

5. $3 \times 1,675$
 $3 \times 2,000 = 6,000$

6. $8,210 \times 2$
 $8,000 \times 2 = 16,000$

For 7-9, estimate to check if the answer is reasonable.

7. $8 \times 578 = 4,624$
 Round 578 to 600
 $8 \times 600 = 4,800$
 Reasonable Not Reasonable

8. $3 \times 8,230 = 2,469$
 Round 8,230 to 8,000
 $3 \times 8,000 = 24,000$
 Reasonable Not Reasonable

9. $7 \times 289 = 2,023$
 Round 289 to 300
 $7 \times 300 = 2,100$
 Reasonable Not Reasonable

10. **Vocabulary** Use *expanded form* or *number name* to complete the definition.

A number written as the sum of the value of its digits is written in expanded form.

11. **Math and Science** The Ojos del Salado volcano has an elevation about 3 times as great as the Khangar volcano. If the Khangar volcano is 6,562 feet above sea level, what is the approximate elevation of the Ojos del Salado volcano?

Ojos del Salado $\approx 3 \times 6,562 \rightarrow 3 \times 7,000 = 21,000$ Ft.

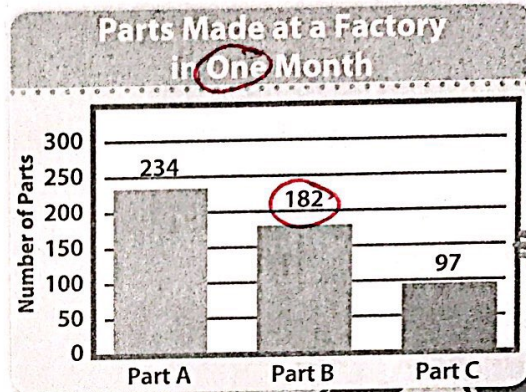
For 12–13, use the graph at the right.

12. **Number Sense** Estimate how many of Part B would be made in 3 months.

182×3
 \downarrow
 $200 \times 3 = 600$

13. It costs the factory \$4 to make each Part A. About how much does it cost to make Part A each month?

234×4
 \downarrow
 $200 \times 4 = 800$



14. **Higher Order Thinking** A Deluxe Package costs \$50 and includes one of each of the individual pictures listed in the table. Estimate about how much money you save with the Deluxe Package instead of buying one of each of the individual pictures. Explain. Show Ms. Neunham!

Deluxe \$50

Individual Picture Prices	
Picture Size	Price
8 × 10	\$18
5 × 7	\$14
4 × 6	\$10
8 wallets	\$18

→ 20
 → 10
 → 10
 → 20
\$60

A Deluxe package would save you about \$ 60 because _____.

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15. The distance between Bill's house and his aunt's house is 485 miles. About how many miles would Bill drive if he made 4 round trips from his house to his aunt's house?

- (A) About 5,000 miles
- (B) About 4,000 miles
- (C) About 3,200 miles
- (D) About 2,000 miles

$485 \times (2 \times 4)$
 \downarrow
 500×8
 4000

16. Fourth graders chose to have a read-a-thon for one hour. Each of the four fourth-grade classes read 408 pages. About how many pages did all the fourth graders read?

- (A) About 800 pages
- (B) About 1,000 pages
- (C) About 1,600 pages
- (D) About 2,400 pages

408×4
 \downarrow
 400×4
 1600

Homework & Practice 3-3

The Distributive Property

Another Look!

Hector's rock collection is stored in 7 cases. Each case holds 280 rocks. How many rocks are in Hector's collection?

You can use the Distributive Property to find the product of 7×280 .



- | | |
|--|---|
| <p>Step 1 Break apart 280 into $200 + 80$</p> <p>$7 \times 280 = 7 \times (200 + 80)$</p> | <p>or Break apart 280 into $300 - 20$</p> <p>$7 \times 280 = 7 \times (300 - 20)$</p> |
| <p>Step 2 Multiply 7 times each part of the sum.</p> <p>$(7 \times 200) + (7 \times 80)$</p> <p>$1,400 + 560$</p> | <p>or Multiply 7 times each part of the difference.</p> <p>$(7 \times 300) - (7 \times 20)$</p> <p>$2,100 - 140$</p> |
| <p>Step 3 Add.</p> <p>$1,400 + 560 = 1,960$</p> | <p>or Subtract.</p> <p>$2,100 - 140 = 1,960$</p> |

So, $7 \times 280 = 1,960$.
Hector has 1,960 rocks in his collection.

For 1-8, use the Distributive Property to find each product.

$$\begin{aligned}
 1. \quad 8 \times 46 &= 8 \times (40 + 6) \\
 &= (8 \times 40) + (8 \times 6) \\
 &= 320 + 48 \\
 &= \boxed{368}
 \end{aligned}$$

$$\begin{aligned}
 2. \quad 39 \times 5 &= 5 \times (40 - 1) \\
 &= (5 \times 40) - (5 \times 1) \\
 &= 200 - 5 \\
 &= \boxed{195}
 \end{aligned}$$

$$\begin{aligned}
 3. \quad 6 \times 310 &= 6 \times (300 + 10) \\
 &= (6 \times 300) + (6 \times 10) \\
 &= 1800 + 60 \\
 &= \boxed{1860}
 \end{aligned}$$

$$\begin{aligned}
 4. \quad 9 \times 895 &= 9 \times (900 - 5) \\
 &= (9 \times 900) - (9 \times 5) \\
 &= 8100 - 45 \\
 &= \boxed{8055}
 \end{aligned}$$

$$\begin{aligned}
 5. \quad 5 \times 108 &= 5 \times (100 + 8) \\
 &= (5 \times 100) + (5 \times 8) \\
 &= 500 + 40 \\
 &= \boxed{540}
 \end{aligned}$$

$$\begin{aligned}
 6. \quad 2 \times 62 &= 2 \times (60 + 2) \\
 &= (2 \times 60) + (2 \times 2) \\
 &= 120 + 4 \\
 &= \boxed{124}
 \end{aligned}$$

$$\begin{aligned}
 7. \quad 4 \times 1,554 &= 4 \times (1,000 + 500 + 50 + 4) \\
 &= (4 \times 1,000) + (4 \times 500) + (4 \times 50) + (4 \times 4) \\
 &= 4,000 + 2,000 + 200 + 16 \\
 &= \boxed{6,216}
 \end{aligned}$$

$$\begin{aligned}
 8. \quad 2 \times 2,568 &= 2 \times (2,000 + 500 + 60 + 8) \\
 &= (2 \times 2,000) + (2 \times 500) + (2 \times 60) + (2 \times 8) \\
 &= 4,000 + 1,000 + 120 + 16 \\
 &= \boxed{5,136}
 \end{aligned}$$

9. © MP.7 Use Structure Show how to use the Distributive Property to find $7 \times 1,214$.

$$7 \times 1,214 = 7 \times (1,000 + 200 + 10 + 4) = (7 \times 1,000) + (7 \times 200) + (7 \times 10) + (7 \times 4) = 7,000 + 1,400 + 70 + 28 = 8,498$$

10. A lodge at a state park has 49 rooms. Up to five people may stay in each room. What is the maximum number of people who can stay at the lodge at one time?

$$49 \times 5 = (40 + 9) \times 5 = (40 \times 5) + (9 \times 5) = 200 + 45 = 245$$

$$49 \times 5 = (50 - 1) \times 5 = (50 \times 5) - (1 \times 5) = 250 - 5 = 245$$

11. Lauren read 36 books during the year. If she reads the same number of books for 6 years in a row, how many total books will Lauren read?

$$36 \times 6 = (30 + 6) \times 6 = (30 \times 6) + (6 \times 6) = 180 + 36 = 216$$

12. A parking garage has 8 levels. Each level has parking spaces for 78 cars. How many cars can park in the garage at one time?

$$8 \times 78 = 8 \times (70 + 8) = (8 \times 70) + (8 \times 8) = 560 + 64 = 624$$

$$8 \times 78 = 8 \times (80 - 2) = (8 \times 80) - (8 \times 2) = 640 - 16 = 624$$

For 13-14, use the table at the right.

13. A banquet room is being set up for a party using round tables. How many chairs are used for the round tables?

$$6 \times 105 = 6 \times (100 + 5) = (6 \times 100) + (6 \times 5) = 600 + 30 = 630 \text{ chairs}$$

14. Higher Order Thinking Which of the three table types allows seating for the greatest number of people? Explain.

Long: $62 \times 8 = (60 \times 8) + (2 \times 8) = 480 + 16 = 496$
 Round: $6 \times 105 = (6 \times 100) + (6 \times 5) = 600 + 30 = 630$
 Square: $150 \times 4 = (100 \times 4) + (50 \times 4) = 400 + 200 = 600$

Type of Table	Number of Tables	Chairs that Fit Around Each
Long Dining Tables	62	8
Round Dining Tables	105	6
Square Dining Tables	150	4

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Most Seating

15. Joey's grade has a goal to collect 4,000 cans for the school canned-food drive. There are 486 students in Joey's grade. If each student brings in 8 cans of food, will the class reach its goal? Explain. Show Ms. N!

$$486 \times 8 = (400 \times 8) + (80 \times 8) + (6 \times 8) = 3200 + 640 + 48 = 4,000$$

The class will _____ because _____

Use place value to break apart numbers and the Distributive Property to help multiply.

