

Multiplication Properties

In 1 through 5, write the multiplication property used in each equation.

1. $53 \times 6 = 6 \times 53$

2. $0 \times 374,387 = 0$

3. $5 \times (11 \times 4) = (5 \times 11) \times 4$

4. $42 \times 1 = 42$

5. $14 \times 5 = 5 \times 14$

6. **Reasoning** Chan bought 2 large frozen yogurts at \$1.50 each and 1 small bottle of water for \$1.00. How much did she pay in total?

7. Dan has 4 shelves. He has exactly 10 books on each shelf. Judy has 10 shelves. She has exactly 4 books on each shelf. Who has more books? Explain.

8. **Algebra** If $3 \times 8 \times 12 = 8 \times 3 \times n$, what is the value of n ?

A 3

B 8

C 12

D 18

9. **Explain It** Write a definition for the Associative Property of Multiplication in your own words and explain how you would use it to compute $4 \times 25 \times 27$ mentally.

Using Mental Math to Multiply

Use mental math to find each product.

1. $150 \times 20 =$

2. $0 \times 50 \times 800 =$

3. $500 \times 40 =$

4. $120 \times 50 =$

5. $60 \times 70 \times 1 =$

6. $9,000 \times 80 =$

7. $100 \times 10 \times 1 =$

8. $1,800 \times 20 \times 0 =$

9. $30 \times 20 =$

10. $1,400 \times 2,000 =$

11. $7,000 \times 50 \times 1 =$

12. $1,000 \times 200 \times 30 =$

13. **Number Sense** A googol is a large number that is the digit one followed by one hundred zeros. If you multiply a googol by 100, how many zeros will that product have?

14. Gregorio drives 200 miles per day for 10 days. How many miles did he drive in all?

15. **Algebra** If $a \times b \times c = 0$, and a and b are integers greater than 10, what must c equal?

A 0

B 1

C 2

D 10

16. **Explain It** Sunghye empties her piggy bank and finds that she has 200 quarters, 150 dimes, and 300 pennies. How much money does she have? Explain.

Name _____

Estimating Products

Estimate each product.

1. $68 \times 21 =$ _____

2. $5 \times 101 =$ _____

3. $151 \times 21 =$ _____

4. $99 \times 99 =$ _____

5. $87 \times 403 =$ _____

6. $19 \times 718 =$ _____

7. $39 \times 51 =$ _____

8. $47 \times 29 \times 11 =$ _____

9. $70 \times 27 =$ _____

10. $69 \times 21 \times 23 =$ _____

11. $7 \times 616 =$ _____

12. $8,880 \times 30 =$ _____

13. **Number Sense** Give three numbers whose product is about 9,000.

Electronics Prices

CD player	\$ 74.00
MP3 player	\$ 99.00
CD/MP3 player	\$199.00
AM/FM radio	\$ 29.00

14. About how much would it cost to buy 4 CD/MP3 players and 3 MP3 players?

15. Which is the closest estimate for the product of $2 \times 19 \times 5$?

A 1,150

B 200

C 125

D 50

16. **Explain It** Explain how you know whether an estimate of a product is an overestimate or an underestimate.

Multiplying by 1-Digit Numbers

Find each product. Estimate to check that your answer is reasonable.

1. $58 \times 3 =$ _____ 2. $49 \times 8 =$ _____

3. $83 \times 5 =$ _____ 4. $95 \times 6 =$ _____

5. $273 \times 4 =$ _____ 6. $35 \times 8 =$ _____

7. $789 \times 6 =$ _____ 8. $643 \times 7 =$ _____

9.
$$\begin{array}{r} 68 \\ \times 2 \\ \hline \end{array}$$
 10.
$$\begin{array}{r} 582 \\ \times 5 \\ \hline \end{array}$$
 11.
$$\begin{array}{r} 84 \\ \times 4 \\ \hline \end{array}$$
 12.
$$\begin{array}{r} 926 \\ \times 7 \\ \hline \end{array}$$

13. Xavier painted five portraits and wants to sell them for 36 dollars each. How much money will he make if he sells all five? _____

14. A farmer wants to build a square pigpen. The length of one side of the pen is 13 ft. How many feet of fencing should the farmer buy? _____

15. Jasmine wants to buy 4 green bags for 18 dollars each and 3 purple bags for 15 dollars each. She has 100 dollars. How much more money does she need? _____

16. **Geometry** A regular octagon is a figure that has eight sides with equal lengths. If one side of a regular octagon is 14 inches long, what is the perimeter of the entire octagon?

A 148 in. B 140 in. C 112 in. D 84 in.

17. **Explain It** Why is 2,482 not a reasonable answer for 542×6 ?

Multiplying 2-Digit by 2-Digit Numbers

Find each product. Estimate to check that your answer is reasonable.

1.
$$\begin{array}{r} 56 \\ \times 34 \\ \hline \end{array}$$

2.
$$\begin{array}{r} 45 \\ \times 76 \\ \hline \end{array}$$

3.
$$\begin{array}{r} 35 \\ \times 15 \\ \hline \end{array}$$

4.
$$\begin{array}{r} 47 \\ \times 94 \\ \hline \end{array}$$

5.
$$\begin{array}{r} 64 \\ \times 51 \\ \hline \end{array}$$

6.
$$\begin{array}{r} 47 \\ \times 30 \\ \hline \end{array}$$

7.
$$\begin{array}{r} 56 \\ \times 19 \\ \hline \end{array}$$

8.
$$\begin{array}{r} 92 \\ \times 49 \\ \hline \end{array}$$

9. To pay for a sofa, Maddie made a payment of 64 dollars each month for one year. How much did the sofa cost? _____

10. **Geometry** To find the volume of a box, you multiply the length times the width times the height. What is the volume, in cubic feet, of a box that is 3 ft long, 8 ft wide, and 16 ft high? _____

11. **Estimation** Katie is in charge of buying juice for the teachers' breakfast party. If one teacher will drink between 18 and 22 ounces of juice, and there are 32 teachers, which is the best estimate for the amount of juice Katie should buy?
- A** about 200 ounces
B about 400 ounces
C about 600 ounces
D about 800 ounces

12. **Explain It** Is $7,849$ a reasonable answer for 49×49 ? Why or why not?

Multiplying Greater Numbers

Find each product. Estimate to check that your answer is reasonable.

1.
$$\begin{array}{r} 556 \\ \times 34 \\ \hline \end{array}$$

2.
$$\begin{array}{r} 234 \\ \times 75 \\ \hline \end{array}$$

3.
$$\begin{array}{r} 395 \\ \times 76 \\ \hline \end{array}$$

4.
$$\begin{array}{r} 483 \\ \times 57 \\ \hline \end{array}$$

5.
$$\begin{array}{r} 628 \\ \times 33 \\ \hline \end{array}$$

6.
$$\begin{array}{r} 154 \\ \times 35 \\ \hline \end{array}$$

7.
$$\begin{array}{r} 643 \\ \times 49 \\ \hline \end{array}$$

8.
$$\begin{array}{r} 536 \\ \times 94 \\ \hline \end{array}$$

9. **Number Sense** In a class of 24 students, 13 students sold over 150 raffle tickets each, and the rest of the class sold about 60 raffle tickets each. The class goal was to sell 2,000 tickets. Did they reach their goal? Explain.
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10. **Player A's** longest home run distance is 484 ft. If **Player A** hits 45 home runs at his longest distance, what would the total distance be? _____

11. **Player B's** longest home run distance is 500 ft. There are 5,280 ft in 1 mi. How many home runs would **Player B** need to hit at his longest distance for the total to be greater than 1 mi? _____

12. **Algebra** Which equation shows how you can find the number of minutes in one year?

- A $60 \times 24 \times 365$
B $60 \times 60 \times 24$
C 60×365
D $60 \times 60 \times 365$

13. **Explain It** Write a real-world problem where you would have to multiply 120 and 75.
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Exponents

For questions 1-4, write in exponential notation.

1. $13 \times 13 \times 13$ _____

2. $8 \times 8 \times 8 \times 8 \times 8 \times 8$ _____

3. 64×64 _____

4. $4 \times 4 \times 4 \times 4 \times 4$
 $\times 4 \times 4 \times 4 \times 4 \times 4$ _____

For questions 5-8, write in expanded form.

5. 2^5 _____

6. 20 squared _____

7. 11^4 _____

8. 9 cubed _____

For questions 9-12, write in standard form.

9. $4 \times 4 \times 4$ _____

10. 14 squared _____

11. 8^5 _____

12. $9 \times 9 \times 9 \times 9 \times 9$ _____

13. **Number Sense** Which of these numbers, written in expanded form, is equal to 625?

A $5 \times 5 \times 5 \times 5$

B 5×5

C $5 \times 5 \times 5$

D $5 \times 5 \times 5 \times 5 \times 5$

14. **Number Sense** Find the number equal to 6 raised to the second power.

A 18

B 36

C 6

D 12

15. **Explain It** Explain what 4 raised to the fourth power means.

Problem Solving: Draw a Picture and Write an Equation

Draw a picture and write an equation. Then solve.

1. When Mary was born, she weighed 8 pounds. When she was 10 years old, she weighed 10 times as much. How much did she weigh when she was 10 years old?
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2. Sandi is 13 years old. Karla is 3 times Sandi's age. How old is Karla?
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3. Reasoning Hwong can fit 12 packets of coffee in a small box and 50 packets of coffee in a large box. Hwong has 10 small boxes and would like to reorganize them into large boxes. Which boxes should he use? Explain.
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4. Number Sense Daniel has 12 tennis balls. Manuel has twice as many tennis balls as Daniel. Kendra has twice as many balls as Manuel. How many tennis balls do they have in all?

A 24 B 36 C 84 D 96

5. Explain It William travels only on Saturdays and Sundays and has flown 400 miles this month. Jason travels every weekday and has flown 500 miles this month. Who travels more miles *per day*? Explain.
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