Section 7.R.3 Multiplication with Whole Numbers

Go to Section 7.R.3 Learn mode in Hawkes to follow along!

The Properties of Multiplication

Symbols for Multiplication

Symbol		Example
___	_____	_____
___	_____	_____
___	_____	_____

Commutative Property of Multiplication

For any whole numbers *a* and *b*, _____

For example, _____

(The order of the numbers in multiplication can be _____)

Associative Property of Multiplication

For any whole numbers *a*, *b*, and *c*, _____

For example, _____

(The grouping of the numbers in multiplication can _____)

Multiplicative Identity Property

For any whole number *a*, _____

_____

(The product of any number and 1 is _____)

The number 1 is called the _____

Multiplication Property of 0 (or Zero-Factor Law)

For any whole number a, _____

For example, _____

_____)

Example 1 Recognizing the Properties of Multiplication

Each of the properties of multiplication is illustrated.

a. $5 \times 6 = 6 \times 5$ _____ property of multiplication

As a check, we see that _____

b. $2 \cdot (5 \cdot 9) = (2 \cdot 5) \cdot 9$ _____ property of multiplication

As a check, we see that _____

c. $8 \cdot 1 = 8$ _____ property

d. $196 \cdot 0 = 0$ Multiplication property of _____

Exercises

For each statement, state the property of multiplication illustrated and show that the statement is true by performing the multiplication.

1. $8 \cdot 0 = 0$

2. $0 \cdot 17 = 0$

3. $2 \cdot (3 \cdot 6) = (2 \cdot 3) \cdot 6$

4. $3 \cdot (1 \cdot 7) = (3 \cdot 1) \cdot 7$

5. $2 \cdot (6 \cdot 8) = 2 \cdot (8 \cdot 6)$

6. $(7 \cdot 3) \cdot 4 = (3 \cdot 7) \cdot 4$

7. $5 \cdot 1 = 5$

8. $1 \cdot 19 = 19$

The Distributive Property

Distributive Property

For any whole numbers a, b, and c, _____

Example 3 Using the Distributive Property

Use the distributive property to simplify each expression.

a. $6(3+5)$

b. $4(7+8)$

Solution

Exercises

Rewrite each expression by using the distributive property and then simplify.

9. $3(9+7)$

10. $9(2+9)$

11. $6(3+11)$

12. $7(8+4)$

Multiplication with Whole Numbers

Example 6 Multiplying Whole Numbers

Multiply: $93 \cdot 46$

Solution

Exercises

Multiply.

13. $\begin{array}{r} 84 \\ \times\ 2 \\ \hline \end{array}$

14. $\begin{array}{r} 21 \\ \times\ 6 \\ \hline \end{array}$

15. $\begin{array}{r} 27 \\ \times\ 6 \\ \hline \end{array}$

16. $\begin{array}{r} 48 \\ \times\ 9 \\ \hline \end{array}$

17. $2(427)$

18. $3(108)$

19. $4 \cdot 702$

20. $3 \cdot 503$

Powers of 10

Multiplying Whole Numbers by Powers of 10

To multiply a whole number:

by 10, write _____
by 100, write _____
by 1000, write _____
by 10,000, write _____
and so on.

Example 7 Multiplying Whole Numbers that End with 0s

Multiply.

a. $6 \cdot 700$

b. $50 \cdot 700$

c. $200 \cdot 800$

d. $7000 \cdot 9000$

Solution

Exercises

Multiply using the technique of multiplying by powers of ten.

21. $30 \cdot 30$

22. $50 \cdot 50$

23. $25 \cdot 100$

24. $47 \cdot 1000$

25.
$$\begin{array}{r} 3000 \\ \times\ 500 \\ \hline \end{array}$$

26.
$$\begin{array}{r} 7000 \\ \times\ 800 \\ \hline \end{array}$$

The Area of a Rectangle

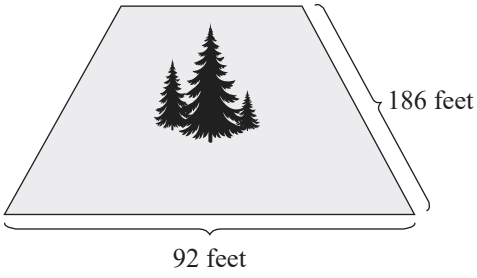
Area of a Rectangle

The **area** of a rectangle (measured in square units) is found by _____

In the form of a formula, $A =$ _____

Example 8 Application: Calculating the Area of a Rectangle

Calculate the area of a rectangular plot of land with dimensions 186 feet by 92 feet.

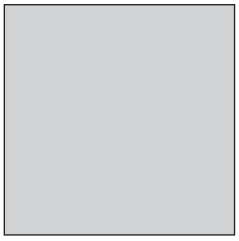


Solution

Exercises

Calculate the area of each rectangle.

27.



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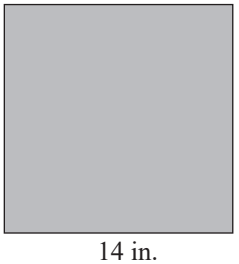

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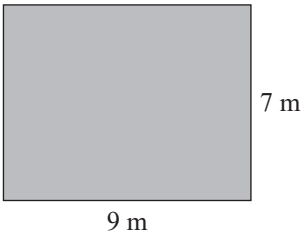

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