

1.1 Introduction to Algebra

1.2 Commutative, Associative, Distributive Laws

Evaluate.

1. $7x$ for $x = 8$

2. $r + 10$ for $r = 19$

3. $\frac{6m-n}{4}$ for $m = 2$ and $n = 4$

4. $\frac{15a}{b}$ for $a = 40$ and $b = 8$

Substitute to find the value of each expression.

5. The area of a rectangle with base b and height h is bh . Find the area of a rectangle that is 9 feet wide and 10 feet long.

6. The area of a triangle with base b and height h is $\frac{1}{2}bh$. Find the area of a triangle with base of 8 inches and height of 5 inches.

7. A baseball player's batting average is $\frac{h}{a}$, where h is the number of hits and a is the number of "at bats." Find George's batting average if he bats 27 times and has 3 hits.

When a letter is used to represent a variety of numbers, it is called a **VARIABLE**.

Commutative Law – You can change the **order** when adding or multiplying without affecting the answer.

1. $4 + 5 =$ _____

2. $3 + 6 =$ _____

3. $8 \bullet b =$ _____

4. $xy =$ _____

5. $5 + ab =$ _____

6. $2(x + 3) =$ _____

Associative Law – Numbers can be **grouped** in any manner for addition or multiplication. (**Order** of numbers **remains the same**; **grouping symbols**—such as parentheses or brackets--**change**.)

7. $(a + 2) + 6 =$ _____

8. $3(xy) =$ _____

9. $(5a)b =$ _____

10. $s + (r + t) =$ _____

11. $(3 + w) + k =$ _____

Distributive Law (Of Multiplication Over Addition) – The product of a number and a sum can be written as the sum of two products.

12. $5(a + b) =$ _____

13. $3(2x + y) =$ _____

14. $(a + b)4 =$ _____

15. $4(2x + y + z) =$ _____

16. $(a + 3b + c)4 =$ _____

Factor (write as a product - two expressions multiplied) using the Distributive Property.

17. $9x + 9y =$ _____

18. $4 + 4x =$ _____

19. $15x + 5 =$ _____

20. $9w + 6 =$ _____

21. $8m + 16y + 12 =$ _____

22. $6m + 6 =$ _____