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The Distributive Property

DISTRIBUTIVE PROPERTY

For any numbers a , b , and c ,

$$a(b + c) = ab + ac \quad \text{and} \quad (b + c)a = ba + ca$$

EXAMPLE:

$$5(11 + 12) = 5 \cdot 11 + 5 \cdot 12 = 55 + 60 = 115$$

$$7(3 + 6) = 7 \cdot 3 + 7 \cdot 6 = 21 + 42 = 63$$

$$6(2 + 4) = 6 \cdot 2 + 6 \cdot 4 = 12 + 24 = 36$$

$$3(r + 7) = 3r + 21$$

$$4(b - 6) = 4b - 24$$

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A **term** is a single number, a single variable, or numbers and variables multiplied together. For example, $5x$, $3p$, 14 , and p are all terms.

LIKE TERMS are terms that are alike. They can be like terms if they have the same variable.

Which of these are like terms?

$6x$ $5a$ $1y$ 1 $15d$ $10r$ $33cd$ $24p$
 $28d$ $32p$ $78r$ $3d$ $90c$ $54x$

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You can simplify expressions by combining like terms:

$$5x + 7x = (5 + 7)x = 12x$$

EXAMPLES:

$$6a + 3a =$$

$$5x - x =$$

$$11b + 3 + 26b =$$

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The last example ($11b + 3 + 26b$) had the answer

$$37b + 3.$$

This is an example of an answer in **SIMPLEST FORM**.

An answer is in simplest form when there are no more like terms and no parentheses.

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Example: Simplify each expression.

$$14a + 7 + 21a$$

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Example: Simplify each expression.

$$r + 3(s + 7r)$$

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Example: Simplify each expression.

$$m + 4(n + 8m)$$

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Example: Simplify each expression.

$$11r + 19(12 + 18r) - 36$$