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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:

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

$$7(3 + 6) =$$

$$6(2 + 4) =$$

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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?

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

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You can simplify expressions by combining like terms:

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

  
same variable

EXAMPLES:

$$6a + 3a = 9a$$

$$5x - 1x = 4x$$

$$\underline{11b} + 3 + \underline{26b} = 37b + 3$$

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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: Simply each expression.

$$14a + 7 + 21a$$

$$35a + 7$$

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Example: Simply each expression.

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

$$\underline{1}r + 3s + \underline{21}r$$

$$22r + 3s$$

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Example: Simplify each expression.

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

$$\underline{1m} + 4n + \underline{32m}$$

$$33m + 4n$$

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Example: Simplify each expression.

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

$$\underline{11r} + 228 + \underline{342r} - 36$$

$$353r + \underline{228} - \underline{36}$$

$$353r + 192$$