


## 6.6 Distributive Property


***Objective: To use the distributive property to simplify and factor expressions***



# The Distributive Property


$$a(b + c) = ab + ac$$

or


$$a(b - c) = ab - ac$$

Order of Operations

$$6(3 + 5)$$

$$6(8)$$

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Distributive Property

$$6(3 + 5)$$

$$6(3) + 6(5)$$

$$18 + 30$$


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← Same answer!! →

# Examples (Use the distributive property to rewrite each algebraic expression)



1)  $4(x + 3) = 4x + 12$



2)  $5(x + y) = 5x + 5y$

3)  $2(d - 4) = 2d - 8$

4)  $\frac{1}{2}(w - 6) = \frac{1}{2}w - 3$

## Factor each expression

$$5) \quad 21 + 14 = 7(3+2)$$

GCF: 7

$$6) \quad 12 + 48 = 12(1+4)$$

GCF : 12

$$7) \quad 36x + 42 = 6(6x+7)$$

GCF: 6

$$8) \quad 9y + 54 = 9(y+6)$$

GCF: 9

$$9) \quad 12x + 15y + 33 = 3(4x+5y+11)$$

GCF: 3

Find the value of  $x$  using the distributive property.

$$10) \quad 3(x + 2) = 3 \cdot 6 + 3 \cdot 2$$

$$x = 6$$

$$11) \quad x(7 - 4) = 9 \cdot 7 - 9 \cdot 4$$

$$x = 9$$

$$12) \quad 8(5 - x) = 8 \cdot 5 - 8(-4)$$

$$x = -4$$