

# Distributive Property

Multiplication 'distributes' over addition (and subtraction):

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

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

1. Substitute the given values for the equation  $a(b + c) = ab + ac$ . Study the example.

<b>a.</b> $a = 2, b = 10, \text{ and } c = 4$ $2(10 + 4) = 2 \times 10 + 2 \times 4$	<b>b.</b> $a = 7, b = 8, \text{ and } c = 5$	<b>c.</b> $a = 4, b = x, \text{ and } c = 5$
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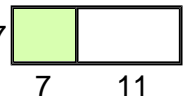
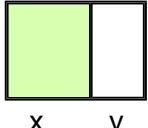
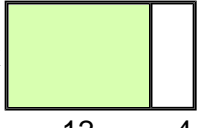
2. Substitute the given values for the equation  $a(b - c) = ab - ac$ .

<b>a.</b> $a = 2, b = 10, \text{ and } c = 4$	<b>b.</b> $a = 3, b = x, \text{ and } c = 7$	<b>c.</b> $a = 9, b = x, \text{ and } c = y$
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3. Take out the parentheses using the distributive property.

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|-----------------------------|--------------------------|--------------------------|
| <b>a.</b> $6(7 + 0.2)$      | <b>b.</b> $6(x + 10)$    | <b>c.</b> $2(x - 5)$     |
| <b>d.</b> $4(110 + 40 + 3)$ | <b>e.</b> $8(x - y)$     | <b>f.</b> $4(8 - w - z)$ |
| <b>g.</b> $y(2 + z)$        | <b>h.</b> $a(b - c + 4)$ | <b>i.</b> $4(t + r - s)$ |

4. Write TWO expressions for the area according to the example.

<p><b>a.</b> </p> <p>Area... as one rectangle: <math>7 \times (7 + 11)</math></p> <p>as two rectangles: <math>7 \times 7 + 7 \times 11</math></p>	<p><b>b.</b> </p>	<p><b>c.</b> </p>
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5. Write these expressions using the distributive property of multiplication. Find their values in a, b, and c.

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|---------------------------------------|---|-----------------------------------|
| <b>a.</b> $8 \times 2 + 8 \times 500$ | <b>b.</b> $7 \times 200 - 7 \times 0.4$ | <b>c.</b> $4(100) - 4(20) + 4(5)$ |
| <b>d.</b> $9y + 9z$                   | <b>e.</b> $7a - 7b + 7c$                | <b>f.</b> $8x + 8$                |

6. Solve *mentally* using the distributive property.

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|--|--------------------------|----------------------------|
| <b>a.</b> $5 \times 98 = 5 \times (100 - 2) =$ | <b>b.</b> $8 \times 999$ | <b>c.</b> $4 \times 20.5$  |
| <b>d.</b> $8 \times 21.4$                      | <b>e.</b> $4 \times 49$  | <b>f.</b> $3 \times 3,028$ |