

## The Distributive Property Pattern

A-DPA 1

**Instructions:** Each of these equations shows the basic pattern of the distributive property. Fill in the missing numbers to complete the pattern and make the equation true.

1  $8 \times (3 + 10) = \boxed{8} \times 3 + \boxed{8} \times 10$

2  $3 \times (7 + 9) = 3 \times \boxed{7} + 3 \times \boxed{9}$

3  $5 \times (12 - 6) = 5 \times \boxed{12} - \boxed{5} \times 6$

4  $7 \times (4 + 8) = \boxed{7} \times 4 + 7 \times \boxed{8}$

5  $11 \times (3 - 2) = 11 \times 3 - 11 \times \boxed{2}$

6  $\boxed{6} \times (5 - \boxed{3}) = 6 \times 5 - 6 \times 3$

7  $\boxed{8} \times (\boxed{3} + 8) = 8 \times 3 + 8 \times 8$

8  $5 \times (7 - 4) = 5 \times \boxed{7} - 5 \times 4$

9  $\boxed{9} \times (10 + 12) = 9 \times 10 + 9 \times 12$

10  $10 \times (\boxed{2} + \boxed{7}) = 10 \times 2 + 10 \times 7$

11  $2 \times (\boxed{15} - 13) = 2 \times 15 - 2 \times 13$

12  $4 \times (9 + 5) = \boxed{4} \times 9 + \boxed{4} \times 5$

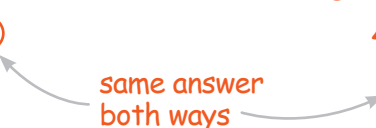
## Simplifying Expressions Two Different Ways

A-DPA 2

**Instructions:** Simplify each expression two different ways. In the first way, simplify what is inside the group first. In the second way, use the distributive property to eliminate the group. You should get the same answer both ways. Be sure to show your work!

### Way 1: Group First

### Way 2: The Distributive Property

|          |  |   |
|----------|--|---|
| <b>1</b> | $5 \times (8 + 2)$ $5 \times 10$ $\textcircled{50}$  | $5 \times (8 + 2)$ $5 \times 8 + 5 \times 2$ $40 + 10$ $\textcircled{50}$ |
|          |  <p>same answer<br/>both ways</p> |   |

|          |   |   |
|----------|---|---|
| <b>2</b> | $3 \times (7 + 5)$ $3 \times 12$ $\textcircled{36}$ | $3 \times (7 + 5)$ $3 \times 7 + 3 \times 5$ $21 + 15$ $\textcircled{36}$ |
|----------|---|---|

|          |   |   |
|----------|---|---|
| <b>3</b> | $10 \times (12 - 4)$ $10 \times 8$ $\textcircled{80}$ | $10 \times (12 - 4)$ $10 \times 12 - 10 \times 4$ $120 - 40$ $\textcircled{80}$ |
|----------|---|---|

|          |  |   |
|----------|--|---|
| <b>4</b> | $6 \times (2 + 5 + 1)$ $6 \times 8$ $\textcircled{48}$ | $6 \times (2 + 5 + 1)$ $6 \times 2 + 6 \times 5 + 6 \times 1$ $12 + 30 + 6$ $42 + 6$ $\textcircled{48}$ |
|----------|--|---|

|          |  |   |
|----------|--|---|
| <b>5</b> | $4 \times (10 - 3 + 2)$ $4 \times (7 + 2)$ $4 \times 9$ $\textcircled{36}$ | $4 \times (10 - 3 + 2)$ $4 \times 10 - 4 \times 3 + 4 \times 2$ $40 - 12 + 8$ $28 + 8$ $\textcircled{36}$ |
|----------|--|---|

## Simplifying Expressions with the Distributive Property

A-DPA 3

**Instructions:** Use the Distributive Property to simplify each of these expressions. Be sure to show all your work.

$$\begin{aligned} 1 \quad & 3 \times (7 + 4) \\ & 3 \times 7 + 3 \times 4 \\ & 21 + 12 \\ & \quad \textcircled{33} \end{aligned}$$

$$\begin{aligned} 2 \quad & 10 \times (3 + 5) \\ & 10 \times 3 + 10 \times 5 \\ & 30 + 50 \\ & \quad \textcircled{80} \end{aligned}$$

$$\begin{aligned} 3 \quad & 2 \times (7 + 5) \\ & 2 \times 7 + 2 \times 5 \\ & 14 + 10 \\ & \quad \textcircled{24} \end{aligned}$$

$$\begin{aligned} 4 \quad & 7 \times (5 - 1) \\ & 7 \times 5 - 7 \times 1 \\ & 35 - 7 \\ & \quad \textcircled{28} \end{aligned}$$

$$\begin{aligned} 5 \quad & 3 \times (12 + 10) \\ & 3 \times 12 + 3 \times 10 \\ & 36 + 30 \\ & \quad \textcircled{66} \end{aligned}$$

$$\begin{aligned} 6 \quad & 4 \times (9 + 5) \\ & 4 \times 9 + 4 \times 5 \\ & 36 + 20 \\ & \quad \textcircled{56} \end{aligned}$$

$$\begin{aligned} 7 \quad & 5 \times (6 + 5 - 1) \\ & 5 \times 6 + 5 \times 5 - 5 \times 1 \\ & 30 + 25 - 5 \\ & 55 - 5 \\ & \quad \textcircled{50} \end{aligned}$$

$$\begin{aligned} 8 \quad & 6 \times (10 - 6 - 4) \\ & 6 \times 10 - 6 \times 6 - 6 \times 4 \\ & 60 - 36 - 24 \\ & 24 - 24 \\ & \quad \textcircled{0} \end{aligned}$$

$$\begin{aligned} 9 \quad & 12 \times (10 - 5 + 2) \\ & 12 \times 10 - 12 \times 5 + 12 \times 2 \\ & 120 - 60 + 24 \\ & 60 + 24 \\ & \quad \textcircled{84} \end{aligned}$$

$$\begin{aligned} 10 \quad & 8 \times (2 + 3 + 4) \\ & 8 \times 2 + 8 \times 3 + 8 \times 4 \\ & 16 + 24 + 32 \\ & 40 + 32 \\ & \quad \textcircled{72} \end{aligned}$$

## Using the Distributive Property to Multiply - Set 1

A-DPA 4

**Instructions:** Use the Distributive Property to rearrange these multiplication problems so they are easier to do mentally. Then simplify them to get a final answer.

$$\begin{aligned}
 & \mathbf{1} \quad 7 \times 32 \\
 & \quad 7 \times (30 + 2) \\
 & \quad 7 \times 30 + 7 \times 2 \\
 & \quad 210 + 14 \\
 & \quad \mathbf{224}
 \end{aligned}$$

$$\begin{aligned}
 & \mathbf{2} \quad 4 \times 26 \\
 & \quad 4 \times (20 + 6) \\
 & \quad 4 \times 20 + 4 \times 6 \\
 & \quad 80 + 24 \\
 & \quad \mathbf{104}
 \end{aligned}$$

$$\begin{aligned}
 & \mathbf{3} \quad 5 \times 132 \\
 & \quad 5 \times (100 + 30 + 2) \\
 & \quad 5 \times 100 + 5 \times 30 + 5 \times 2 \\
 & \quad 500 + 150 + 10 \\
 & \quad \mathbf{660}
 \end{aligned}$$

$$\begin{aligned}
 & \mathbf{4} \quad 8 \times 54 \\
 & \quad 8 \times (50 + 4) \\
 & \quad 8 \times 50 + 8 \times 4 \\
 & \quad 400 + 32 \\
 & \quad \mathbf{432}
 \end{aligned}$$

$$\begin{aligned}
 & \mathbf{5} \quad 9 \times 41 \\
 & \quad 9 \times (40 + 1) \\
 & \quad 9 \times 40 + 9 \times 1 \\
 & \quad 360 + 9 \\
 & \quad \mathbf{369}
 \end{aligned}$$

$$\begin{aligned}
 & \mathbf{6} \quad 2 \times 734 \\
 & \quad 2 \times (700 + 30 + 4) \\
 & \quad 2 \times 700 + 2 \times 30 + 2 \times 4 \\
 & \quad 1,400 + 60 + 8 \\
 & \quad \mathbf{1,468}
 \end{aligned}$$

$$\begin{aligned}
 & \mathbf{7} \quad 6 \times 65 \\
 & \quad 6 \times (60 + 5) \\
 & \quad 6 \times 60 + 6 \times 5 \\
 & \quad 360 + 30 \\
 & \quad \mathbf{390}
 \end{aligned}$$

$$\begin{aligned}
 & \mathbf{8} \quad 4 \times 456 \\
 & \quad 4 \times (400 + 50 + 6) \\
 & \quad 4 \times 400 + 4 \times 50 + 4 \times 6 \\
 & \quad 1,600 + 200 + 24 \\
 & \quad \mathbf{1,824}
 \end{aligned}$$

## Using the Distributive Property to Multiply - Set 2

A-DPA 5

**Instructions:** Use the Distributive Property to rearrange these multiplication problems so they are easier to do mentally. Then simplify them to get a final answer.

$$\begin{aligned}
 & \mathbf{1} \quad 9 \times 43 \\
 & \quad 9 \times (40 + 3) \\
 & \quad 9 \times 40 + 9 \times 3 \\
 & \quad 360 + 27 \\
 & \quad \mathbf{387}
 \end{aligned}$$

$$\begin{aligned}
 & \mathbf{2} \quad 6 \times 58 \\
 & \quad 6 \times (50 + 8) \\
 & \quad 6 \times 50 + 6 \times 8 \\
 & \quad 300 + 48 \\
 & \quad \mathbf{348}
 \end{aligned}$$

$$\begin{aligned}
 & \mathbf{3} \quad 3 \times 97 \\
 & \quad 3 \times (90 + 7) \\
 & \quad 3 \times 90 + 3 \times 7 \\
 & \quad 270 + 21 \\
 & \quad \mathbf{291}
 \end{aligned}$$

$$\begin{aligned}
 & \mathbf{4} \quad 5 \times 28 \\
 & \quad 5 \times (20 + 8) \\
 & \quad 5 \times 20 + 5 \times 8 \\
 & \quad 100 + 40 \\
 & \quad \mathbf{140}
 \end{aligned}$$

$$\begin{aligned}
 & \mathbf{5} \quad 7 \times 84 \\
 & \quad 7 \times (80 + 4) \\
 & \quad 7 \times 80 + 7 \times 4 \\
 & \quad 560 + 28 \\
 & \quad \mathbf{588}
 \end{aligned}$$

$$\begin{aligned}
 & \mathbf{6} \quad 3 \times 615 \\
 & \quad 3 \times (600 + 10 + 5) \\
 & \quad 3 \times 600 + 3 \times 10 + 3 \times 5 \\
 & \quad 1,800 + 30 + 15 \\
 & \quad \mathbf{1,845}
 \end{aligned}$$

$$\begin{aligned}
 & \mathbf{7} \quad 2 \times 843 \\
 & \quad 2 \times (800 + 40 + 3) \\
 & \quad 2 \times 800 + 2 \times 40 + 2 \times 3 \\
 & \quad 1,600 + 80 + 6 \\
 & \quad \mathbf{1,686}
 \end{aligned}$$

$$\begin{aligned}
 & \mathbf{8} \quad 4 \times 722 \\
 & \quad 4 \times (700 + 20 + 2) \\
 & \quad 4 \times 700 + 4 \times 20 + 4 \times 2 \\
 & \quad 2,800 + 80 + 8 \\
 & \quad \mathbf{2,888}
 \end{aligned}$$