

# 1-3 Order of Operations with Variables

## ANSWERS

Simplify all of the algebraic expressions below given that

$$a = 10 \quad b = 8 \quad c = 20 \quad x = 2 \quad y = 1$$

Remember to show all of your work, step by step.

$$\begin{aligned} 1. \quad ab - c \\ &= 10 \cdot 8 - 20 \\ &= 80 - 20 \\ &= 60 \end{aligned}$$

$$\begin{aligned} 2. \quad c - xy \\ &= 20 - 2 \cdot 1 \\ &= 20 - 2 \\ &= 18 \end{aligned}$$

$$\begin{aligned} 3. \quad ax - cy \\ &= 10 \cdot 2 - 20 \cdot 1 \\ &= 20 - 20 \cdot 1 \\ &= 20 - 20 \\ &= 0 \end{aligned}$$

$$\begin{aligned} 4. \quad 4x + 2c \\ &= 4 \cdot 2 + 2 \cdot 20 \\ &= 8 + 2 \cdot 20 \\ &= 8 + 40 \\ &= 48 \end{aligned}$$

$$\begin{aligned} 5. \quad 8b - 2c \\ &= 8 \cdot 8 - 2 \cdot 20 \\ &= 64 - 2 \cdot 20 \\ &= 64 - 40 \\ &= 24 \end{aligned}$$

$$\begin{aligned} 6. \quad 5ax - 2cy \\ &= 5 \cdot 10 \cdot 2 - 2 \cdot 20 \cdot 1 \\ &= 50 \cdot 2 - 2 \cdot 20 \cdot 1 \\ &= 100 - 2 \cdot 20 \cdot 1 \\ &= 100 - 40 \cdot 1 \\ &= 100 - 40 \\ &= 60 \end{aligned}$$

$$\begin{aligned} 7. \quad a(c - 2b) - y \\ &= 10 \cdot (20 - 2 \cdot 8) - 1 \\ &= 10 \cdot (20 - 16) - 1 \\ &= 10 \cdot 4 - 1 \\ &= 40 - 1 \\ &= 39 \end{aligned}$$

$$\begin{aligned} 8. \quad x(3b - c) + x(c - ax) \\ &= 2 \cdot (3 \cdot 8 - 20) + 2 \cdot (20 - 10 \cdot 2) \\ &= 2 \cdot (24 - 20) + 2 \cdot (20 - 10 \cdot 2) \\ &= 2 \cdot 4 + 2 \cdot (20 - 10 \cdot 2) \\ &= 2 \cdot 4 + 2 \cdot (20 - 20) \\ &= 2 \cdot 4 + 2 \cdot 0 \\ &= 8 + 2 \cdot 0 \\ &= 8 + 0 \\ &= 8 \end{aligned}$$