

3.3 Practice B

$$\begin{aligned} 1. \quad 16 + (f + 4) &= 16 + (4 + f) && \text{Commutative Property of Addition} \\ &= (16 + 4) + f && \text{Associative Property of Addition} \\ &= 20 + f && \text{Add 16 and 4.} \end{aligned}$$

$$\begin{aligned} 2. \quad (3y) \cdot 9 &= 9 \cdot (3y) && \text{Commutative Property of Multiplication} \\ &= (9 \cdot 3)y && \text{Associative Property of Multiplication} \\ &= 27y && \text{Multiply 9 and 3.} \end{aligned}$$

$$\begin{aligned} 3. \quad 5(8y) &= (5 \cdot 8)y && \text{Associative Property of Multiplication} \\ &= 40y && \text{Multiply 8 and 5.} \end{aligned}$$

$$\begin{aligned} 4. \quad (0 + n) + 15 &= (n + 0) + 15 && \text{Commutative Property of Addition} \\ &= n + (0 + 15) && \text{Associative Property of Addition} \\ &= n + 15 && \text{Addition Property of Zero} \end{aligned}$$

$$\begin{aligned} 5. \quad (21 \cdot y) \cdot 1 &= 1 \cdot (21 \cdot y) && \text{Commutative Property of Multiplication} \\ &= (1 \cdot 21)y && \text{Associative Property of Multiplication} \\ &= 21y && \text{Multiplication Property of One} \end{aligned}$$

$$\begin{aligned} 6. \quad 10 \cdot x \cdot 4 &= 10 \cdot (x \cdot 4) && \text{Associative Property of Multiplication} \\ &= 10 \cdot (4 \cdot x) && \text{Commutative Property of Multiplication} \\ &= (10 \cdot 4) \cdot x && \text{Associative Property of Multiplication} \\ &= 40x && \text{Multiply 10 and 4.} \end{aligned}$$

$$\begin{aligned} 7. \quad 34 \cdot y \cdot 0 &= 34 \cdot (y \cdot 0) && \text{Associative Property of Multiplication} \\ &= 34 \cdot 0 && \text{Multiplication Property of Zero} \\ &= 0 && \text{Multiplication Property of Zero} \end{aligned}$$

$$\begin{aligned} 8. \quad 35 + (p + 5) &= 35 + (5 + p) && \text{Commutative Property of Addition} \\ &= (35 + 5) + p && \text{Associative Property of Addition} \\ &= 40 + p && \text{Add 35 and 5.} \end{aligned}$$

$$9. \quad 11 + h \qquad 10. \quad k \cdot 12 \qquad 11. \quad (21 + 9) + 8$$

$$12. \quad (12 \cdot 5) \cdot 4 \qquad 13. \quad 18 \cdot w \qquad 14. \quad 26 + c$$

15. The change in grouping shows the Associative Property of Multiplication.

$$16. \quad \text{a. } 21 + 19 + n$$

$$\begin{aligned} \text{b. } 21 + 19 + n &= (21 + 19) + n && \text{Associative Property of Addition} \\ &= 40 + n && \text{Add 21 and 19.} \end{aligned}$$

$$17. \quad 37 + t + 29 = 66 + t$$