Use the commutative and associative properties to simplify each expression.

1. $8 + (9 + b)$

2. $\frac{1}{8}(8z)$

3. $-9(8x)$

4. $\frac{7}{9} + \left(\frac{2}{9} + y\right)$

5. $\frac{2}{7}\left(\frac{7}{2}r\right)$

6. $7 + (x + 4)$

Use the distributive property to write each expression without parentheses. Then simplify the result.

7. $-5(2r + 11)$

8. $-4(4 + 2p + 5q)$

9. $\frac{1}{2}(6x + 8)$

10. $-\frac{1}{3}(3x - 9y)$

Use the distributive property to write each sum as a product.

11. $11x + 11y$

12. $(-3)a + (-3)b$

Name the properties illustrated by each true statement.

13. $3 \cdot 5 = 5 \cdot 3$

14. $2 + (x + 5) = (2 + x) + 5$

15. $6 \cdot \frac{1}{6} = 1$

16. $-4(y + 7) = -4 \cdot y + (-4) \cdot 7$

Determine which pairs of actions are commutative.

17. “taking a test” and “studying for the test”

18. “putting on your shoes” and “putting on your socks”

19. “putting on your left shoe” and “putting on your right shoe”

20. “reading the sports section” and “reading the comics”

21. “feeding the dog” and “feeding the cat”

22. “baking a cake” and “eating the cake”