

Commutative and Associative Properties**The Commutative Property**

The order in which you add or multiply numbers does not change the outcome.

$$\begin{array}{cc} 4 + 5 = 9 & 3 \cdot 4 = 12 \\ \text{and} & \text{and} \\ 5 + 4 = 9 & 4 \cdot 3 = 12 \\ a + b = b + a & a \cdot b = b \cdot a \end{array}$$

Also known as:
the order property

The Associative Property

The order in which you add or multiply three or more numbers does not change the outcome.

$$\begin{array}{cc} (3 + 4) + 5 = 12 & (3 \cdot 4) \cdot 5 = 60 \\ \text{and} & \text{and} \\ 3 + (4 + 5) = 12 & 3 \cdot (4 \cdot 5) = 60 \\ (a + b) + c = a + (b + c) & (a \cdot b) \cdot c = a \cdot (b \cdot c) \end{array}$$

Also known as:
the grouping property

Circle the true statements. Do not find the answers.

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|---|---|
| 1. $6 + 3 = 3 + 6$ | 2. $9 \div 3 = 3 \div 9$ |
| 3. $25 \cdot 4 = 4 \cdot 25$ | 4. $(5 + 6) + 7 = 5 + (6 + 7)$ |
| 5. $43 + 18 = 18 + 43$ | 6. $(8 - 5) - 2 = 8 - (5 - 2)$ |
| 7. $4 \times 5 = 5 \times 4$ | 8. $(12 \div 3) \div 2 = 12 \div (3 \div 2)$ |
| 9. $(6 \cdot 8) \cdot 1 = 6 \cdot (8 \cdot 1)$ | 10. $(6 \cdot 3) \cdot 4 = 6 \cdot (3 \cdot 4)$ |
| 11. $8 \cdot (10 \cdot 5) = (8 \cdot 10) \cdot 5$ | 12. $43 + (15 + 6) = (43 + 15) + 6$ |
| 13. $(a + b) + c = a + (b + c)$ | 14. $a \cdot (b \cdot c) = (a \cdot b) \cdot c$ |

Fill in the blanks to make a true statement.

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|---|---|
| 15. $(4 + 6) + 9 = 4 + (\underline{\quad} + 9)$ | 16. $11 + 8 = \underline{\quad} + 11$ |
| 17. $x \cdot 3 = 3 \cdot \underline{\quad}$ | 18. $a \cdot (b \cdot c) = (a \cdot \underline{\quad}) \cdot c$ |
| 19. $(\underline{\quad} + 5) + 1 = 4 + (5 + 1)$ | 20. $5 \cdot \underline{\quad} = 9 \cdot 5$ |
| 21. $(x + \underline{\quad}) + z = x + (y + z)$ | 22. $38 + 125 = 125 + \underline{\quad}$ |
| 23. The product of 4 and 8 is equal to the product of 8 and ____. | 24. The sum of 6 and 10 is equal to the sum of 10 and ____. |