Properties of Operations

Commutative Properties	Associative Properties
You can add or multiply numbers in any order and the sum or product will be the same.	You can group numbers differently. It will not affect the sum or product.
Examples: $10 + 5 + 3 = 5 + 3 + 10 = 18$ $7 \times 5 = 5 \times 7 = 35$	**Examples:** $2 + (7 + 6) = (2 + 7) + 6 = 15$ $(4 \times 5) \times 8 = 4 \times (5 \times 8) = 160$
Identity Properties You can add zero to a number or multiply it by 1 and not change the value of the number.	**Multiplication Property of Zero** If you multiply a number by zero, the product will always be zero.
Examples: $17 + 0 = 17$ $45 \times 1 = 45$	**Example:** $12 \times 0 = 0$

Find each missing number. Tell what property or properties are shown.

1. $9 \times 5 = 5 \times$ _____

_____

2. _____ $\times 89 = 89$

_____

3. $(3 + 4) + 19 = 3 + ($_____$+ 19)$

_____

4. $128 +$ _____ $= 128$

_____

5. _____ $+ 18 = 18 + 12$

_____

6. Reasoning What is the product of any number, x, multiplied by 1? Explain how you know.

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