Mathematical Laws

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The **Commutative Law** allows you to switch the order of the terms you are performing an operation on.

For addition:

$$a + b = b + a$$

For multiplication:

$$a \times b = b \times a$$

The **Associative Law** allows you tells us that how we group things doesn't matter.

For addition:

$$(a + b) + c = a + (b + c)$$

For multiplication:

$$(a \times b) \times c = a \times (b \times c)$$

The **Distributive Law** allows you to multiply a number into a larger term, or pull out a common factor form a few terms.

$$a \times (b + c) = a \times b + a \times c$$

Questions:

1. Simplify $x^2 - 7x + 2 - 3x - 2x^2 + 9$

2. Simplify $-7x^4 + 5x^3 + 13x - 1 - 5x^5 + 7x^4 - 10x^3 - 7x - 3$

3. Simplify $x^3 + 2x^2 - 4x^3 + x - 13x^2 + 3 - 2x + 4$

4. Simplify $4 \times (5x^2 + 6x - 9)$

5. Simplify $-2 \times (x^2 - 7x - 17)$

6. Simplify $3 \times (4x^3 - 2x^2 - 5x + 12)$

7. Simplify $2 \times (2x^2 - 5x + 6) - 3 \times (x^2 + 3x + 4)$

8. Simplify $-1 \times (7x^2 - 6x - 6 + 4x^2 + 2x - 5)$

9. Simplify $4a - 3b + 2 \times \left(\dfrac{3}{2}a - \dfrac{3}{4}b \right)$

10. Simplify $\dfrac{5x^2 - 6x + 9 - x^2 - 10x + 5}{8}$