

So we are given an expression:

$$(x + 7) \cdot (3 + x) + (3 + x) \cdot 2 + (x + 7) \cdot (9 + x)$$

Let's simplify it!

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Let's reshuffle operands a bit

$$(x + 7) \cdot (x + 3) + (3 + x) \cdot 2 + (x + 7) \cdot (9 + x)$$

Let's reshuffle operands a bit

$$(x + 7) \cdot (x + 3) + (x + 3) \cdot 2 + (x + 7) \cdot (9 + x)$$

Let's reshuffle operands a bit

$$(x + 7) \cdot (x + 3) + 2 \cdot (x + 3) + (x + 7) \cdot (9 + x)$$

Sprinkling out-of-brackets magic!

$$(x + 3) \cdot (x + 7 + 2) + (x + 7) \cdot (9 + x)$$

Some evaluations leave us with

$$(x + 3) \cdot (x + 9) + (x + 7) \cdot (9 + x)$$

Let's reshuffle operands a bit

$$(x + 3) \cdot (x + 9) + (x + 7) \cdot (x + 9)$$

Sprinkling out-of-brackets magic!

$$(x + 9) \cdot (x + 3 + x + 7)$$

Let's reshuffle operands a bit

$$(x + 9) \cdot (x + x + 3 + 7)$$

Sprinkling out-of-brackets magic!

$$(x + 9) \cdot (x \cdot 2 + 3 + 7)$$

Let's reshuffle operands a bit

$$(x + 9) \cdot (2 \cdot x + 3 + 7)$$

Let's reshuffle operands a bit

$$(x + 9) \cdot (2 \cdot x + 7 + 3)$$

Some evaluations leave us with

$$(x + 9) \cdot (2 \cdot x + 10)$$

So finally:

$$(x + 9) \cdot (2 \cdot x + 10)$$