

7.EE Writing Expressions

Alignments to Content Standards: 7.EE.A.1

Task

Write an expression for the sequence of operations.

- Add 3 to x , subtract the result from 1, then double what you have.
- Add 3 to x , double what you have, then subtract 1 from the result.

IM Commentary

The instructions for the two expressions sound very similar, however, the order in which the different operations are performed and the exact wording make a big difference in the final expression. Students have to pay close attention to the wording: “subtract the result from 1” and “subtract 1 from the result” are very different.

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Solution

- This problem can be done step-by-step. We first add 3 to x :

$$x + 3.$$

Then we subtract the result that we just got from 1:

$$1 - (x + 3).$$

We then double, meaning we multiply this entire expression by 2:

$$2(1 - (x + 3)).$$

If we choose to simplify this expression, we use the distributive, commutative and associative properties in the following way:

$$\begin{aligned} 2(1 - (x + 3)) &= 2(1 - x - 3) && \text{distribute the -1} \\ &= 2(-x - 2) && \text{subtracting 3 from 1} \\ &= -2x - 4 && \text{distribute the 2} \end{aligned}$$

b. Again, we add 3 to x:

$$x + 3$$

This time, next we double, meaning multiplying this expression by 2:

$$2(x + 3).$$

Then we subtract 1 from the result and we have:

$$2(x + 3) - 1.$$

If we choose to simplify this expression, we use the distributive and associative properties in the following way:

$$\begin{aligned} 2(x + 3) - 1 &= (2x + 6) - 1 && \text{distribute the 2} \\ &= 2x + 5 && \text{subtracting 1 from 6} \end{aligned}$$

Notice that the final expressions are very different, even though the instructions sounded very similar.



