

**Essential Question:** How do we simplify polynomial expressions with multiple operations?

**Do Now:** Consider the two expressions below. Do you see any commonality?

*Think about this:* How would you simplify expression A? How would you simplify expression B?

a)  $(4)(5) + (7)(10)$

b)  $(x + 1)(x - 1) + (2x - 5)(x + 6)$

---

### Simplifying Polynomial Expressions

1)  $3x(5 - 4x) + 6(3 - 2x)$

2)  $3(y^3 + 8y) - 2(y^3 + 5)$



**P**  
**E**  
**M or D**  
**A or S**

3)  $(x - 4)(x + 4) + (x + 6)(2x + 5)$

4)  $-\frac{3}{2}(8a + 2a^2)(a^2 - a - 9)$

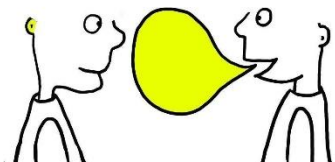
5)  $(x^2 + 5x - 10) - (x + 2)^2$

6) Find the result when the sum of  $x^2 - 2x + 7$  and  $6x - 9$  is multiplied by  $\frac{1}{2}x^3$ .

The  
**TAKEAWAY**

Always follow the \_\_\_\_\_  
when simplifying polynomial expressions.

Turn and Talk



1) Subtract  $(3x - 1)^2$  from  $12x$ . Represent your final answer as a simplified polynomial expression written in standard form.

2) Celina says that each of the following expressions below is actually a *binomial* in disguise. Do you agree or disagree? Justify your response.

a)  $5abc - 2a^2 + 6abc$

b)  $5(a - 1) - 10(a - 1) + 100(a - 1)$

c)  $(2\pi r - \pi r^2)(r) + (2\pi r - \pi r^2)(r)$

3) The volume of a rectangular pyramid is one-third the product of the area of its base and height. Represent the volume of a rectangular pyramid as a polynomial expression in simplest standard form whose base has an area of  $3x^2 + 12x + 9$  square feet and whose height is  $x + 3$  feet. Use appropriate units in your final answer.

