

Name: \_\_\_\_\_

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**Algebra (simplifying expressions)**

To simplify an algebraic expression, we simply collect **like terms** (terms that contain variable(s) raised to the same power(s)):

**Example 1.**

$$4x - 2 + 3 - 6x = -2x + 1$$

Notice that numbers by themselves are their own type of term, constants.

Be careful about negatives! I recommend grouping the sign with the coefficient so that you don't make a silly mistake.

**Example 2.**

$$6 - 2x + 7 + 8x = 6 + (-2x) + 7 + 8x = 13 + 6x$$

NOT

$$6 - 2x + 7 + 8x = 13 - 10x$$

The distributive property says that

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

for any real numbers  $a, b, c$ . This allows us to simplify certain expressions:

**Example 3.**

$$2(x + 1) + 3(2x - 1) = 2x + 1 + 6x - 3 = 8x - 2$$

Remember that the product of two negatives is positive - this is important for correct distribution.

**Example 4.**

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

NOT

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

1. Simplify the following:

(a) (1 point)

$$7a + 7 - 8a - 3$$

(b) (1 point)

$$5 - 9x + 2 - 2x$$

(c) (1 point)

$$5 + 2t - 6 - 3s - 5t + 4s$$

2. Simplify the following:

(a) (1 point)

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

(b) (1 point)

$$-3(2y - 8) - 5(3y + 7)$$

(c) (1 point)

$$3(3z - 1) - 4(2 - 5z) + 2(2z - 1)$$

Note: For fractions, remember to use the least common denominator. You can choose to distribute at any time, but you must distribute at some point.

3. Simplify the following:

(a) (1 point)

$$\frac{12s + 1}{6} - \frac{4s - 3}{4}$$

(b) (1 point)

$$\frac{x + 2}{10} - \frac{1 - 3x}{12} + \frac{x + 1}{4}$$