

Guided Practice 1.3.2**Example 1**

Find the sum of $(4 + 3x) + (2 + x)$.

1. Rewrite the sum so that like terms are together.

There are two numeric quantities, 4 and 2, and two terms that contain a variable, $3x$ and x . All the terms are positive.

$$\begin{aligned}(4 + 3x) + (2 + x) \\ = 4 + 2 + 3x + x\end{aligned}$$



2. Find the sum of any numeric quantities.

The numeric quantities in this example are 4 and 2.

$$\begin{aligned}4 + 2 + 3x + x \\ = 6 + 3x + x\end{aligned}$$



3. Find the sum of any terms with the same variable raised to the same power.

The two terms $3x$ and x both contain only the variable x raised to the first power.

$$\begin{aligned}6 + 3x + x \\ = 6 + 4x\end{aligned}$$

The result of $(4 + 3x) + (2 + x)$ is $6 + 4x$.




Example 2

Find the sum of $(7x^2 - x + 15) + (6x + 12)$.


1. Rewrite the sum so that like terms are together.
 Be sure to keep any negatives with the expression that follows, such as $-x$.

$$(7x^2 - x + 15) + (6x + 12)$$

$$= 7x^2 - x + 6x + 15 + 12$$


2. Find the sum of any numeric quantities.

$$7x^2 - x + 6x + 15 + 12$$

$$= 7x^2 - x + 6x + 27$$


3. Find the sum of any terms with the same variable raised to the same power.

There is only one term with the variable x raised to the second power.


There are two terms with the variable x raised to the first power, $-x$ and $6x$, so these can be combined.

Add the coefficients of the variable.

$$7x^2 - x + 6x + 27$$

$$= 7x^2 + 5x + 27$$

The result of $(7x^2 - x + 15) + (6x + 12)$ is $7x^2 + 5x + 27$.



UNIT 1 • RELATIONSHIPS BETWEEN QUANTITIES AND EXPRESSIONS

Lesson 3: Interpreting Formulas and Expressions

Instruction

Example 3

Find the difference of $(x^5 + 8) - (3x^5 + 5x)$.

1. Rewrite the difference as a sum.

A difference can be written as a sum by adding the opposite of the second expression.

Simplify “ $-(3x^5 + 5x)$ ” by distributing -1 and writing the polynomial as $(-3x^5 - 5x)$.

$$\begin{aligned}(x^5 + 8) - (3x^5 + 5x) \\ &= (x^5 + 8) + [-1(3x^5 + 5x)] \\ &= (x^5 + 8) + (-3x^5 - 5x)\end{aligned}$$

2. Rewrite the sum so that any like terms are together.

Be sure to keep any negatives with the expression that follows, such as $-3x^5$.

$$\begin{aligned}(x^5 + 8) + (-3x^5 - 5x) \\ &= x^5 + (-3x^5) + (-5x) + 8\end{aligned}$$

3. Find the sum of any terms with the same variable raised to the same power.

There are two terms with the variable x raised to the fifth power.

There is only one term with x raised to the first power, and only one numeric quantity.

The sum of the two terms with x^5 can be combined by adding their coefficients.

$$\begin{aligned}x^5 + (-3x^5) + (-5x) + 8 \\ &= -2x^5 - 5x + 8\end{aligned}$$

The result of $(x^5 + 8) - (3x^5 + 5x)$ is $-2x^5 - 5x + 8$.

