Unit 2: Solving Equations
Lesson 2.2: Combining Like Terms

Get Ready:

Solve these equations:

\[ 5x + 2 = -8 \]

\[ \frac{x}{5} + 2 = -8 \]

1) What is different about how you solved these equations?

2) What are the different parts to the first equation?

3) How can you check if your solution is correct?

\[ \rightarrow \text{Plug the soln back into the problem.} \]

4) What happens if you check an incorrect solution?
Like Terms

Terms that contain the same variable which is raised to the same exponent!

\[-2p, 5p, \frac{p}{2} = 0.5p = \frac{1}{2} \cdot p\]

\[\frac{3}{4}, -7\]

Constants

\[15x, -6x, -8x^2, x^2, -ba, 7ab\]

Variable Coefficients "# multiplied w/ variables"
Mathematical Statements

2a + 3 - a² + 5a - 2

You can **Simplify** an Algebraic **Expression** by **CLT** → No =

5x - 2 + 2x = 12

You can **Solve** Algebraic **Equation**

Goal is to isolate the variable!!!
Simplify the expression:

\[ 15j - 2 + 2j^3 - 4 + 5j - j^2 + 3 - 5j^3 \]

\[ 15j + 5j - 2 - 4 + 3 + 2j^3 - 5j^3 - j^2 \]

\[ -3j^3 - j^2 + 20j - 3 \]
Solve the equations

\[5a - 8 - 7a + 2 = 10\]

-2a - 6 = 10

\[\frac{-2a}{-2} = \frac{16}{-2}\]

a = -8

3x + 2 = 12 + 5x

\[-\frac{3x}{0x} + 2 = 12 + 2x\]

\[\frac{-12}{-10} = \frac{2x}{2}\]

-5 = x
2.2 Combining Like Terms

Sharks and Minnows
Round 1: Like Terms on Same Side

- \(-40 = 10 + 2n - 12n\)
- \(2n + 10 - 6 = -8\)
- \(-11 = 3r - 4r\)
- \(-b - 6b = 35\)
- \(-12p - 8p = -40\)
- \(-19 = 1 - 9n - 11n\)
- \(3 = 10x + 3 + 10x\)
- \(-26 = 10m + 3m\)
- \(7 = 2 + 8r + 13\)
- \(3x - 8x = -25\)
Round 2: Like terms on opposite sides

- $m - 5 - 5m = -2m + 21$
- $-12a - 8 = -9 - 2a$
- $x - 7 = 7x - 14$
- $8v - 28 = v - 14$
- $14x + 14 = 20 + 13x$
- $2x - 26 = 1 + 5x$
- $6m - 2m = 9m + 11m$
- $-6x + 13 - 11x = -8 - 14x$
- $9x + 10 - 13 = -27 + 11x$
- $9v - 9 = 1 + 4v$
Fishy Game Problems

Solve each equation.

1) $3x - 8x = -25$
   $\{5\}$

2) $7 = 2 + 8r + 13$
   $\{-1\}$

3) $-26 = 10m + 3m$
   $\{-2\}$

4) $3 = 10n + 3 + 10n$
   $\{0\}$

5) $-19 = 1 - 9n - 11n$
   $\{1\}$

6) $-12p - 8p = -40$
   $\{2\}$

7) $-b - 6b = 35$
   $\{-5\}$

8) $-11 = 3r - 4r$
   $\{11\}$

9) $2n + 10 - 6 = -8$
   $\{-6\}$

10) $-40 = 10 + 2n - 12n$
    $\{5\}$

11) $9x - 9 = 1 + 4x$
    $\{2\}$

12) $9x + 10 - 13 = -27 + 11x$
    $\{12\}$

13) $-6x + 13 - 11x = -8 - 14x$
    $\{7\}$

14) $6m - 2m = 9m + 11m$
    $\{6\}$

15) $2x - 26 = 1 + 5x$
    $\{-9\}$

16) $14x + 14 = 20 + 13x$
    $\{6\}$

17) $8v - 28 = v - 14$
    $\{2\}$

18) $x - 7 = 7x - 14x - 7$
    $\{0\}$

19) $-12a - 8 = -9a - 2a$
    $\{-8\}$

20) $m - 5 - 5m = -2m + 21$
    $\{-13\}$