

Solving Multi-Step Equations

Procedure: To solve multi-step equations...

1. Fully simplify both sides of the equation
2. Get all variables to one side of the equation.
3. Use inverse operations to isolate the variable
undo addition and subtraction first

Ex.

$$\begin{array}{r}
 2x+3 = 7 \\
 \underline{-3 \quad -3} \\
 2x = 4 \\
 \underline{\div 2 \quad \div 2} \\
 \boxed{x = 2}
 \end{array}$$

Check: $2x + 3 = 7$
 $2(2) + 3 = 7$
 $4 + 3 = 7$
 $7 = 7$ Check

Ex.

$$\begin{array}{r}
 2(x+5) = 3x - 5 \\
 2x + 10 = 3x - 5 \\
 \underline{-2x \quad -2x} \\
 10 = x - 5 \\
 \underline{+5 \quad +5} \\
 \boxed{x = 15}
 \end{array}$$

Solve and check each equation.

1. $-2x + 7 = 25$

2. $3 - 8x = -141$

3. $15 - 2(w + 5) = 11$

4. $12 - 4r = 6r + 2$

5. $-4(n + 5) = -32$

6. $12 - 2x + 5 = -1$

7. $3 - 2x = 15$

8. $\frac{x}{2} - 7 = 12$

9. $17 + 3x = 4x - 9$

10. $-3(6x - 12) = 36 - 18x$

Slope Practice

To find the slope between two points algebraically:

1. Substitute the x and y coordinates into the formula
 - a. First, choose which ordered pair is the 1st and which is the 2nd
 - b. Either choice will be fine!
2. Simplify the ratio
 - a. Careful with your negatives
 - b. Be willing to keep fraction!

**Most common formula is:

$$m = \frac{y_2 - y_1}{x_2 - x_1}$$

1. (3, 5) and (1, 11)

2. (-3, -2) and (1, -12)

3. (7, -2) and (2, 18)

4. (-6, 2) and (-4, 10)

Slope Intercept Form

$$y = mx + b$$

where $m = \text{slope}$
 $b = \text{y-intercept}$

Write the slope-intercept form of the equation of each line given the slope and y-intercept:

5. Slope = 1, y-intercept = -2

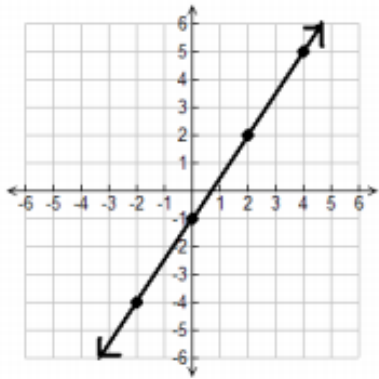
6. Slope = $-\frac{6}{5}$, y-intercept = 1

7. Slope = $-\frac{4}{3}$, y-intercept = 0

Write the slope- intercept form of the equation of each line:

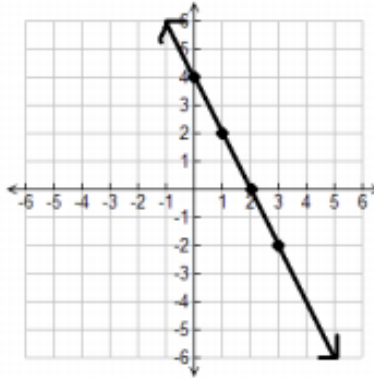
8.

slope	
y-intercept	
equation	



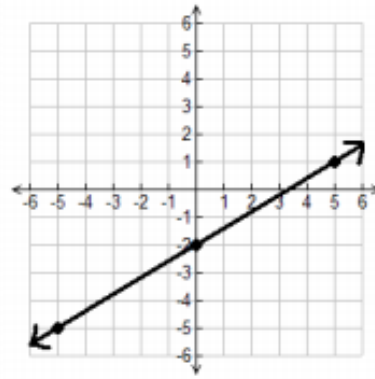
9.

slope	
y-intercept	
equation	



10.

slope	
y-intercept	
equation	



Factoring Polynomials

Factoring Strategies

- 1) Look for Greatest Common Factor (GCF)
 - 2) # of terms in remaining polynomial
 - 4 Terms → factor by grouping
 - 3 Terms → factor into product of 2 binomials
 - 2 Terms → difference of squares or sum/difference of cubes
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1. $x^2 - 9x + 20$

2. $9x^2 + 9x$

3. $x^2 + 16x + 64$

4. $x^2 - 2x - 15$

5. $x^2 - 81$

6. $6x^2 - 11x + 4$

7. $5x^2 + 10x$

8. $10x^2 + 19x + 6$

9. $6x^2 - 15x$

10. $x^2 + 8x + 16$