Lesson 5.2 Solving Systems of Linear Equations Using Elimination Method Day 3

Find the Slope
(3, 0) (-11, -15)

Paradise
Education Center
Soaring Above The Rest!

Pythagorean Theorem

18 cm

x cm

30 cm

Simplify the Expression
Write in Exponential Notation

$$\frac{3x^3 \cdot z^4 \cdot 4x^3}{2x \cdot x \cdot 3z}$$

$$\frac{\left(\dfrac{2}{3}\right)^2 \cdot \left(\dfrac{2}{3}\right)^6}{\left(\dfrac{2^2}{3^2}\right)^3}$$

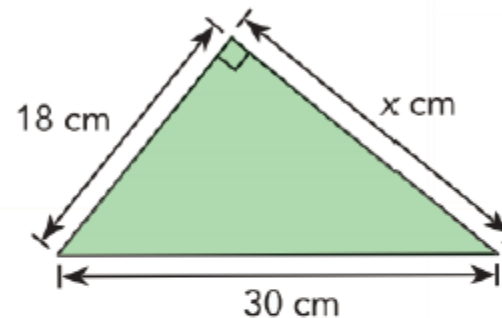**Simplify Expression**
Write as positive exponent

Lesson 5.2 Solving Systems of Linear Equations Using Elimination Method Day 3

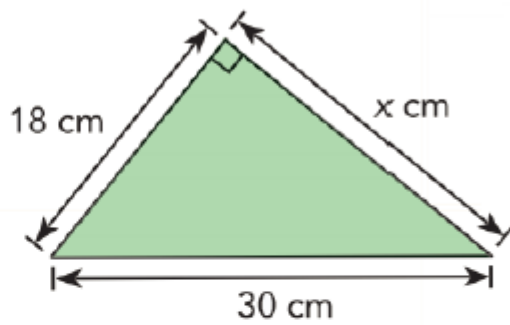## Week 1 Wednesday Course 3 Warm-up

Find the Slope
(3, 0) (-11, -15)

Given two points:
(x_1, y_1) (x_2, y_2)

Slope Formula:
$$\frac{y_2 - y_1}{x_2 - x_1}$$

$$\frac{-15-0}{-11-3} = \frac{-15}{-14} = \frac{15}{14}$$

Paradise Education Center
Soaring Above The Rest!

Pythagorean Theorem

18 cm, x cm, 30 cm

$x = 24$

Simplify the Expression
Write in Exponential Notation

$$\frac{3x^3 \cdot z^4 \cdot 4x^3}{2x \cdot x \cdot 3z}$$

$$2x^4 z^3$$

Simplify Expression
Write as positive exponent

$$\frac{\left(\frac{2}{3}\right)^2 \cdot \left(\frac{2}{3}\right)^6}{\left(\frac{2^2}{3^2}\right)^3}$$

$$\left(\frac{2}{3}\right)^2$$

Lesson 5.2 Solving Systems of Linear Equations Using Elimination Method Day 3

Objective

TSW solve systems of linear equations by finding the unique solution using the following strategy…

***Elimination Method with** and **without common terms**

A system of linear equations may have a unique solution. It can be solved using the elimination, substitution, or graphical methods.

Common Core State Standards

8EE 8a Understand that solutions to a system…satisfy both equations simultaneously. 8EE 8 b Solve Systems of two linear equations in two variables algebraically

Mathematical Practices *2 Reason 3 Construct arguments 4 Model Mathematics*

Quick Write- Why use the Elimination Method with and without common terms?

Why use the Elimination Method with and without common terms?

Help solve real world problems such as choosing describing items sold at basketball game

You are running a concession stand at a basketball game. You are selling hot dogs and sodas. Each hot dog costs $1.50 and each soda costs $0. 50. At the end of the night you made a total of $78.50. You sold a total of 87 hot dogs and sodas combined. You must report the number of hot dogs sold and the number of sodas sold. How many hot dogs were sold and how many sodas were sold?

We will focus on real world problems later this week. Today, we will focus on how the strategy works between two systems of linear equations

Guided Practice

Solve each system of linear equations using the elimination method.

5 $3x - 2y = 24$

$5x + 4y = -4$

Guided Practice

Solve each system of linear equations using the elimination method.

5 $3x - 2y = 24$
$5x + 4y = -4$

$x = 4, y = -6$

Guided Practice

Solve each system of linear equations using the elimination method.

6 $2x + 7y = -32$

$4x - 5y = 12$

Guided Practice

Solve each system of linear equations using the elimination method.

6 $2x + 7y = -32$

$4x - 5y = 12$

$x = -2, y = -4$

Guided Practice

Solve each system of linear equations using the elimination method.

4 $7m + 2n = -8$

$2m = 3n - 13$

Guided Practice

Solve each system of linear equations using the elimination method.

4 $7m + 2n = -8$

$2m = 3n - 13$

$m = -2, n = 3$

Your Turn

$$8x + 6y = 14$$
$$6x + 3y = 6$$

Your Turn

$8x + 6y = 14$

$6x + 3y = 6$

$8x + 6y = 14$ — Eq. 1
$6x + 3y = 6$ — Eq. 2
Multiply Eq. 2 by 2:
$2(6x + 3y) = 2(6)$
$12x + 6y = 12$ — Eq. 3
Subtract Eq. 3 from Eq. 1:
$(8x + 6y) - (12x + 6y) = 14 - 12$
$8x - 12x + 6y - 6y = 2$
$-4x = 2$
$x = -\dfrac{1}{2}$

Substitute $-\dfrac{1}{2}$ for x into Eq. 1:

$8\left(-\dfrac{1}{2}\right) + 6y = 14$

$-4 + 6y = 14$
$6y = 18$
$\dfrac{6y}{6} = \dfrac{18}{6}$
$y = 3$

So, the solution of the system of linear equations is $x = -\dfrac{1}{2}, y = 3$.

Practice 5.2 #7-9

Challenge-#19-24

*Solve created equations

"Pick a Snowflake"

*Real World Problem (website)

*BuzzMath

Practice 5.2

1. $2j + k = 6$
   $j - k = 8$
2. $2j + 3k = 11$
   $2j - 5k = 3$
3. $3m + n = 30$
   $2m - n = 20$
4. $3x - y = 9$
   $2x - y = 7$
5. $5s - t = 12$
   $3s + t = 12$
6. $2b + c = 10$
   $2b - c = 6$
7. $3m - n = 7$
   $21m + 6n = -29$
8. $7a + b = 10$
   $2a + 3b = -8$
9. $2p + 5q = 4$
   $7p + 15q = 9$

Solve each system of linear equations using the substitution method.

10. $2j + k = 3$
    $k = j - 9$
11. $2h + 3k = 13$
    $h = 2k - 4$
12. $3m + b = 23$
    $m - b = 5$
13. $3h - k = 10$
    $h - k = 2$
14. $3s - t = 5$
    $s + 2t = 4$
15. $2x + y = 20$
    $3x + 4y = 40$
16. $3x + 2y = 0$
    $5x - 2y = 32$
17. $5x - y = 20$
    $4x + 3y = 16$
18. $3p + 4q = 3$
    $\frac{1}{2} + q = 3p$

Solve each system of linear equations using the elimination method or substitution method. Explain why you choose each method.

19. $2x + 7y = 32$
    $4x - 5y = -12$
20. $3x + 3y = 22$
    $3x - 2y = 7$
21. $7m + 2n = 20$
    $2m = 3n - 5$
22. $3h - 4k = 35$
    $k = 2h - 20$
23. $2h + 7k = 32$
    $3h - 2k = -2$
24. $2m + 4 = 3n$
    $5m - 3n = -1$

Solve.

25. *Math Journal* Sam solves the following system of linear equations by the elimination method, without using calculator.

$2x + 3y = 1$
$3x - 17y = 23$

He can multiply the first equation by 3 and the second equation by 2 in order to eliminate x. Or he can eliminate y by multiplying the first equation by 17 and the second equation by 3. Which way should Sam choose? Explain.

Lesson Check #1-6 Can Solve Systems of linear equations using the elimination method

Ticket Out the Door- 1 Better and 1 Puzzle

*Try to use key vocabulary

Systems of Linear equations, unique solution,
elimination method with/without common terms

1 thing I better understand after today's class is...

1 thing I am still puzzled about is...