

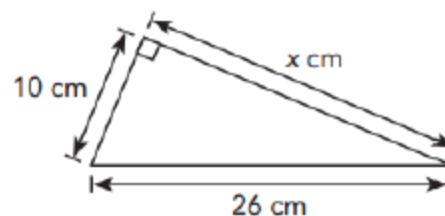
Lesson 5.2 Solving Systems of Linear Equations Using Elimination Method Day 2

Week 1 Monday Course 3 Warm-up

Find the Slope
(17, -13) (17, 8)



Pythagorean Theorem



Simplify the Expression
Write in Exponential Notation

$$28m^7n^4 \div 7m^3n^2$$

$$\frac{\left(\frac{x}{2}\right)^3 \cdot \left(\frac{x}{2}\right)^4}{\left(\frac{x^3}{2}\right)^2}$$

Simplify Expression
Write as positive exponent

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Week 1 Monday Course 3 Warm-up

Find the Slope

$$(17, -13) (17, 8)$$

$$\frac{8 - (-13)}{17 - 17} = \frac{21}{0} = \text{Undefined}$$



Pythagorean Theorem

$$26^2 = 10^2 + x^2$$

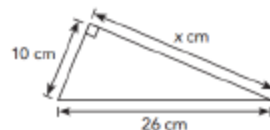
$$676 = 100 + x^2$$

$$676 - 100 = 100 + x^2 - 100$$

$$576 = x^2$$

$$x = \sqrt{576}$$

$$x = 24$$



Simplify the Expression
Write in Exponential Notation

$$28m^7n^4 \div 7m^3n^2$$

$$= \frac{28m^7n^4}{7m^3n^2}$$

$$= \frac{28}{7} \cdot \frac{m^7}{m^3} \cdot \frac{n^4}{n^2}$$

$$= 4 \cdot m^{7-3} \cdot n^{4-2}$$

$$= 4m^4n^2$$

Simplify Expression
Write as positive exponent

$$\left(\frac{x}{2}\right)^3 \cdot \left(\frac{x}{2}\right)^4$$

$$\frac{\left(\frac{x}{2}\right)^3 \cdot \left(\frac{x}{2}\right)^4}{\left(\frac{x^3}{2}\right)^2}$$

$$\frac{x}{2^5}$$

Lesson 5.2 Solving Systems of Linear Equations Using Elimination Method Day 2

Objective

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

*Elimination Method with **common terms**

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



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

Lesson 5.2 Solving Systems of Linear Equations Using Elimination Method Day 2



How does this video illustrate the vocabulary- systems of linear equations, unique solution, elimination method?

<http://safeshare.tv/w/PYDVUBPoQv>

Lesson 5.2 Solving Systems of Linear Equations Using Elimination Method Day 2

Review Key Vocabulary from Objective Using Think/Scribe

Systems of Linear Equations

Unique Solution

Lesson 5.2 Solving Systems of Linear Equations Using Elimination Method Day 2

Definition of Elimination Method

Elimination Method with common terms

Lesson 5.2 Solving Systems of Linear Equations Using Elimination Method Day 2

Definition of Elimination Method

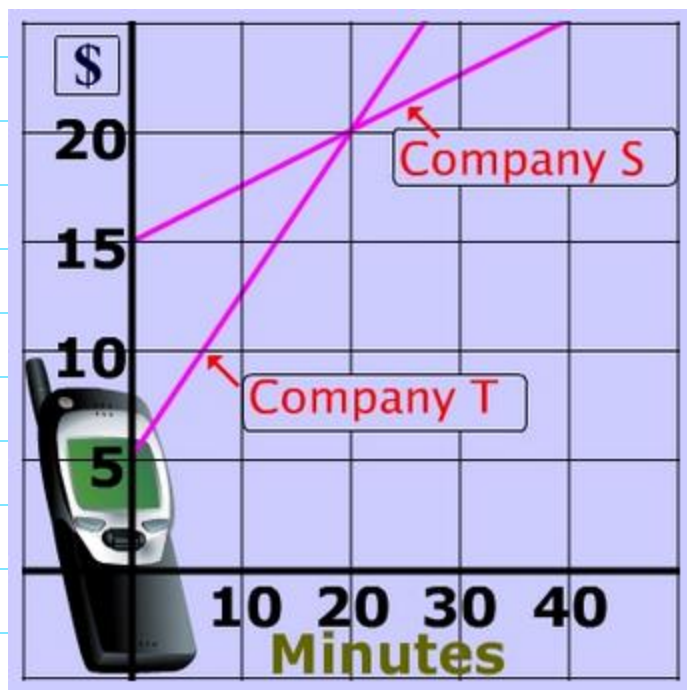
Elimination Method

A method for solving system of equations in which equations are added or subtracted to eliminate one variable

Purpose of Elimination Method

Help solve real world problems such as choosing the best cell phone plan

At how many minutes do both companies charge the same amount?



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.

1 $3y - x = 2$
 $3y + x = 16$

Guided Practice

Solve each system of linear equations using the elimination method.

$$\begin{aligned} 1 \quad & 3y - x = 2 \\ & 3y + x = 16 \end{aligned}$$

$$3y - x = 2 \quad \text{--- Eq. 1}$$

$$3y + x = 16 \quad \text{--- Eq. 2}$$

Add Eq. 1 and Eq. 2:

$$(3y - x) + (3y + x) = 2 + 16$$

$$3y + 3y - x + x = 18$$

$$6y = 18$$

$$\frac{6y}{6} = \frac{18}{6}$$

$$y = 3$$

Substitute 3 for y into Eq. 1:

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

$$9 - x = 2$$

$$x = 7$$

So, the solution of the system of linear equations is $x = 7$, $y = 3$.

Guided Practice

Solve each system of linear equations using the elimination method.

2
$$\begin{aligned}x - 5y &= 13 \\9y - x &= -17\end{aligned}$$

Guided Practice

Solve each system of linear equations using the elimination method.

2

$$x - 5y = 13$$

$$9y - x = -17$$

$$x - 5y = 13$$

— Eq. 1

$$9y - x = -17$$

— Eq. 2

Add Eq. 1 and Eq. 2:

$$(x - 5y) + (9y - x) = 13 + (-17)$$

$$x - x - 5y + 9y = 13 - 17$$

$$4y = -4$$

$$\frac{4y}{4} = \frac{-4}{4}$$

$$y = -1$$

Substitute -1 for y into Eq. 1:

$$x - 5(-1) = 13$$

$$x + 5 = 13$$

$$x = 8$$

So, the solution of the system of linear equations is $x = 8, y = -1$.

Guided Practice

Solve each system of linear equations using the elimination method.

3

$$\begin{aligned} 7q + 2p &= 29 \\ 2p - q &= 5 \end{aligned}$$

Guided Practice

Solve each system of linear equations using the elimination method.

3
$$\begin{aligned} 7q + 2p &= 29 \\ 2p - q &= 5 \end{aligned}$$

$$7q + 2p = 29 \quad \text{— Eq. 1}$$

$$2p - q = 5 \quad \text{— Eq. 2}$$

Subtract Eq. 2 from Eq. 1:

$$(7q + 2p) - (2p - q) = 29 - 5$$

$$7q + q + 2p - 2p = 24$$

$$8q = 24$$

$$\frac{8q}{8} = \frac{24}{8}$$

$$q = 3$$

Lesson 5.2 Solving Systems of Linear Equations Using Elimination Method Day 2

Your Turn

$$2w - 3v = 4$$

$$w + 3v = 29$$

Lesson 5.2 Solving Systems of Linear Equations Using Elimination Method

Practice 5.2

Challenge-

*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 $3m - n = 7$
 $71m + 4n = -20$

8 $7a + b = 10$
 $7a + 2b = -8$

9 $2p + 5q = 4$
 $7n + 15r = 0$

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.

$$\begin{array}{l} 2x + 3y = 1 \\ 3x - 17y = 23 \end{array}$$

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.

Name: _____ Date: _____

Practice 5.1

Solve each system of linear equations by making tables of values. Each variable x is a positive integer less than 6.

1 $2x + y = 5$ $x - y = -2$	2 $x + 2y = 4$ $x = 2y$	3 $3x + 2y = 10$ $5x - 2y = 6$
4 $x - 2y = -5$ $x = y$	5 $2y - x = -2$ $x = y + 2$	6 $2x + y = 3$ $x = y + 1$
7 $x + 2y = 1$ $x - 2y = 5$	8 $2x - y = 5$ $2x + y = 1$	9 $2y + x = -1$ $x = y + 1$

Solve by making a table of values. The values x and y are integers.

10 A shop sells a party hat at x dollars and a mask at y dollars. On a particular morning, 10 hats and 20 masks were sold for \$30. In the afternoon, 6 hats and 10 masks were sold for \$15. The related system of linear equations is

$$\begin{array}{l} 10x + 20y = 30 \\ 6x + 10y = 15 \end{array}$$

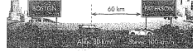
Solve the system of linear equations. Then find the cost of each hat and each mask.

11 Alicia is x years old and her cousin is y years old. Alicia is 2 times as old as her cousin. Three years later, their combined age will be 27 years. The related system of linear equations is

$$\begin{array}{l} x = 2y \\ x + y = 21 \end{array}$$

Solve the system of linear equations. Then find Alicia's age and her cousin's age.

12 Steve and Allen start driving at the same time from Boston to Paterson. The journey is 60 kilometers. Steve drives at 100 kilometers per hour and takes 1 hour to complete the journey. Allen, who drives at 80 kilometers per hour, is 40 kilometers away from Paterson when Steve reaches Paterson. The related system of linear equations is

$$\begin{array}{l} 100t = d \\ 80t = d - 40 \end{array}$$


Solve the system of linear equations by making tables of values. Then find the distance between Boston and Paterson.

Lesson Check #1 & 2 – Can solve systems of linear equations by the elimination method

Lesson 5.2 Solving Systems of Linear Equations Using 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 common terms

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

1 thing I am still puzzled about is... _____