

Welcome Back MYP Math 9!

Self-Assess.

	Assignment Effort Grade (Circle One)	Comments (What was interesting or challenging?)
Monday Date: <u>9/25</u> Topic: <u>19B: Substitution</u>	0 1 2	I did two from #1 and two from #2... great algebra review!
Tuesday Date: <u>9/26</u> Topic: <u>19A/19B Graphing & Substitution Worksheet</u>	0 1 2	
Wednesday Date: <u>9/27</u> Topic: <u>19 Elimination</u>	0 1 2	
Thursday Date: _____ Topic: _____	0 1 2	
Friday Date: _____ Topic: _____	0 1 2	

Warm-up: Solving by Elimination Day 2 (p.374)

WORD PROBLEM

Samuel wants to buy a pie, but only has \$3.50. He sees his friend André leaving the canteen with a pie, and asks him how much it cost.

André says, "Not sure," said André, "I bought a pie and a sandwich, and it cost me \$7 altogether."

Samuel saw another friend Samuel with a pie, and asked him how much it cost.

Samuel said, "I bought 2 pies and 3 sandwiches, and they cost me \$10 altogether."



How much does a pie cost? sandwich cost?

Warm-up: (p.374) How much does a pie cost?
sandwich cost?

OPENING PROBLEM

Ewen wants to buy a pie, but only has \$3.50. He sees his friend André leaving the canteen with a pie, and asks him how much it cost.

"I'm not sure," said André, "I bought a pie and a sandwich. They cost me \$7 altogether."

Ewen saw another friend Samuel with a pie, and asked him how much it cost.

"Well, I bought 2 pies and 3 sandwiches, and they cost me \$17 altogether."



p: price of pie
s: price of sand

$$\begin{aligned} (p+s=7)(-3) & \Rightarrow -3p-3s=-21 \\ 2p+3s & = 17 \end{aligned}$$

$$4+s=7$$

$$s = \$3$$

$$\begin{aligned} -3p-3s & = -21 \\ 2p+3s & = 17 \end{aligned}$$

$$-p = -4$$

$$p = \$4$$

No pie for Ewen

Warm-up: (p.374) How much does a pie cost?
sandwich cost?

OPENING PROBLEM

Ewen wants to buy a pie, but only has \$3.50. He sees his friend André leaving the canteen with a pie, and asks him how much it cost.

"I'm not sure," said André, "I bought a pie and a sandwich. They cost me \$7 altogether."

Ewen saw another friend Samuel with a pie, and asked him how much it cost.

"Well, I bought 2 pies and 3 sandwiches, and they cost me \$17 altogether."



p: \$ of pies
s: \$ of sand

$$p+s=7 \Rightarrow s=7-p$$

$$2p+3s=17 \Rightarrow 2p+3(7-p)=17$$

$$s=7-4 \Rightarrow 2p+21-3p=17$$

$$s = \$3 \quad -p+21=17$$

$$\begin{aligned} -21 & -21 \\ \hline -p & = -4 \end{aligned}$$

$$p = 4$$

Class Plan

1. Warm-up

2. 19C Elimination

3. Handback Quiz 1 - Olympics

C

SOLUTION BY ELIMINATION

If both equations are presented in the general form $Ax + By = C$, then solution by substitution is tedious. We instead use the method of **elimination**.

In this method, we make the coefficients of x (or y) the **same size** but **opposite in sign**. We then add the equations, which has the effect of **eliminating** one of the variables.

When?

- 2 Equations in $Ax + By = C$ Form

How?

- Make coefficient of x or y same size, opp. sign.
- **We add the equations.**

Example: Solve simultaneously by elimination:

$$\begin{cases} 2x + y = 8 \\ x - 3y = 11 \end{cases} \quad + \quad \begin{cases} 6x + 3y = 24 \\ x - 3y = 11 \end{cases}$$

$$\begin{array}{r} (5) -3y = 11 \\ -5 \quad -5 \\ \hline -3y = 6 \end{array} \quad \begin{array}{r} 7x = 35 \\ \hline 7 \quad 7 \end{array}$$

$$\begin{array}{r} -3y = 6 \\ \hline -3 \quad -3 \end{array} \quad y = 2 \quad x = 5$$

$$\boxed{(5, -2)}$$

C

SOLUTION BY ELIMINATION

Elimination: $\begin{cases} 3x + 2y = 7 \\ 2x - 5y = 11 \end{cases}$

$$\begin{cases} (5) 15x + 10y = 35 \\ (a) 4x - 10y = 22 \end{cases}$$

$$\begin{array}{r} 3(3) + 2y = 7 \\ 9 + 2y = 7 \\ -9 \quad -9 \\ \hline 2y = -2 \\ \hline 2 \quad 2 \end{array} \quad \begin{array}{r} 19x = 57 \\ \hline 19 \quad 19 \end{array}$$

$$\boxed{x = 3}$$

$$\boxed{y = -1}$$

$$\boxed{(3, -1)}$$

Example 5

Solve simultaneously by elimination:
$$\begin{cases} 3x + 2y = 7 \\ 2x - 5y = 11 \end{cases}$$

$$3x + 2y = 7 \quad \dots (1) \qquad 2x - 5y = 11 \quad \dots (2)$$

To make the coefficients of y the same size but opposite in sign, we multiply (1) by 5 and (2) by 2.

$$\begin{aligned} \therefore 15x + 10y &= 35 \quad \{(1) \times 5\} \\ 4x - 10y &= 22 \quad \{(2) \times 2\} \end{aligned}$$

$$\text{Adding,} \quad \frac{19x}{\quad} = 57$$
$$\therefore x = 3$$

$$\begin{aligned} \text{Substituting } x = 3 \text{ into (1) gives } 3(3) + 2y &= 7 \\ \therefore 9 + 2y &= 7 \\ \therefore 2y &= -2 \\ \therefore y &= -1 \end{aligned}$$

The solution is $x = 3$, $y = -1$.

$$\text{Check: In (2): } 2(3) - 5(-1) = 6 + 5 = 11 \quad \checkmark$$

Exercises... 19C Elimination**C**

Chapter 19

SOLUTION BY ELIMINATION**#4 (a-f), #6****Challenge #5 (a)**

C

Chapter 19

SOLUTION BY ELIMINATION

4 Solve simultaneously by elimination:

a
$$\begin{cases} 2x + y = 8 \\ x - 3y = 11 \end{cases}$$

b
$$\begin{cases} 3x + 2y = 7 \\ x + 3y = 7 \end{cases}$$

c
$$\begin{cases} 5x - 2y = 17 \\ 3x - y = 9 \end{cases}$$

d
$$\begin{cases} 2x + 5y = -14 \\ -6x + 2y = -9 \end{cases}$$

e
$$\begin{cases} 7x + 3y = 5 \\ 5x - 6y = 9 \end{cases}$$

f
$$\begin{cases} 4x + 9y = 24 \\ 12x - 7y = -30 \end{cases}$$

C

Chapter 19

SOLUTION BY ELIMINATION

6 Try to solve by elimination:

a
$$\begin{cases} 2x - y = 3 \\ 4x - 2y = 6 \end{cases}$$

b
$$\begin{cases} 3x + 4y = 6 \\ 6x + 8y = 7 \end{cases}$$

Comment on your results.

C

Chapter 19

SOLUTION BY ELIMINATION

5 Solve simultaneously by elimination:

$$\text{a } \begin{cases} 2x + 3y = 13 \\ 3x + 2y = 17 \end{cases}$$

$$\text{b } \begin{cases} 4x - 3y = 1 \\ 2x + 5y = 7 \end{cases}$$

$$\text{c } \begin{cases} 2x + 5y = 14 \\ 5x - 3y + 27 = 0 \end{cases}$$

$$\text{d } \begin{cases} 7x + 2y = 20 \\ 13x + 3y = 34 \end{cases}$$

$$\text{e } \begin{cases} 3x + 7y = 5 \\ 5x + 11y = 10 \end{cases}$$

$$\text{f } \begin{cases} 5x - 7y - 9 = 0 \\ 4x - 5y - 5 = 0 \end{cases}$$

C

Chapter 19

SOLUTION BY ELIMINATION

Solutions

EXERCISE 19C

$$1 \quad \text{a } 11x = 11 \quad \text{b } 4y = 12 \quad \text{c } 9x = 9 \quad \text{d } 9x = 6$$

$$\text{e } -y = 11 \quad \text{f } -11y = -11$$

$$2 \quad \text{a } x = 2, y = 6 \quad \text{b } x = 1, y = -2$$

$$\text{c } x = -1, y = -3 \quad \text{d } x = 1, y = -5$$

$$\text{e } x = 2, y = -2 \quad \text{f } x = -\frac{17}{4}, y = \frac{5}{2}$$

$$3 \quad \text{a } 10x + 25y = 5 \quad \text{b } -3x + y = -4$$

$$\text{c } 3x - 21y = 24 \quad \text{d } -10x - 8y = -18$$

$$\text{e } -18x - 12y = 12 \quad \text{f } -16x + 8y = -12$$

$$4 \quad \text{a } x = 5, y = -2 \quad \text{b } x = 1, y = 2$$

$$\text{c } x = 1, y = -6 \quad \text{d } x = \frac{1}{2}, y = -3$$

$$\text{e } x = 1, y = -\frac{2}{3} \quad \text{f } x = -\frac{3}{4}, y = 3$$

$$5 \quad \text{a } x = 5, y = 1 \quad \text{b } x = 1, y = 1$$

$$\text{c } x = -3, y = 4 \quad \text{d } x = \frac{8}{5}, y = \frac{22}{5}$$

$$\text{e } x = \frac{15}{2}, y = -\frac{5}{2} \quad \text{f } x = -\frac{10}{3}, y = -\frac{11}{3}$$

6 a infinitely many solutions, the lines are coincident
b no solutions, the lines are parallel

Quiz 1.1

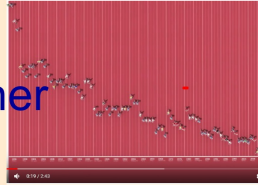
Criterion D Real Life Application

https://www.youtube.com/watch?v=_L_vq5JYQIE



Look over errors.
Learn from mistakes.
Improve on Unit Test.

Done?
Work on other
homework



Quiz 1.1

Criterion D Real Life Application

https://www.youtube.com/watch?v=_L_vq5JYQIE



Grade	Percentage
A	87%
A-	75%
B+	71%
B	62%
B-	60%
C+	57%
C	50%
C-	45%
D+	38%
D	32%
D-	25%
F	0%

8 = 100%

7

6

5

4

3

2

1








0

(15%)

Exercises...

Make quiz corrections
(Exemplar Online)

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