Introduction to Systems of Equations

Agenda

Warm-Up

Set up unit 6

Notes p. 75-76

HW: Practice #1-7

Reminders

ELA Test Wednesday

Essential Question

How can I find if a point is a solution to a system?

Turn in Twizzlers Extra Credit now!!

Warm-Up - Monday

1. Which of the following tables best represents a linear function with a rate of change of -3?
(Hint: use stat)

A

x	y
0	-8
-6	-4
-9	-2
-12	0

B ✗

x	y
9	-4
6	-6
-6	-14
-9	-16

-3 ⟨ , ⟩ -2

C ✗

x	y
-4	9
-6	12
0	3
2	0

D (circled)

x	y
-3	1
-1	-5
2	-14
3	-17

+2 ⟨ , ⟩ -6

$$m = \frac{\Delta y}{\Delta x}$$
$$= \frac{-2}{-3}$$
$$= \frac{2}{3}$$

$$m = -1.5$$

Linkg
y=ax+b
a=-1.5
b=3

$$m = -\frac{6}{2}$$
$$m = \boxed{-3}$$

On page 73 and 74, set up unit 6 in your notebook.

Page 72 is BLANK!!

Put your "6" tab on page 73(fold along the dotted line)

73

UNIT TITLE:

6   Systems

Page #	Page Title
74	Words Worth Knowing
75	Intro to Systems
76	Types of Systems

On page 73 and 74, set up unit 6 in your notebook.
Put your "6" tab on page 73 (fold along the dotted line)

74

Unit 6 Words Worth Knowing

unit 6:

systems

- ☐ System of Equations
- ☐ Solution to a System
- ☐ Let Statement
- ☐ Intersecting
- ☐ Coincident
- ☐ Parallel
- ☐ No solution
- ☐ Infinite Solutions
- ☐ Graphing
- ☐ Substitution
- ☐ Elimination
- ☐ System of Inequalities
- ☐ Solution Set

Systems of Equations p. 75

Essential Question   How can I find if a point is a solution to a system?

System of Equations:

a set of 2 linear equations that have

ex
$3x - 2y = 4$
$y = 6x - 3$

the same 2 variables

ex two lines on a graph
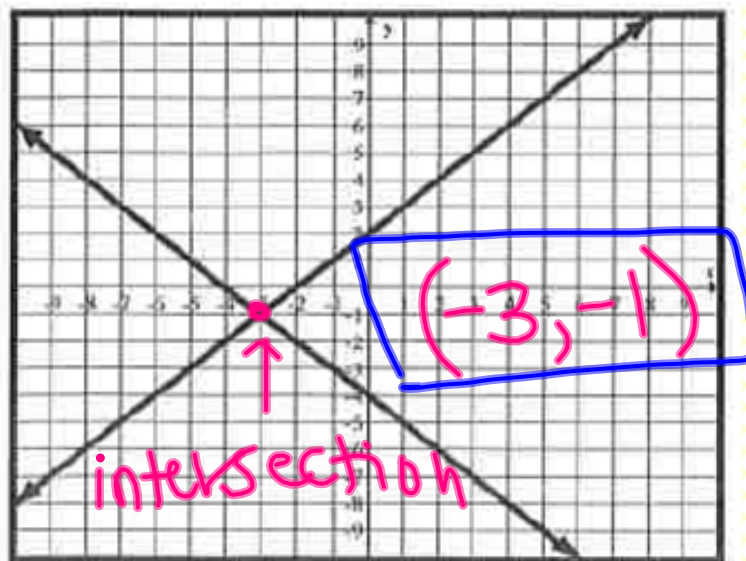
A Solution to a System of Equations:

(cross | touch)

where the lines intersect or the point

that satisfies BOTH equations

Systems of Equations p. 75

Essential Question   How can I find if a point is a solution to a system?

Determine the solutions to the following systems of equations

1.

(-3,-1)

↑
intersection

2.

①

x	y
-6	-6
-2	-4
2	-2
6	0
10	2

②

x	y
-6	-12
-4	-8
-2	-4
0	0
2	4

Same point

(-2,-4)

SOLUTION to the
System is an ORDERED PAIR

Fold blue paper in half. Cut along the dotted lines and
cut off the top flap (with an X). Glue onto page 76.

Types of Systems
Solve BOTH equations for y
and compare the slopes

intersecting lines

coincident lines

Parallel lines

Fold blue paper in half. Cut along the dotted lines and
cut off the top flap (with an X). Glue onto page 76.

1) calculator
   - draw picture
2) by hand
   — tell slopes of lines

Types of Systems

Solve BOTH equations for y
and compare the slopes

$y_1 = 2x$ m=2

$y_2 = -\dfrac{1}{2}x - 3$ m=$-\dfrac{1}{2}$

one solution

y=mx+b   slopes
↳slope   different

one solution
(solution is
where lines cross)

solution
(x, y)

① $2x + 4y = 8$
② $8y = 16 - 4x$
   8   8   8

$y = 2 - \dfrac{1}{2}x$

$y = -\dfrac{1}{2}x + 2$ SAME

m=$-\dfrac{1}{2}$ b=2

solve for y!
① 2x+4y=8
   -2x   -2x
   4y = -2x+8
   4   4   4
$y = -\dfrac{1}{2}x + 2$
m=$-\dfrac{1}{2}$ b=2

infinite
solutions
(MANY)
lines are the same,
touch all the time.

$y_1 = 2x - 1$ m=2 b=-1   +solve for y

$2y = 4x + 3$
 2   2   2

$y = 2x + 1.5$ m=2 b=1.5

NO
solution

slopes same, y-int diff.
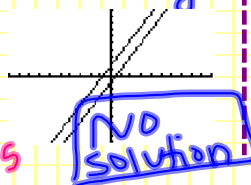
NO
solutions
never touch!

Systems of Equations p. 75

Essential Question   How can I find if a point is a solution to a system?

Determine if the point given is a solution to the system of equations

PLUG IN POINTS TWICE

3. (5, 2)   [yes]   no

$x = 5 \quad y = 2$

① $\frac{2}{5}x - y = 0$

② $3x - y = 13$

① $\frac{2}{5}(5) - 2 \overset{?}{=} 0$

$2 - 2 = 0$

$0 = 0$ ✓

TRUE

② $3(5) - 2 \overset{?}{=} 13$

$15 - 2 = 13$

$13 = 13$ ✓

TRUE

2 TRUES → **YES**

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4. (-2, 2)   yes   [no]

$x \quad y$

① $x + 3y = 4$

② $-x + y = 2$

① $(-2) + 3(2) \overset{?}{=} 4$

$-2 + 6 = 4$

$4 = 4$ ✓

True

② $-(-2) + 2 \overset{?}{=} 2$

$2 + 2 = 2$

$4 \neq 2$

FALSE

1 FALSE → **NO**

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5. (3, 6)   yes   [no]

$x \quad y$

① $y + 3x = 9$

② $y = 2x$

① $6 + 3(6) \overset{?}{=} 9$

$6 + 18 = 9$

$27 \neq 9$

FALSE

② We don't have to check the second equation if the first didn't work!

NO WORK, NO CREDIT, NO KIDDING

Algebra I – Unit 6: Topic 1 – Intro to Systems

Practice – Intro to Systems	**No textbook correlation**

Name _____ Date _____ Period _____

Determine if the given point is a solution to the equation.

1. $(-3, 6)$ $2x - y = -12$
   $3x + 2y = -3$

2. $(-1, -4)$ $3y = x - 11$
   $-2x + y = -2$

3. $(4, 1)$ $x + 2y = 6$
   $x - y = 3$

4. $(2, 1)$ $2x - 5y = -1$
   $3x - 4y = -2$

use calculator? Draw picture!

Determine the number of solutions for each system. Write "one", "none" or "infinite".

5. $y = \dfrac{2}{3}x - 5$
   $3y = 2x$

6. $3x + y = 3$
   $2y = -6x + 6$

7. $x + 2y = 5$
   $2x + 4y = 2$

Systems of Equations HW Help

#1-4. Plug in each point (x , y). Does it make a true statement? YOU MUST SHOW WORK!!

1. No   2. Yes   3. Yes   4. No

#5-7. Solve all equations for y, then find the slope (the number next to x). YOU MUST SHOW WORK!!

5. None

6. Infinite

7. None

Need more help? Drop by tutoring!!