Name Key

8A; Algebra 1

Date _____

Period _____

How do we solve a System of Equations graphically?

- Two or more linear equations together form a system of linear equations.
- One way to solve a system of linear equations is by graphing. Any point common to all the lines is a solution of the system. Therefore, any ordered pair that makes all the equations true is a solution of the system.

aka point of intersection (P.o.I)

Examples:

1) Is (-1,5) a solution of each system? Verify your answer.

(a) $y = 2x + 7$

$y = x + 6$

(-1,5) yes (-1,5) is a solution b/c satisfies both equations

x y

Chk #1

$y = 2x + 7$

$5 = 2(-1) + 7$

$5 = -2 + 7$

$5 = 5$ ✓

Chk #2

$y = x + 6$

$5 = -1 + 6$

$5 = 5$ ✓

(b) $y = -x + 4$

$y = -\frac{1}{5}x$

NO the point (-1,5) is not a solution b/c the point (-1,5) does not satisfy both equations

Chk #1

$y = -x + 4$

$5 = -(-1) + 4$

$5 = 1 + 4$

$5 = 5$ ✓

Chk #2

$y = -\frac{1}{5}x$

$5 = -\frac{1}{5}(-1)$

$5 \neq \frac{1}{5}$

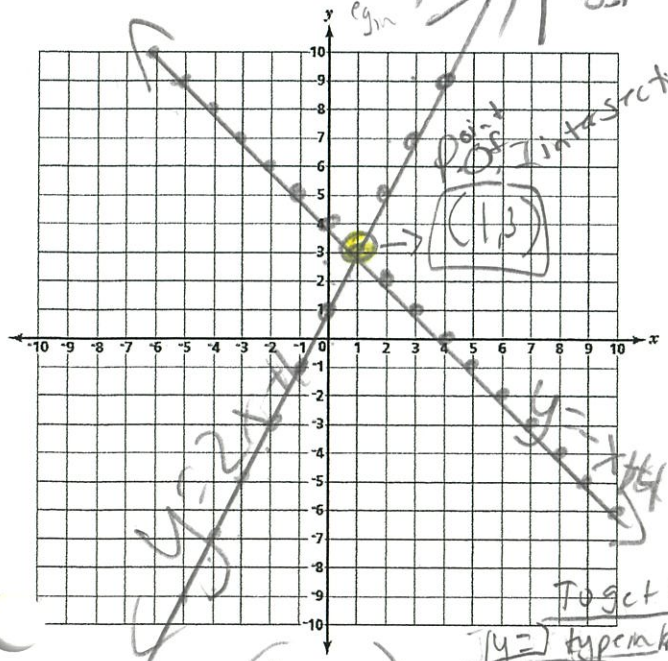
2) Solve each system by graphing and check your answer.

(a) $y = -x + 4$

$y = 2x + 1$

$y = -x + 4$: $m = -\frac{1}{1}$ ↓ →, $B = 4$ (y-int)

$y = 2x + 1$: $m = \frac{2}{1}$ ↑ →, $B = 1$



Solution: (1,3)

To get P.o.I: [y=] type in both equations [2nd] [Graph] + look for repeating #'s in y_1, y_2

OR

[y=] type in both equations [2nd] [Trace] [5: intersect] [ENTER] x3 ↑ to Eq P.o.I. } press [graph] to see graph

(b) $2x + y = 8$

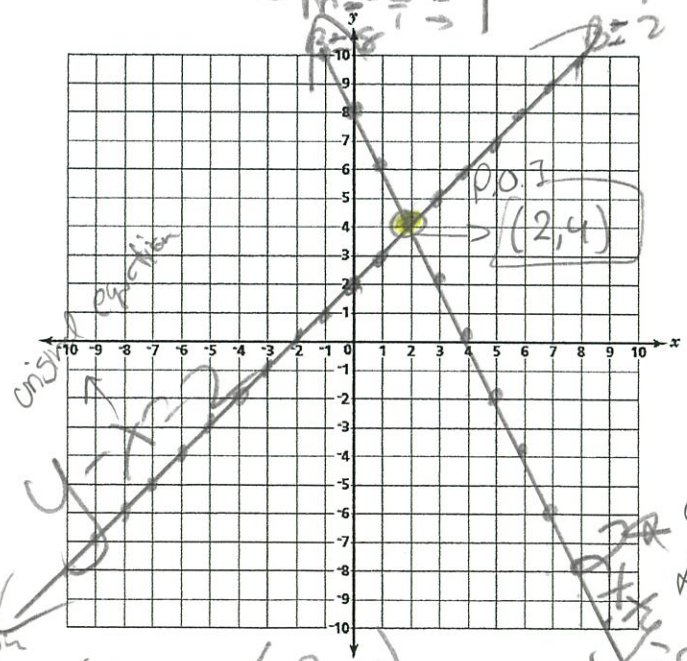
$y - x = 2$

$2x + y = 8$: $-2x \quad -2x$

$y = -2x + 8$: $m = -\frac{2}{1}$ ↓ →, $B = 8$ (y-int)

$y - x = 2$: $+x \quad +x$

$y = x + 2$: $m = \frac{1}{1}$, $B = 2$



Solution: (2,4)

3) (a) Graph the following lines:

$y = x$

$x + y = -2$

$y = 5$

$y = x$

$m = \frac{1}{1}$ ↑ →

$B = 0$

$x + y = -2$

$y = -x - 2$

$m = -\frac{1}{1}$ ↓ →

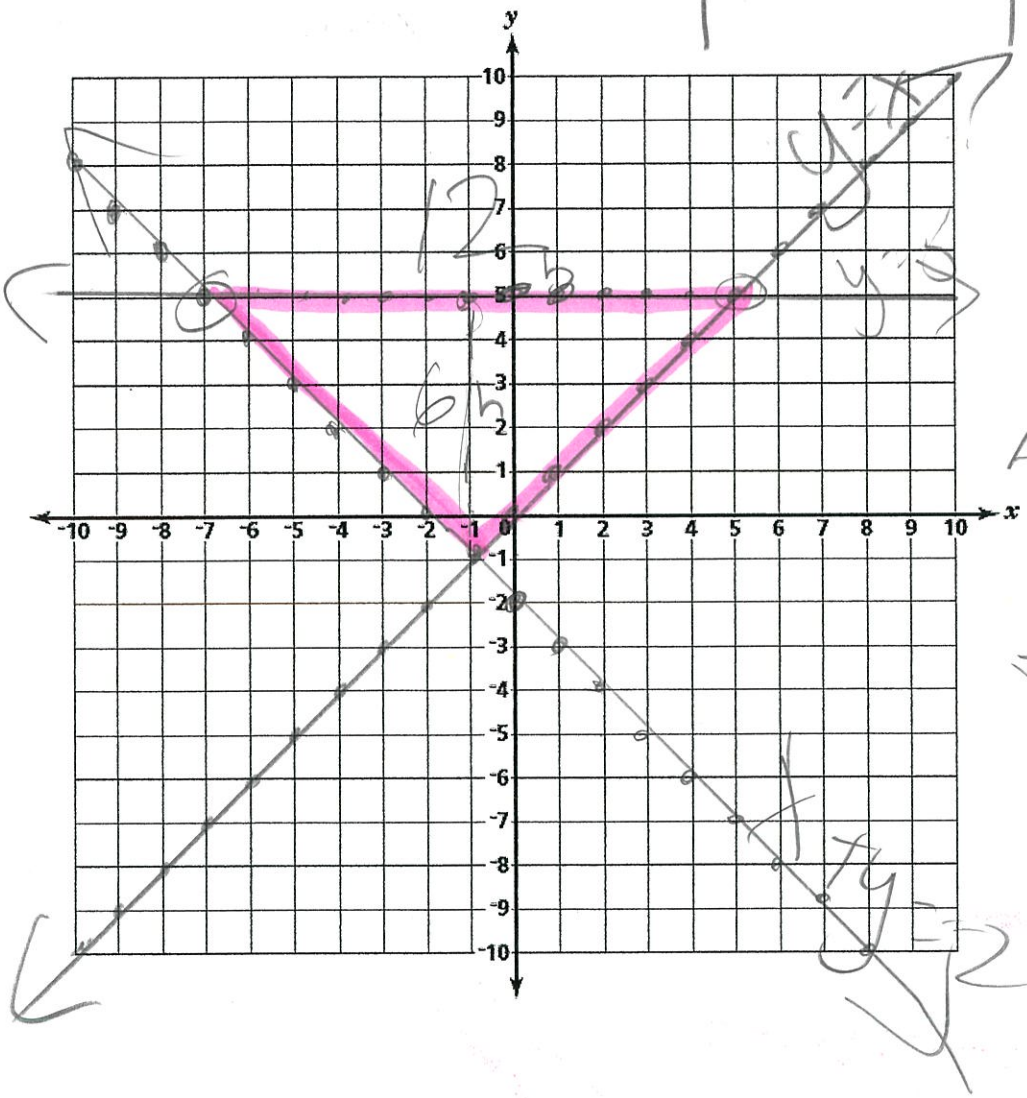
$B = -2$

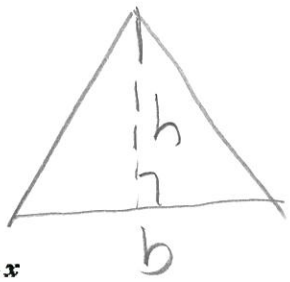
$y = 5$ → horizontal line through 5

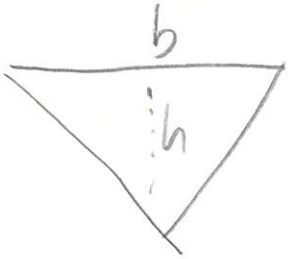
$m = 0$

$B = 5$

(2)







original equation

(b) Name the figure that is formed. Triangle

(c) Find the area of the figure. $36 u^2$

$A = \frac{1}{2}bh$

$A = \frac{1}{2}(12)(6)$

$A = 36$