

Warmup - Solve using elimination or substitution

The Frosty Ice-Cream Shop sells sundaes for \$2 and banana splits for \$3. On a hot summer day, the shop sold 8 more sundaes than banana splits and made \$156.

$x = \text{sundaes}$

$y = \text{banana split}$

$$26.4 + 8 = y$$

$$34.4 = y$$

banana splits

$$2x + 3y = 156$$
$$x + 8 = y$$

$$2x + 3(x + 8) = 156$$

$$2x + 3x + 24 = 156$$

$$5x + 24 = 156$$
$$\begin{array}{r} -24 \\ -24 \end{array}$$

$$\frac{\$x}{\$} = \frac{132}{5}$$

$$x = 26.4$$

sundaes

How do you solve a system of equations by graphing?

1st Equation

$$\cancel{+x} + y = 3$$

$$y = -x + 3$$

Slope: $-\frac{1}{1}$

y-int: $(0, 3)$

$$y = mx + b$$

$$\begin{aligned} x + y &= 3 \\ -6x + y &= -4 \end{aligned}$$

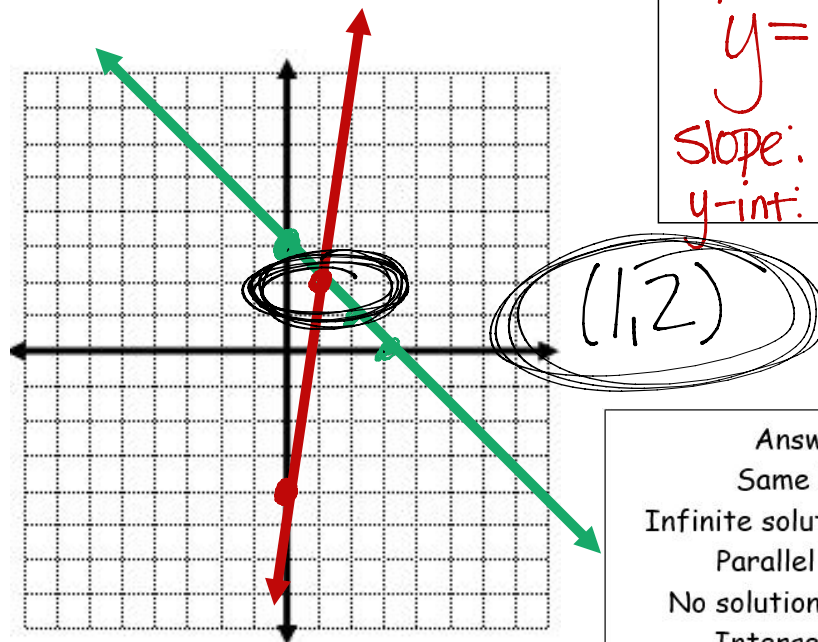
2nd Equation

$$\cancel{-6x} + y = -4$$

$$y = 6x - 4$$

Slope: $\frac{6}{1}$

y-int: $(0, -4)$



Equation 1

Slope:

y- intercept:

Equation 2

Slope:

y- intercept:

Answer:

Same line?

NO

Infinite solutions

NO

Parallel lines?

No solution

NO

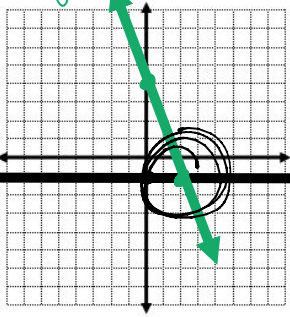
Intersection?

Name it $(1, 2)$

Solve the following systems graphically.

1. $y = -1$
 $y = \frac{-5}{2}x + 4$

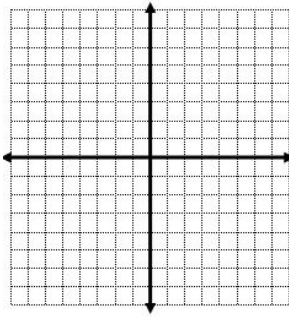
Slope: $-\frac{5}{2}$
 y-int: (0, 4)



(2, -1)

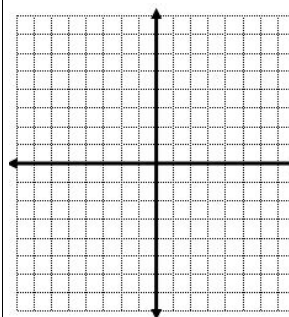
Answer:
 Same line? NO
 Infinite solutions _____
 Parallel lines? _____
 No solution NO
 Intersection? _____
 Name it (2, -1)

2. $2x + 3y = -12$
 $5x - 3y = -9$



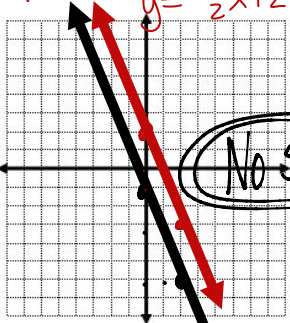
Answer:
 Same line? _____
 Infinite solutions _____
 Parallel lines? _____
 No solution _____
 Intersection? _____
 Name it _____

3. $y = 3x - 4$
 $y = -\frac{1}{2}x + 3$



Answer:
 Same line? _____
 Infinite solutions _____
 Parallel lines? _____
 No solution _____
 Intersection? _____
 Name it _____

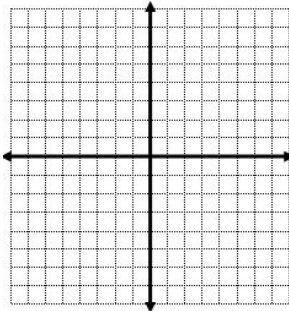
4. $-2y - 5x = 2$ $-2y - 5x = 2$
 $-5x = 2y + 4$ $+5x + 5x$
 $+4$
 ~~$2y = -5x + 4$~~
 $y = -\frac{5}{2}x + 2$
 $2y = 5x + 2$
 $-2y = -5x - 2$
 $y = -\frac{5}{2}x - 1$
 Slope: $-\frac{5}{2}$
 y-int: (0, -1)



No Solution

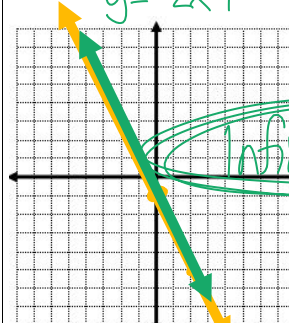
Answer:
 Same line? NO
 Infinite solutions _____
 Parallel lines? yes
 No solution yes
 Intersection? _____
 Name it _____

5. $-5x + 3y = -3$
 $5x - 3y = -9$



Answer:
 Same line? _____
 Infinite solutions _____
 Parallel lines? _____
 No solution _____
 Intersection? _____
 Name it _____

6. $-2x - y = 1$ $-2x - y = 1$
 $-6x = 3y + 8$ $+2x + 2x$
 -3 $+2x$
 ~~$y = -6x - 3$~~
 $y = -2x - 1$
 $y = 2x + 1$
 $-1 = 1$
 $y = -2x - 1$
 Slope: $-\frac{2}{1}$
 y-int: (0, -1)



Infinitely many

Answer:
 Same line? yes
 Infinite solutions yes
 Parallel lines? _____
 No solution no
 Intersection? _____
 Name it no