

Bell Ringer

Thursday 10/10

Is the ordered pair (8, 2) a solution to the system?

$8 - 2 = 6 \checkmark$

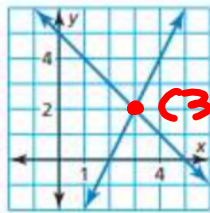
$2x - 10y = 4$

$2(8) - 10(2) = 4$

Use the graph to solve the system

$x + y = 5$

$y = 2x - 4$



No 😞

Is the ordered pair (5, -6) a solution to the system?

$6x + 3y = 12$

$30 + -18 = 12 \checkmark$

$4x + y = 14$

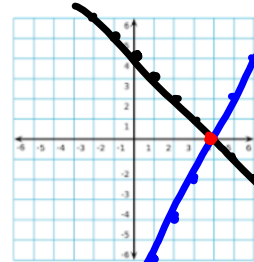
$20 - 6 = 14 \checkmark$ Yes!

Solve the system of equations by graphing

$y = -x + 4$

$y + 8 = 2x$

$y = 2x - 8$



(4, 0)

Essential Question

How can you use substitution to solve a system of linear equations?

 **Core Concept****Solving a System of Linear Equations by Substitution**

Step 1 Solve one of the equations for one of the variables.

Step 2 Substitute the expression from Step 1 into the other equation and solve for the other variable.

Step 3 Substitute the value from Step 2 into one of the original equations and solve.

Solve using substitution

$$y = \boxed{3x}$$

$$x + 2y = -32$$

$$x + 2(3x) = -32$$

$$\frac{4}{4}x = \frac{-32}{4}$$

$$x = -8$$

$$\boxed{(-8, -24)}$$

Solve using substitution

$$y = 2x + 7$$

$$y = x - 1$$

$$2x + 7 = x - 1$$

$$x = -8$$

$$(-8, -9)$$

Solve using substitution

$$2x + 2y = 38$$

$$y = \boxed{8 + 3}$$

$$y = \boxed{19 - x}$$

$$19 - x = x + 3$$

$$2x + 2(x + 3) = 38$$

$$2x + 2x + 6 = 38$$

$$\frac{4x}{4} = \frac{32}{4}$$

$$x = 8$$

$$(8, 11)$$

Solve using substitution

$$x = \boxed{-2y + 4}$$

$$3.5x + 7y = 14$$

$$3.5(-2y + 4) + 7y = 14$$

$$-7y + 14 + 7y = 14$$

$$14 = 14$$

∞ sol \rightarrow same line!

Solve using substitution.

Which variable will be easiest to solve for?

$$3y + 4x = 14$$

$$\cancel{-2x} + y = -3 + 2x$$

+2x

$$y = -3 + 2x$$

Solve using substitution

Which variable is easiest to solve for?

$$6y + 5x = 8$$

$$x + 3y = -7 \quad -3y$$

$$x = -7 - 3\left(\frac{43}{9}\right)$$

$$\frac{-7}{\frac{3}{3}} + \frac{43}{\frac{3}{3}}$$

$$\left(\frac{22}{3}, -\frac{43}{9}\right)$$

$$6y + 5(-7 - 3y) = 8$$

$$6y - 35 - 15y = 8$$

$$-9y = 43$$

$$y = -\frac{43}{9}$$

Solve using substitution

Which variable is easiest to solve for?

$$-x + y = 3$$

$$y = 3 + x$$

$$y = x + 3$$

$$3x + y = -1$$

$$y = \boxed{-1 - 3x}$$

For each system of equations, which variable would you solve for?

a. $x + y = -7$ b. $x - 6y = -11$

$-5x + y = 5$ $3x + 2y = 7$

$x = -7 - y$
or
 $y = -7 - x$

$x = -11 + 6y$

-5-

c. $4x + \underline{y} = -1$

$3x - 5y = -18$

$y = -1 - 4x$

You pay \$22 to rent 6 video games. The store charges \$4 for new games and \$2 for older games. How many new games did you rent?

$$\$ 4x + 2y = 22$$

$$\text{games } \begin{array}{r} -x \\ -x \end{array} + y = \begin{array}{r} 6 \\ -y \end{array}$$

$$y = \boxed{6 - x}$$

$$4x + 2(6 - x) = 22$$

$$4x + 12 - 2x = 22$$

$$\frac{2x}{2} = \frac{10}{2}$$

$$x = 5$$

new
x
5

old
y
1

A drama club earns \$1,040 from a production. A total of 64 adult tickets and 132 student tickets are sold. An adult ticket costs twice as much as a student ticket. Write a system of linear equations that represents this situation. What is the price of each type of ticket?

$x =$ price adult ticket
 $y =$ price kid ticket

st: 64
 adult: 8

$$64x + 132y = 1,040$$

$$x = 2y$$

$$64(2y) + 132y = 1,040$$

$$128y + 132y = 1,040$$

$$\frac{260y}{260} = \frac{1040}{260} \quad y = 4$$

There are a total of 64 students in a drama club and a yearbook club. The drama club has 10 more students than the yearbook club. Write a system of linear equations that represents this situation. How many students are in each club?

5.2 Substitution hw pg 227-228 #s 1, 2,
3-19 odd, 25, 32