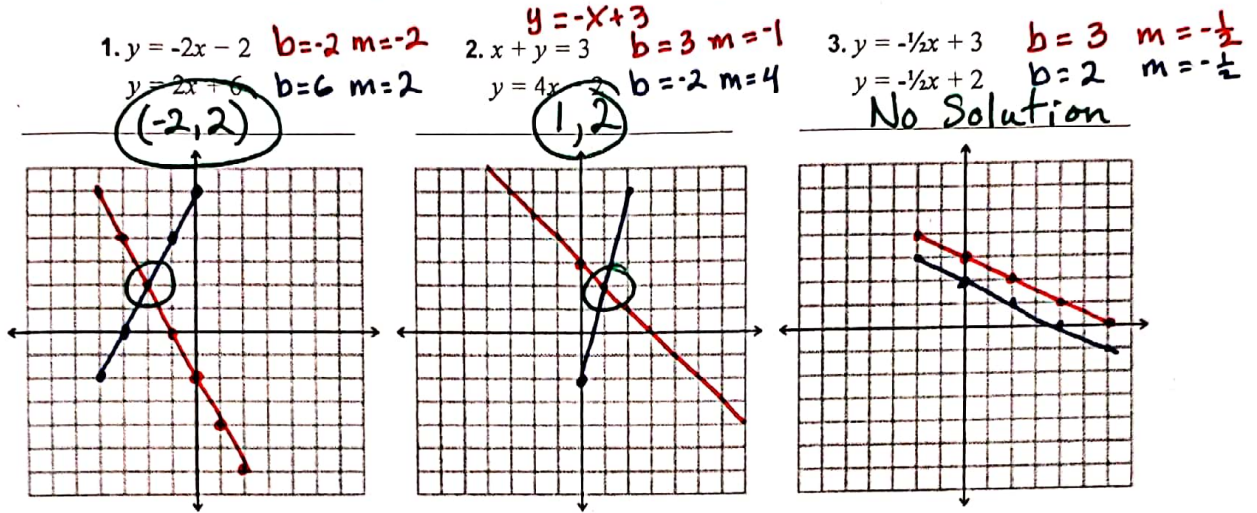


Unit 6 Review

Solve each system by graphing.

Tell whether the system has *one solution*, *infinitely many solutions*, or *no solution*.



Solve each system using substitution.

4. $x = 4y$
 $x + 2y = 66$

$$4y + 2y = 66$$

$$\frac{6y}{6} = \frac{66}{6}$$

$y = 11$

$$x = 4(11)$$

$x = 44$

Solution
 $(44, 11)$

5. $x = 7$
 $3x + y = 17$

$$3(7) + y = 17$$

$$21 + y = 17$$

$$y = 17 - 21$$

$y = -4$

Solution
 $(7, -4)$

6. $y = x + 2$
 $2x + y = 8$

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

$$3x + 2 = 8$$

$$3x = 8 - 2$$

$$3x = 6$$

$$\frac{3x}{3} = \frac{6}{3}$$

$x = 2$

$$y = 2 + 2$$

$y = 4$

Solution
 $(2, 4)$

Solve each system using elimination.

7. $x + y = 4$
 $x - y = 6$

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

$x = 5$

$$5 + y = 4$$

$$y = 4 - 5$$

$y = -1$

Solution
 $(5, -1)$

8. $-2x + 3y = 9$
 $2x - 2y = -4$

$y = 5$

$$-2x + 3(5) = 9$$

$$-2x + 15 = 9$$

$$-2x = 9 - 15$$

$$-2x = -6$$

$$\frac{-2x}{-2} = \frac{-6}{-2}$$

$x = 3$

Solution
 $(3, 5)$

9. $2(x + y) = 7$
 $3x - 2y = 11$

$$2x + 2y = 7$$

$$3x - 2y = 11$$

$$5x = 18$$

$x = 3.6$

$$5 + y = 7$$

$$y = 7 - 5$$

$y = 2$

Solution
 $(3.6, 2)$

Write a system of equations to model each situation. Solve by any method.

13. The sum of two numbers is 70. Their difference is 26. Write a system of equations that reflects the situation. What are the two numbers?

$$\begin{aligned} x + y &= 70 \\ x - y &= 26 \\ \hline 2x &= 96 \\ x &= 48 \end{aligned}$$

$$\begin{aligned} 48 + y &= 70 \\ y &= 22 \end{aligned}$$

14. Two numbers have a sum of 40 and a difference of 32. Write a system of equations that describes this situation. What are the two numbers?

$$\begin{aligned} x + y &= 40 \\ x - y &= 32 \\ \hline 2x &= 72 \\ x &= 36 \end{aligned}$$

$$\begin{aligned} 36 + y &= 40 \\ y &= 4 \end{aligned}$$

15. You have ones & fives in your pocket. 61 bills total, worth \$201. How many fives & ones are there?

$$\begin{aligned} x + y &= 61 \\ 1x + 5y &= 201 \\ \hline 4y &= 140 \\ y &= 35 \end{aligned}$$

35 bills
\$1 bills

$$\begin{aligned} x + 35 &= 61 \\ x &= 26 \end{aligned}$$

16. A change purse contains a total of 100 nickels and dimes. The total value of the coins is \$7. How many coins of each type does the purse contain?

$$\begin{aligned} x + y &= 100 \\ 0.05x + 0.10y &= 7 \\ -10(0.05x + 0.10y &= 7) \\ -5x - 10y &= 70 \\ \hline +10x + 10y &= 1000 \\ 5x &= 300 \\ x &= 60 \text{ nickels} \end{aligned}$$

$$\begin{aligned} 60 + y &= 100 \\ y &= 40 \text{ dimes} \end{aligned}$$

17. Penny has a collection of dimes and nickels. She has 95 coins totaling \$4.90. Find how many of each type of coin she has.

$$\begin{aligned} x + y &= 95 \\ 0.10x + 0.05y &= 4.90 \\ -10(0.10x + 0.05y &= 4.90) \\ -1x - 0.5y &= -49 \\ \hline 0.5y &= 46 \\ y &= 92 \text{ nickels} \end{aligned}$$

$$\begin{aligned} x + 92 &= 95 \\ x &= 3 \text{ dimes} \end{aligned}$$

18. Shady Acres Apartments charges \$1,000 deposit to move in, plus \$800 a month for rent. Duplex Duos charges \$1200 as a deposit, but only \$775 a month for rent. After how many months will their costs be equal?

A) Define variable	B) Write equation	C) Solve	D) After how many months will their costs be equal?
$x = \text{Months}$	$1000 + 800x = 1200 + 775x$	$\begin{aligned} 1000 + 25x &= 1200 \\ -1000 & \quad -1000 \\ \hline 25x &= 200 \\ x &= 8 \end{aligned}$	$x = 8 \text{ months}$

19. Jay's Body Shop pays \$2400 a day for building rent & equipment. It usually costs \$450 to put together the average car. If they sell a car for an average of \$1,250, how many cars do they sell before they break even?

A) Define variable	B) Write equation for cost & income.	C) Solve
$x = \text{cars}$	$2400 + 450x = 1250x$	$\begin{aligned} 2400 &= 800x \\ \frac{2400}{800} &= \frac{800x}{800} \\ x &= 3 \text{ cars} \end{aligned}$

20. Rifleman Sports sells rifles. It costs \$300 to make one rifle and costs \$30,000 a month to run the warehouse and the machinery. An average rifle costs \$700. How many rifles does the store have to sell to break even?

A) Define variable	B) Write equation for cost & income.	C) Solve
$x = \text{rifles}$	$300x + 30,000 = 700x$	$\begin{aligned} 30,000 &= 400x \\ \frac{30,000}{400} &= \frac{400x}{400} \\ x &= 75 \text{ rifles} \end{aligned}$