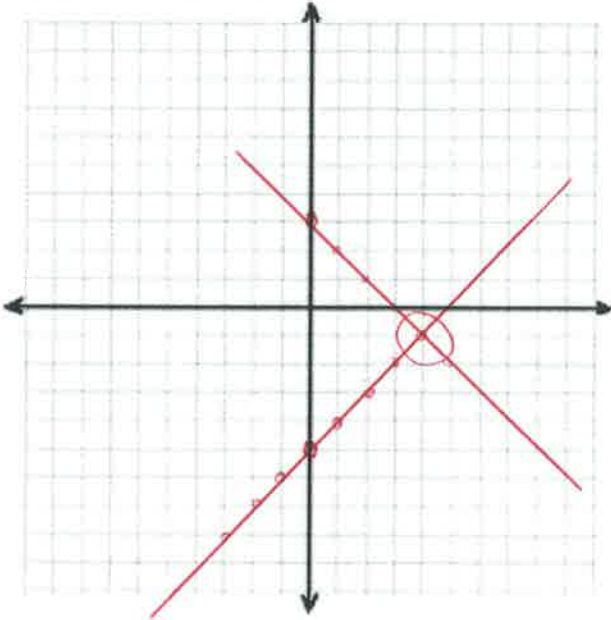


# Chapter 1 Review

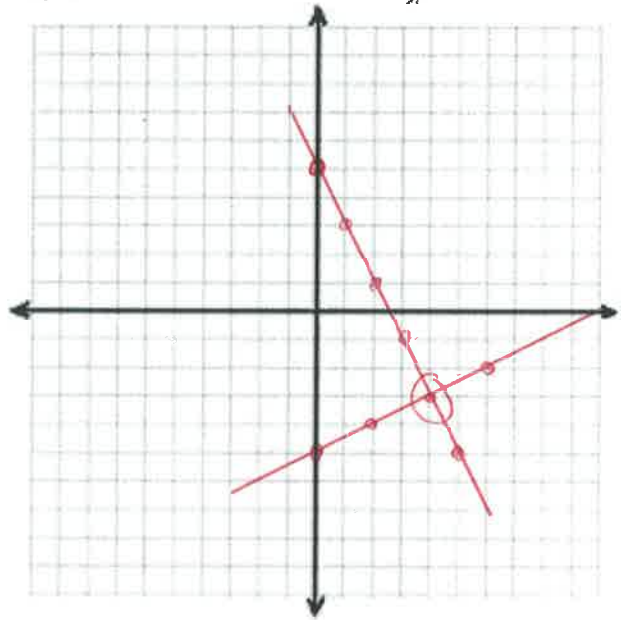
) Graph each set of lines to find the point of intersection

a)  $y = x - 5$  and  $y = -x + 3$



POI:  $(4, -1)$

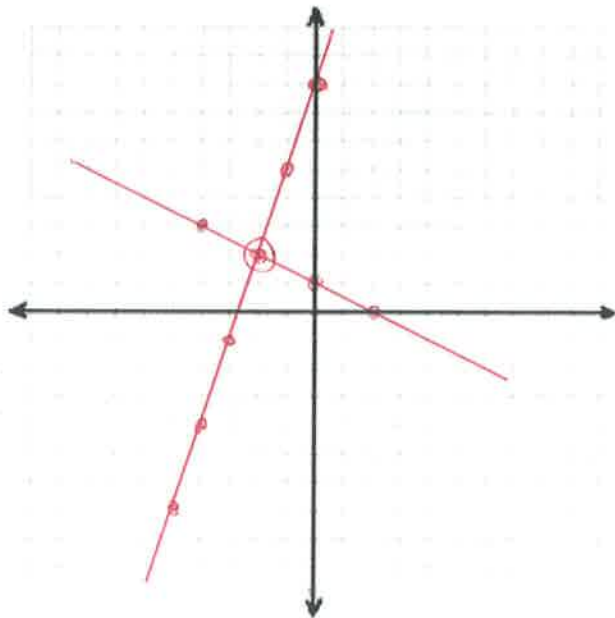
b)  $y = -2x + 5$  and  $y = \frac{1}{2}x - 5$



POI:  $(4, -3)$

c)  $y = 3x + 8$  and  $x + 2y = 2$

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

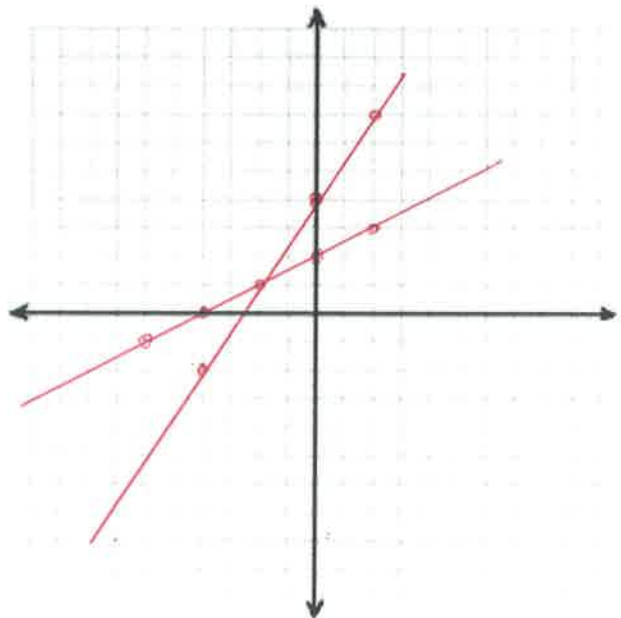


POI:  $(-2, 2)$

d)  $3x - 2y = -8$  and  $x - 2y = -4$

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

$y = \frac{1}{2}x + 2$



POI:  $(-2, 1)$

2) Solve each linear system using the method of substitution.

a)  $2x + y = 7$   
 $3x - 2y = 21$

$y = 7 - 2x$

$3x - 2(7 - 2x) = 21$

$2(5) + y = 7$

$3x - 14 + 4x = 21$

$10 + y = 7$

$7x = 35$

$y = -3$

$x = 5$

b)  $y = 2x + 4$   
 $x - 4y = -9$

$x - 4(2x + 4) = -9$

$y = 2(-1) + 4$

$x - 8x - 16 = -9$

$y = 2$

$-7x = 7$

$x = -1$

POI:  $(5, -3)$

POI:  $(-1, 2)$

c)  $3s + 5t = 2$   
 $s + 4t = -4$

$s = -4 - 4t$

$3(-4 - 4t) + 5t = 2$

$s = -4 - 4(-2)$

$-12 - 12t + 5t = 2$

$s = 4$

$-7t = 14$

$t = -2$

d)  $3m - 6n = 1$   
 $m + 3n = 2$

$m = 2 - 3n$

$3(2 - 3n) - 6n = 1$

$m + 3(\frac{1}{3}) = 2$

$6 - 9n - 6n = 1$

$m + 1 = 2$

$-15n = -5$

$m = 1$

$n = \frac{1}{3}$

POI:  $s = 4 \quad t = -2$

POI:  $m = 1 \quad n = \frac{1}{3}$

e)  $y - 2 = -2x$   
 $3x + 2y = 5$

$y = -2x + 2$

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

$y = -2(-1) + 2$

$3x - 4x + 4 = 5$

$y = 4$

$-x = 1$

$x = -1$

f)  $2x - 3y = 6$   
 $2x - y = 7$

$y = 2x - 7$

$2x - 3(2x - 7) = 6$

$y = 2(\frac{15}{4}) - 7$

$2x - 6x + 21 = 6$

$y = \frac{15}{2} - \frac{14}{2}$

$-4x = -15$

$y = \frac{1}{2}$

$x = \frac{15}{4}$

POI:  $(-1, 4)$

POI:  $(\frac{15}{4}, \frac{1}{2})$

3)

Which two equations are equivalent?

- A  $y = 2x + 6$
- B  $2y = x + 12$
- C  $3y = x + 2$
- D  $2y = 4x + 12$

Explain why:

$D = A \times 2$  ; equivalent equations can be written by multiplying an equation by any real #.

4)

Which of the following equations is equivalent to  $y = \frac{2}{3}x + \frac{1}{5}$ ?

- A  $y = 2x + 1$
- B  $3y = 2x + 1$
- C  $15y = 10x + 3$
- D  $10x - 15y + 5 = 0$

Explain why:

original  $\times 15 = C$

5)

A linear system is given.

$$\begin{aligned} x - y &= 7 & \textcircled{1} \\ 3x + 2y &= -5 & \textcircled{2} \end{aligned}$$

Explain why the following is an equivalent linear system.

$$\begin{aligned} 3x - 3y &= 21 & \textcircled{3} \\ 12x + 8y &= -20 & \textcircled{4} \end{aligned}$$

$$\begin{aligned} \textcircled{1} \times 3 &= \textcircled{3} \\ \textcircled{2} \times 4 &= \textcircled{4} \end{aligned}$$

6) Solve each linear system using the method of elimination.

b)  $x - y = 14$   $\times 2 \rightarrow 2x - 2y = 28$   
 $2x + 5y = -7$   $\times 1 \rightarrow 2x + 5y = -7$  -  
 $-7y = 35$   
 $y = -5$

$x - (-5) = 14$   
 $x + 5 = 14$   
 $x = 9$

b)  $2x - 3y = -4$   $\rightarrow 2x - 3y = -4$   
 $3x + y = 5$   $\times 3 \rightarrow 9x + 3y = 15$  +  
 $11x = 11$   
 $x = 1$

$3(1) + y = 5$   
 $y = 2$

POI:  $(9, -5)$

POI:  $(1, 2)$

c)  $3x + 4y = 17$   $\rightarrow 3x + 4y = 17$   
 $7x - 2y = 17$   $\times 2 \rightarrow 14x - 4y = 34$  +  
 $17x = 51$   
 $x = 3$

$3(3) + 4y = 17$   
 $9 + 4y = 17$   
 $4y = 8$   
 $y = 2$

d)  $2x + 5y = 18$   $\rightarrow 2x + 5y = 18$   
 $3x + 5y - 17 = 0$   $\rightarrow 3x + 5y = 17$  -  
 $-x = 1$   
 $x = -1$

$2(-1) + 5y = 18$   
 $-2 + 5y = 18$   
 $5y = 20$   
 $y = 4$

POI:  $(3, 2)$

POI:  $(-1, 4)$

e)  $3x + 2y = 34$   $\times 3 \rightarrow 9x + 6y = 102$   
 $5x - 3y = -13$   $\times 2 \rightarrow 10x - 6y = -26$  +  
 $19x = 76$   
 $x = 4$

$3(4) + 2y = 34$   
 $12 + 2y = 34$   
 $2y = 22$   
 $y = 11$

f)  $5x + 2y = 5$   $\times 3 \rightarrow 15x + 6y = 15$   
 $2x + 3y = 13$   $\times 2 \rightarrow 4x + 6y = 26$  -  
 $11x = -11$   
 $x = -1$

$2(-1) + 3y = 13$   
 $3y = 15$   
 $y = 5$

POI:  $(4, 11)$

POI:  $(-1, 5)$

7) The public golf course runs a junior league with a registration fee of \$200 and a cost of \$25 per round played. To stay competitive, the private golf club in the same town offers a junior league with a registration fee of \$250, but only \$20 per round played.

a) Write linear equations to represent both junior leagues.

$$\text{Public: } C = 200 + 25R$$

$$\text{Private: } C = 250 + 20R$$

c) Solve the linear system.

$$200 + 25R = 250 + 20R$$

$$5R = 50$$

$$R = 10$$

$$C = 200 + 25(10)$$

$$C = 450$$

c) Interpret the solution.

If you play 10 rounds, the cost of each course would be the same (\$450).

d) Which league should each golfer join?

i) MaeLing plans to play 16 rounds in the league.

Private

ii) Jacob plans to play 8 rounds in the league.

Public



## Extra Practice

### Matching

Match the words or phrases with their definitions.

- |                              |                                |
|------------------------------|--------------------------------|
| a. linear system             | f. equivalent linear equations |
| b. equivalent linear systems | g. graph                       |
| c. method of substitution    | h. intercept                   |
| d. slope                     | i. method of elimination       |
| e. point of intersection     |                                |

e 13. Where two lines meet

a 14. Consists of at least two lines

h 15. The point where a line crosses the  $x$ - or  $y$ -axis

b 16. Two linear systems that have the same solutions

c 17. A solution method in which one variable is replaced

d 18. This is equal for two lines that are parallel

i 19. When two linear equations are added or subtracted to solve a linear system

f 20. Two linear equations that have the same graph

### Short Answer

21. Find the point of intersection of the lines  $y = -\frac{5}{2}x$  and  $y = -x + 3$  by graphing.

22. Lee has \$200 and would like to buy 10 books as gifts. A paperback book costs \$14 and a hard cover costs \$24. Graphically find the number of each kind of book that Lee should buy to spend all of his \$200.

23. The cost of admission to Fantasy World theme park totalled \$120.50 for a group of 11 children and 2 adults. The admission totalled \$100 for another group consisting of 7 children and 3 adults.

(a) Write a linear system to model this problem.

(b) What is the admission cost for an adult and for a child?

