

Name: KEY

Date: _____

6 Foundations of Math 10

Chapter PRACTICE Test – Systems of Linear Equations

1. Solve the linear system by graphing (3)

I. $y = -2x + 4$

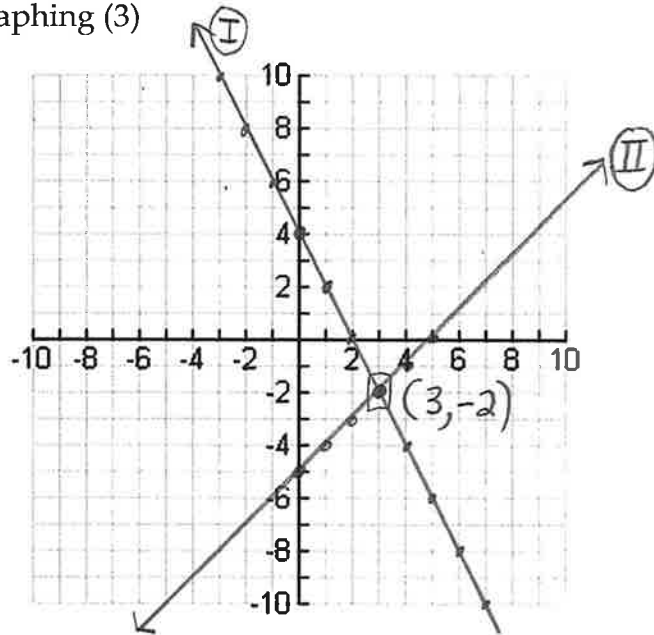
II. $y = x - 5$

Ⓘ $y = -2x + 4$

$m = -\frac{2}{1}, y\text{-int} = +4$

Ⓜ $y = x - 5$

$m = \frac{1}{1}, y\text{-int} = -5$

solution $(3, -2)$ 

2. Solve the linear system by graphing (3)

I. $3x + 2y = 12$

II. $3x - y = 3$

Ⓘ $3x + 2y = 12$

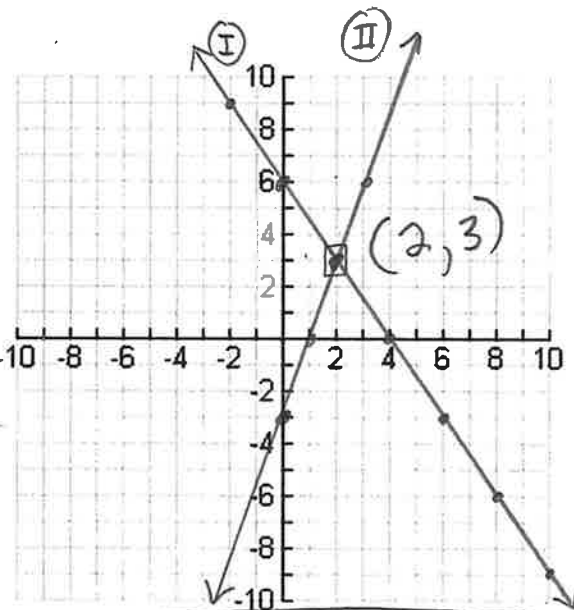
$2y = -\frac{3x}{2} + \frac{12}{2}$

$y = -\frac{3}{2}x + 6 \rightarrow m = -\frac{3}{2}$
 $y\text{-int} = +6$

Ⓜ $3x - y = 3$

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

$y = 3x - 3 \rightarrow m = \frac{3}{1}$
 $y\text{-int} = -3$

solution $(2, 3)$

Practice Test

3. Solve the linear system by Addition (elimination)

$$\begin{array}{r} \text{I. } (2x + 4y = -12) \times -1 \\ \text{II. } 2x - 6y = 38 \\ \hline \text{III. } -2x - 4y = 12 \\ \hline -10y = 50 \\ \hline -10 \quad -10 \\ \hline y = -5 \end{array}$$

choose ①

$$\begin{array}{r} 2x + 4y = -12 \\ 2x + 4(-5) = -12 \\ 2x - 20 = -12 \\ \hline +20 \quad +20 \\ \hline 2x = 8 \end{array}$$

$$\boxed{x = 4}$$

$$\boxed{\text{solution } (4, -5)}$$

4. Solve the linear system by Substitution

$$\text{I. } 7x + y = 10 \rightarrow y = -7x + 10$$

$$\begin{array}{r} \text{II. } 3x - 2y = -3 \\ 3x - 2(-7x + 10) = -3 \\ 3x + 14x - 20 = -3 \\ \hline +20 \quad +20 \\ \hline 17x = 17 \\ \hline 17 \quad 17 \\ \hline x = 1 \end{array}$$

$$\begin{array}{r} 3) y = -7x + 10 \\ y = -7(1) + 10 \\ y = -7 + 10 \\ \hline y = 3 \end{array}$$

$$\boxed{\text{solution } (1, 3)}$$

5. a) Solve the linear system by Substitution or Addition (elimination).

to get $-6y$ and $+6y$!

$$\begin{array}{r} \text{I. } x - 6y = 18 \\ \text{II. } (2x + 3y = 6) \times 2 \\ \hline \text{III. } 1x - 6y = 18 \\ \text{IV. } 4x + 6y = 12 \\ \hline 5x = 30 \\ \hline 5 \quad 5 \\ \hline x = 6 \end{array}$$

choose ②

$$\begin{array}{r} 2x + 3y = 6 \\ 2(6) + 3y = 6 \\ 12 + 3y = 6 \\ \hline -12 \quad -12 \\ \hline 3y = -6 \\ \hline 3 \quad 3 \\ \hline y = -2 \end{array}$$

$$\boxed{\text{solution } (6, -2)}$$

b) Check your solution to 5a

check
 $(6, -2)$
x y

$$\begin{array}{r} \text{I } x - 6y = 18 \\ (6) - 6(-2) = 18 \\ 6 + 12 = 18 \\ 18 = 18 \\ \checkmark \end{array}$$

$$\begin{array}{r} \text{II } 2x + 3y = 6 \\ 2(6) + 3(-2) = 6 \\ 12 - 6 = 6 \\ 6 = 6 \\ \checkmark \end{array}$$

Practice Test

6. ^① The sum of two numbers is 162. ^② One number is 3 more than twice the other number. What are the two numbers? let $x = \text{one \#}$, let $y = \text{other \#}$

① $x + y = 162$

② $x = 2y + 3$

① $(2y + 3) + y = 162$
 $3y = 159$
 $\frac{3y}{3} = \frac{159}{3}$

$y = 53$
 ② $x = 2y + 3$
 $x = 2(53) + 3$
 $x = 106 + 3$
 $x = 109$

The two #'s are 109 and 53

7. 950 tickets were sold for a concert. Tickets for the front section cost \$35 each and the back section tickets sold for \$20 each. If the total amount of money made from ticket sales was \$25 750, how many of each type of ticket were sold? let $f = \# \text{ of front tix sold}$, let $b = \# \text{ of back tix sold}$

① $f + b = 950 \rightarrow 3) b = -f + 950$

② $35f + 20b = 25750$
 $35f + 20(-f + 950) = 25750$
 $35f - 20f + 19000 = 25750$
 $15f = 6750$
 $\frac{15f}{15} = \frac{6750}{15}$

$f = 450$
 3) $b = -f + 950$
 $b = -(450) + 950$
 $b = 500$

There were 450 front section tix sold, and 500 back section tix sold

8. While at the movie theatre, the Gretzky family buys 2 boxes of popcorn and 3 soft drinks for a total of \$23. The Crosby family buys 4 boxes of popcorn and 7 soft drinks for \$50. Determine the cost for one box of popcorn and the cost for one soft drink. let $p = \text{cost of 1 box of popcorn}$, let $d = \text{cost for 1 soft drink}$

Gretzky \rightarrow ① $(2p + 3d = 23) \times -2$
 Crosby \rightarrow ② $4p + 7d = 50$
 \oplus
 ① $-4p - 6d = -46$

 $d = 4$

choose ②
 $4p + 7d = 50$
 $4p + 7(4) = 50$
 $4p + 28 = 50$
 $4p = 22$
 $\frac{4p}{4} = \frac{22}{4}$
 $p = 5.50$

1 box of popcorn costs \$5.50, and 1 soft drink costs \$4.00

TURN OVER!

Practice Test

9) A plane carrying a cargo of basketball uniforms takes 3.5 hours to fly 1008km to its' destination ^{with the wind} with a tail wind. The return trip with a head wind ^{against the wind} took 4 hours. Determine the **speed of the plane in still air (the airspeed)**, and the **wind speed** (both in km/h).

*Round answers to the nearest tenth

let p = speed of plane in still air
let w = speed of wind

$$\frac{D}{TV}$$

trip	D (km)	V (km/hr)	T (hrs)	Equations $V = \frac{D}{T}$
with wind	1008	$p+w$	3.5	$p+w = \frac{1008}{3.5}$ (=288)
against wind	1008	$p-w$	4	$p-w = \frac{1008}{4}$ (=252)

$$\textcircled{1} p + w = 288$$

$$\textcircled{+} \textcircled{2} p - w = 252$$

$$\frac{2p}{2} = \frac{540}{2}$$

$$p = 270$$

choose $\textcircled{1}$

$$p + w = 288$$

$$\begin{array}{r} 270 + w = 288 \\ -270 \quad -270 \end{array}$$

$$w = 18$$

The speed of the plane in still air is 270 km/hr, and speed of wind is 18 km/hr

10) Mr. Baker invested \$15,000 in two different funds. One fund earned 6% interest, and the other earned 8% interest, for a total of \$1100 in interest in the first year. Determine how much he invested in each fund.

let x = \$ invested @ 6% let y = \$ invested @ 8%

total \$ $\textcircled{1} x + y = 15000 \rightarrow \textcircled{3} y = -x + 15000$

interest $\textcircled{2} 0.06x + 0.08y = 1100$

$$0.06x + 0.08(-x + 15000) = 1100$$

$$\begin{array}{r} 0.06x - 0.08x + 1200 = 1100 \\ -1200 \quad -1200 \end{array}$$

$$\begin{array}{r} -0.02x = -100 \\ -0.02 \quad -0.02 \end{array}$$

$$x = 5000$$

$$\textcircled{3} y = -x + 15000$$

$$y = -(5000) + 15000$$

$$y = 10000$$

Mr. Baker invested \$5000 @ 6% interest, and \$10,000 @ 8% interest