

Name: KEY

Date: _____

Foundations of Math 10

Chapter 7 PRACTICE Test – Systems of Linear Equations

1. Solve the linear system by graphing (3)

I. $y = -2x + 4$

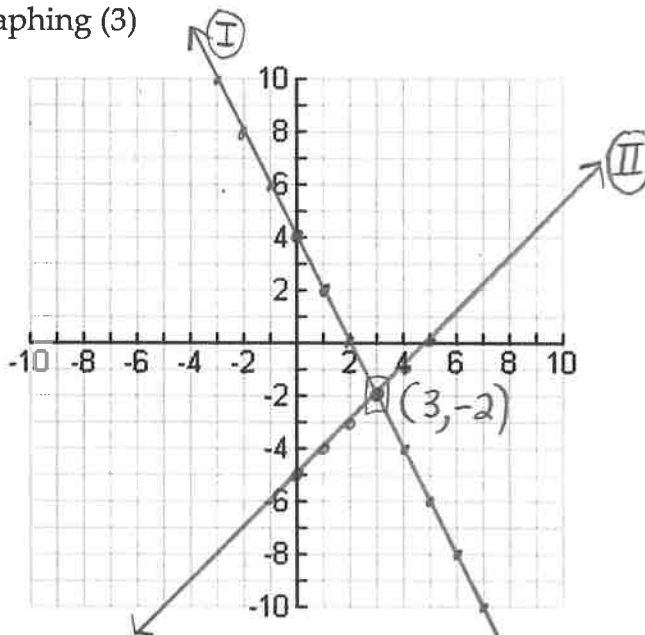
II. $y = x - 5$

Ⓘ $y = -2x + 4$

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

Ⓜ $y = x - 5$

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

solution $(3, -2)$ 

2. Solve the linear system by graphing (3)

I. $3x + 2y = 12$

II. $3x - y = 3$

Ⓘ $3x + 2y = 12$

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

$y = -\frac{3}{2}x + 6$ → $m = -\frac{3}{2}$

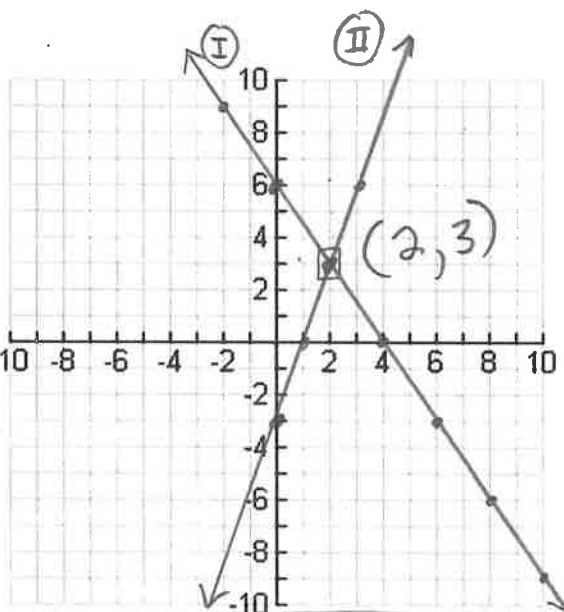
$y\text{-int} = +6$

Ⓜ $3x - y = 3$

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

$y = 3x - 3$ → $m = \frac{3}{1}$

$y\text{-int} = -3$

solution $(2, 3)$

Practice Test

3. Solve the linear system by **Addition (elimination)**

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

choose ①

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

$$\begin{array}{r} 2x = 8 \\ \boxed{x = 4} \end{array}$$

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

4. Solve the linear system by **Substitution**

$$\begin{array}{r} \text{I. } 7x + y = 10 \rightarrow 3) \quad y = -7x + 10 \\ \text{II. } 3x - 2y = -3 \end{array}$$

$$\begin{array}{r} 3x - 2(-7x + 10) = -3 \\ 3x + 14x - 20 = -3 \\ + 20 + 20 \\ 17x = 17 \\ \frac{17x}{17} = \frac{17}{17} \end{array}$$

$$\boxed{x = 1}$$

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

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

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

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

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

choose ②

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

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

b) Check your solution to 5a

check
 $\boxed{(6, -2)}$
x | y

$$\begin{array}{r} \text{① } x - 6y = 18 \\ (6) - 6(-2) = 18 \\ 6 + 12 = 18 \\ 18 = 18 \\ \checkmark \end{array}$$

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

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 $(2y + 3) + y = 162$

$3y = 159$

$y = 53$

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 $35f + 20b = 25750$
 $35f + 20(-f + 950) = 25750$
 $35f - 20f + 19000 = 25750$
 $15f = 6750$

$f = 450$
 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

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

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

$p = 5.50$

TURN OVER!

Practice Test

9) A plane carrying a cargo of basketball uniforms takes 3.5 hours to fly 1008km to its' destination with a tail wind. The return trip with a head 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



trip	p (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	$p-w = \frac{1008}{4} (=252)$

$$\begin{aligned} \textcircled{1} \quad p + w &= 288 \\ \textcircled{+} \textcircled{2} \quad p - w &= 252 \\ \hline 2p &= 540 \\ \frac{2p}{2} &= \frac{540}{2} \\ p &= 270 \end{aligned}$$

choose $\textcircled{1}$

$$\begin{aligned} p + w &= 288 \\ 270 + w &= 288 \\ -270 & \quad -270 \end{aligned}$$

$$w = 18$$

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

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

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

$$\underline{0.06x} - \underline{0.08x} + 1200 = 1100$$

$$\quad \quad \quad -1200 \quad -1200$$

$$\begin{aligned} -0.02x &= -100 \\ -0.02 & \quad -0.02 \end{aligned}$$

$$x = 5000$$

$$\begin{aligned} \textcircled{3} \quad y &= -x + 15000 \\ y &= -(5000) + 15000 \\ y &= 10000 \end{aligned}$$

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