

Detailed Targets:

7 I can use previous skills learned as they apply to Chapter 6 topics.

7.1A I can check the intersection point (solution) of a system of equations.

Ex 1a: Is $\begin{matrix} x & y \\ (6, -1) \end{matrix}$ a solution to the linear system $\begin{cases} 2x + 5y = 7 \\ -x - 2y = -8 \end{cases}$?

$$\begin{array}{r} 2(6) + 5(-1) = 7 \\ 12 - 5 = 7 \\ 7 = 7 \checkmark \end{array} \qquad \begin{array}{r} -(6) - 2(-1) = -8 \\ -6 + 2 = -8 \\ -4 \neq -8 \end{array}$$

NOT A SOLUTION of the system

7.1B I can use the graphing method to solve a system of equations.

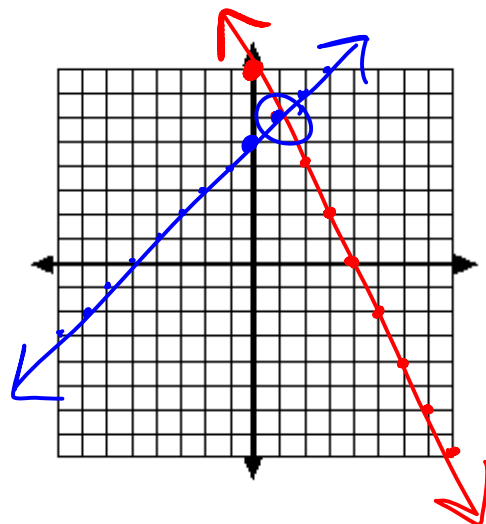
Ex 1b: Solve the linear system by graphing:

$$\begin{cases} -x + y = 5 \\ 2x + y = 8 \end{cases}$$

$$\begin{array}{r} -x + y = 5 \\ +x \qquad +x \\ \hline y = x + 5 \end{array}$$

$$\begin{array}{r} 2x + y = 8 \\ -2x \qquad -2x \\ \hline y = -2x + 8 \end{array}$$

$(1, 6)$



check

$$\begin{array}{r} -(1) + 6 = 5 \\ -1 + 6 = 5 \\ 5 = 5 \checkmark \end{array} \qquad \begin{array}{r} 2(1) + 6 = 8 \\ 2 + 6 = 8 \\ 8 = 8 \checkmark \end{array}$$

7.1C I can use the graphing method to solve a multi-step problem.

Ex 1c: Your school is selling football tickets for a home game. The school sold 35 tickets for \$86 on the first day of the sale. Student tickets cost \$2 each and non-student tickets cost \$3 each. Find the number of student tickets and non-student tickets sold.

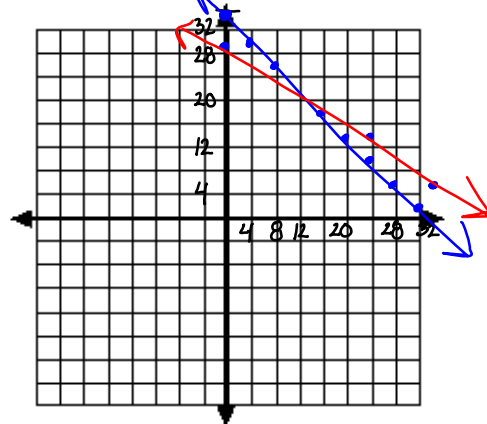
$x = \# \text{ student tickets}$
 $y = \# \text{ non-student tickets}$

$(19, 16)$

$$\begin{cases} x + y = 35 \\ 2x + 3y = 86 \end{cases}$$

$$\begin{array}{r} x + y = 35 \\ -x \qquad -x \\ \hline y = -x + 35 \end{array}$$

$$\begin{array}{r} 2x + 3y = 86 \\ -2x \qquad -2x \\ \hline 3y = -2x + 86 \\ \frac{3y}{3} = \frac{-2x}{3} + \frac{86}{3} \\ y = -\frac{2}{3}x + \frac{86}{3} \end{array}$$



19 student tickets
16 non-student tickets

7.2A I can use the substitution method to solve a system of equations.

Ex2a: Solve the linear system by using the substitution method:

$$\begin{cases} -5x - y = 12 \\ 3x - 5y = 4 \end{cases}$$

$-5x - y = 12$
 $+5x$
 $\hline -y = 5x + 12$
 $\frac{-y}{-1} = \frac{5x + 12}{-1}$
 $y = -5x - 12$

$3x - 5(-5x - 12) = 4$
 $3x + 25x + 60 = 4$
 $28x + 60 = 4$
 $28x = -56$
 $x = -2$

$$\begin{cases} -5x - y = 12 \\ 3x - 5y = 4 \end{cases}$$

$(-2, -2)$

$-5(-2) - y = 12$
 $10 - y = 12$
 $-y = 2$
 $y = -2$

7.2B I can use the substitution method to solve a multi-step problem.

Ex 2b: A food co-op is a business that usually offers special process on locally grown food and produce. Some co-ops are clubs, while others are retail stores. The weekly cost for seasonal produce offered by a club-based co-op is \$15 per week and \$17.50 per week for a retail-based co-op. The club-based co-op also charges a one time club fee of \$20. Find the number of weeks which the total cost of weekly produce will be the same.

$x = \# \text{ weeks}$
 $y = \text{total cost}$

Club $y = 20 + 15x$
 Retail $y = 17.50x$

$17.50x = 20 + 15x$
 $2.50x = 20$
 $x = 8$

8 weeks

7.3A I can use the adding method to solve a system of equations.

Ex 3a: Solve the linear system by using the adding method:

$$\begin{cases} 5x + 6y = 4 \\ -7x - 6y = -8 \end{cases}$$

$\hline -2x = -4$
 $x = 2$

$5(2) + 6y = 4$
 $10 + 6y = 4$
 $6y = -6$
 $y = -1$

$(2, -1)$

$$\begin{cases} 5x + 6y = 4 \\ -7x - 6y = -8 \end{cases}$$

7.3B I can use the adding method to solve a multi-step problem.

Ex 3b: Two friends are making their own greeting cards. They already have ink and stamps, but they will buy the postage stamps and cardstock. Stan needs 4 postage stamps and 2 packages of card stock. Lynn needs 7 postage stamps and 2 packages of card stock. If it costs Stan \$22.98 for his supplies and it costs Lynn \$32.73 for her supplies, how much does it cost for one postage stamp and one package of cardstock?

$x = \$ \text{ postage stamp}$
 $y = \$ \text{ card stock}$

Stan $\begin{cases} 4x + 2y = 22.98 \\ 7x + 2y = 32.73 \end{cases} -1$
 Lynn

$x = 3.25$
 $4(3.25) + 2y = 22.98$
 $13 + 2y = 22.98$
 $2y = 9.98$
 $y = 4.99$

$(3.25, 4.99)$

$\$3.25 \text{ stamp}$
 $\$4.99 \text{ cardstock}$

$$\begin{cases} 4x + 2y = 22.98 \\ -7x - 2y = -32.73 \end{cases}$$

$\hline -3x = -9.75$

7.4A I can use the multiplication method to solve a system of equations.

Ex 4a: Solve the linear system by using the multiplication method:

$$\begin{cases} 2x - 3y = 6 \\ 4y = -7x - 8 \end{cases}$$

$$\begin{cases} (2x - 3y = 6) \cdot 4 \\ (7x + 4y = -8) \cdot 3 \end{cases}$$

$$\begin{cases} 8x - 12y = 24 \\ 21x + 12y = -24 \end{cases}$$

$$29x = 0$$

$$x = 0$$

$$\begin{aligned} 2(0) - 3y &= 6 \\ -3y &= 6 \\ y &= -2 \end{aligned}$$

$$(0, -2)$$

7.4B I can use the multiplication method to solve a multi-step problem.

Ex 4b: Mr. Bolton bought a total of 20 pounds of grass seed at the nursery for \$168. He paid \$9 per pound for Kentucky blue grass and \$6 per pound for Tall Fescue. How many pounds of each kind of grass did he buy?

x = # lbs Kentucky

y = # lbs Tall Fescue

$$\begin{cases} (x + y = 20) \cdot 6 \\ 9x + 6y = 168 \end{cases}$$

$$\begin{cases} -6x - 6y = -120 \\ 9x + 6y = 168 \end{cases}$$

$$3x = 48$$

$$x = 16$$

$$16 + y = 20$$

$$y = 4$$

$$(16, 4)$$

16 lbs Kentucky Blue
4 lbs Tall Fescue

7.5A I can identify the number of solutions of a linear system by graphing.

Ex 5a: Without solving the linear system, tell whether the linear system has one solution, no solution, or many solutions:

a.
$$\begin{cases} (-3x + 5y = 6) \cdot 2 \\ 6x - 10y = -12 \end{cases}$$

$$\begin{cases} 6x - 10y = -12 \\ 6x - 10y = -12 \end{cases}$$

same equations so...
same line so...

Many solutions

b.
$$\begin{cases} 9x - 5y = 12 \\ 9x - 5y = 8 \end{cases}$$

if you put these equations in slope-intercept form ($y = mx + b$) they will have same slopes and different y-int so...
Parallel lines...

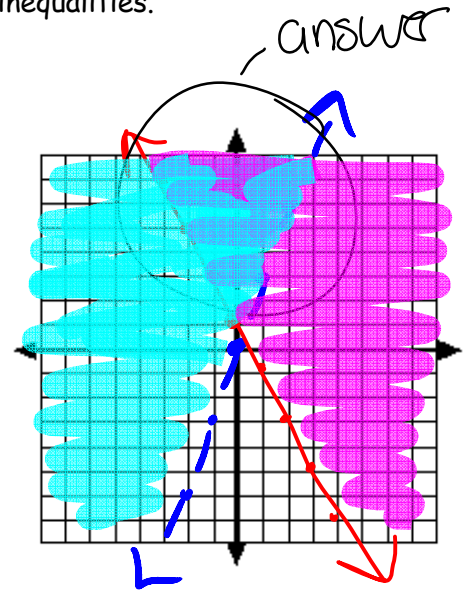
NO SOLUTIONS

7.6A I can use the graphing method to solve a linear system of inequalities.

Ex 6a: Graph the system of inequalities: $\begin{cases} y < 3x + 0 \\ y \geq -2x + 1 \end{cases}$

test (0,1)
 $1 < 3(0)$
 $1 < 0$
 False

test (0,0)
 $0 \geq -2(0) + 1$
 $0 \geq 1$
 False



WPU 7.1 I can approach and solve real-life number and age problems.

Ex WPU 1: One number is 3 times a second number. The larger number decreased by the smaller number is 18. Find the two numbers.

$x = \text{small \#}$ solve by substitution
 $y = \text{bigger \#}$
 $\begin{cases} y = 3x \\ y - x = 18 \end{cases}$ $\begin{cases} 3x - x = 18 \\ 2x = 18 \\ x = 9 \end{cases}$ 9, 27

WPU 7.2 I can approach and solve real-life coin and digit problems.

Ex WPU 2: The units digit of two digit number is two less than the tens digit. The number is two more than six times the sum of the digits. Find the number.

the #
 $= 10t + u$
 $= (10)(8) + 6$
86

$\begin{cases} u = t - 2 \\ 10t + u = 2 + 6(t + u) \end{cases}$ $\begin{cases} u = t - 2 \\ 4t - 5u = 2 \end{cases}$ $\begin{cases} -t + 10 = 2 & u = t - 2 \\ -t = -8 & u = 8 - 2 \\ t = 8 & u = 6 \end{cases}$

WPU 7.3 I can approach and solve real-life wind and current problems.

$R \times T = D$ Ex WPU 3:

	3hr	12
up	$r - c$	
down	$r + c$	

During a kayaking trip, a kayaker travels 12 miles upstream (against the current) in 3 hours and 12 miles downstream (with the current) in 2 hours. The speed of the current remained constant during the trip. What is the rate of the current?

$\begin{cases} 3(r - c) = 12 \\ 2(r + c) = 12 \end{cases}$
 $\begin{cases} (3r - 3c = 12) \cdot 2 \\ (2r + 2c = 12) \cdot 3 \end{cases}$

$\begin{cases} 6r - 6c = 24 \\ 6r + 6c = 36 \end{cases}$
 $\hline 12r = 60$
 $r = 5$
 rate of object

$2(5) + 2c = 12$
 $10 + 2c = 12$
 $2c = 2$
 $c = 1$
 rate of current

1mph