

Systems Test 2 Review

Agenda

Warm-Up
HW Check
Review
Work Time
HW: Study!!

Reminders

- Test Tomorrow!
- Test Corrections due by tmr by 4:15PM
- All homework due tmr by 4:15PM
- Check website for extra credit opportunities

Warm-Up Thursday

1. Debbie and Joey decided to earn money during the summer. Debbie had \$8 to start with and earns \$8 an hour at her job. Joey had \$16 to start with and earns \$6 per hour at his job. What is the minimum number of whole hours Debbie needs to work in order to have more money than Joey?

$$\begin{aligned} \text{Debbie} &> \text{Joey} \\ 8 + 8x &> 16 + 6x \\ -6x & \quad -6x \\ 8 + 2x &> 16 \\ -8 & \quad -8 \\ 2x &> 8 \\ \frac{2x}{2} &> \frac{8}{2} \\ x &> 4 \end{aligned}$$

$$\begin{aligned} y &= 8 + 8x \\ y &= 16 + 6x \end{aligned}$$

5 hours

Questions, Comments, Concerns?

Algebra I - Unit 6: Topic 2 – Reasonableness and Applications of Systems

Practice – Reasonableness and Applications of Systems

pp 383-411, 421-426

Name _____ Date _____ Period _____

For each of the following: define the variables, write the system of equations and then solve using the 'best' method.

- Coach P. made 4 shots in basketball practice this morning, no free throws. The combination of 3-pointers and 2-pointers totaled 11 points. How many baskets were 3-pointers?
- The drama department sold 300 tickets for their last show. Adult tickets cost \$10 and student tickets cost \$5. If they sold \$2750 worth of tickets, what is a reasonable conclusion that can be made about the tickets?
 - Only adults bought tickets
 - More adults than students bought tickets
 - More students than adults bought tickets
 - The same number of adults and students bought tickets

3. At a restaurant the cost for a breakfast taco and a small glass of milk is \$2.10. The cost for 2 tacos and 3 small glasses of milk is \$5.15. Find the cost of one taco and one glass of milk.

Handwritten notes: $x = \text{taco}$, $y = \text{milk}$, eliminate

$$\begin{aligned} x + y &= 2.10 \\ 2x + 3y &= 5.15 \end{aligned} \Rightarrow \begin{aligned} -2x - 2y &= -4.20 \\ \hline 2x + 3y &= 5.15 \\ \hline y &= .95 \end{aligned}$$

Handwritten box: milk \$0.95, taco \$1.15

- The members of a new band want to spend no more than \$70 for at least 60 fliers to advertise their upcoming concert. The cost to produce a color flier is \$1.50 per flier. The cost to produce a black and white flier is \$0.75 per flier. If the members of the band want to get the maximum number of fliers made for \$70 using both color and black and white fliers, which of the following is a reasonable solution?
 - The band can order 26 color fliers and 30 black and white fliers.
 - The band can order 30 color fliers and 40 black and white fliers.
 - The band can order 30 color fliers and 32 black and white fliers.
 - The band can order 60 color fliers.

5. Cody likes to snack on pecans and almonds. Pecans sell for \$3 a pound and almonds sell for \$4 a pound. Cody wants to buy a mixture of nuts that weighs no more than 5 pounds, and he plans to spend at most \$18.00. Find three possible solutions to this situation.

Handwritten notes: $x = \text{pecans}$, $y = \text{almonds}$, Plug in values

$$\begin{aligned} 3x + 4y &\leq 18 \\ x + y &\leq 5 \end{aligned}$$

Handwritten list: ①, ②, ③

- Two complementary angles have measures of s and t . If t is 9 less than twice s , which system of linear equations can be used to determine the measure of each angle?

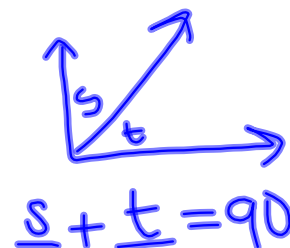
A $\begin{aligned} t + s &= -9 \\ t &= 2s + 90 \end{aligned}$

B $\begin{aligned} t - s &= -9 \\ t &= 2s - 90 \end{aligned}$

C $\begin{aligned} t + s &= 90 \\ t &= 2s - 9 \end{aligned}$

D $\begin{aligned} t + s &= 90 \\ t &= -2s - 90 \end{aligned}$

Handwritten: $t = 2s - 9$



Algebra I - Unit 6: Topic 2 – Reasonableness and Applications of Systems

7. Marisela owns a clothing store that sells hats and shirts. All of the hats cost the same, x dollars, and all of the shirts cost the same, y dollars. The following customers came into the store and made purchases:

Frank bought two shirts and a hat for a total of \$17.00.

Allison bought four shirts and three hats for a total cost of \$37.00.

Judy bought six shirts and three hats for a total cost of \$51.00.

$x \rightarrow$ hats
 $y \rightarrow$ shirts

$$\begin{array}{rcl} 2y + x & = & 17 \\ 4y + 3x & = & 37 \\ 6y + 3x & = & 51 \end{array}$$

- A. Write three equations that represent these situations.

- B. Do Frank and Allison's purchases provide enough information to determine the price for each shirt and each hat? If so, find these prices and show your work. If not, explain why not.

$$\begin{array}{rcl} -3(2y + x = 17) & \rightarrow & -6y - 3x = -51 \\ 4y + 3x = 37 & & +4y + 3x = 37 \\ \hline & & -2x = -14 \\ & & x = 7 \end{array}$$

$y = 7$ Shirts are \$7
 $x = 3$ hats are \$3

- C. Explain why you can't use Frank and Judy's purchases to determine the price for each shirt and hat.

$$\begin{array}{rcl} 2y + x = 17 & & 6y + 3x = 51 \rightarrow 2y + x = 17 \\ \text{same line} & & \text{infinite} \end{array}$$

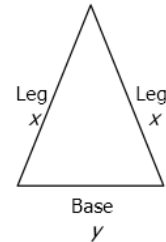
8. An isosceles triangle has legs that are each x inches long and a base that is y inches long. The perimeter of this triangle is 38 inches. The base is 8 inches shorter than the length of a leg. Which system of linear equations can be used to find the length of each of the 3 sides?

A $\begin{array}{l} 2x + y = 38 \\ y = x - 8 \end{array}$

C $\begin{array}{l} 2x + 2y = 38 \\ x = y - 8 \end{array}$

B $\begin{array}{l} 2x + 2y = 38 \\ y = x - 8 \end{array}$

D $\begin{array}{l} 2x + y = 38 \\ x = y + 8 \end{array}$



9. Hunter has a jar of 368 nickels and dimes. The total value of the coins is \$28.40. How many nickels and dimes does Hunter have?

10. Juan bought a total of 52 cans of Dr. Pepper and Sprite. There were three times as many cans of Dr. Pepper as Sprite. How many cans of Dr. Pepper did he buy?

Worth bonus points on tmr's test!

Algebra I
Unit 6 Test Review - Systems

Name _____
Date _____ Period ____

Solve the following using the method of your choice.

1. $y = \frac{1}{5}x + 2$
 $-\frac{1}{5}x + y = 2$

2. $-2x + 2y = 6$
 $3x - y = 3$

How many solutions does each system of equations have? (One, none or infinite)

3. $3x - 9y = 12$
 $-x + 3y = -3$

solve both for y

4. $-2x + y = 10$
 $x - 4y = 8$

NOT TWO

$$\begin{array}{r} 3x - 9y = 12 \\ -3x = -3 \end{array}$$

$$\begin{array}{r} -9y = 12 - 3x \\ -9 = -9 \end{array}$$

$$y = \frac{12 - 3x}{-9}$$

$$y = \frac{12 - 3x}{-9}$$

$$\begin{array}{r} -x + 3y = -3 \\ +x = -3 \end{array}$$

$$\begin{array}{r} 3y = -3 + x \\ 3 = 3 \end{array}$$

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



parallel \Rightarrow no solution

Is the point $(2, -3)$ a solution to the following systems?

5. $y = -2x + 1$
 $2x + y = 10$

6. $4y \geq 2 - 9x$

7. $10 \leq \frac{7}{2}x - y$

① $4(-3) \geq 2 - 9(2)$
 $-12 \geq 2 - 18$
 $-12 \geq -16$
✓

② $10 \leq \frac{7}{2}(2) - (-3)$
 $10 \leq 10$
✓

The point $(x, -7)$ is a solution to the following system of equations. What is the value of x?

7. $-5x + y = -2$
 $2x - y = 5$

$y = -7$

Set up a system for each, then solve.

8. Suppose that taxi-company A has a fare schedule of \$1.15 per mile plus a \$3 usage fee. Taxi-company B charges \$0.90 per mile plus a \$5 usage fee. How far can you travel so that the fares are equal?

What does the solution mean? _____

9. During a football game, pretzels and sodas are sold to raise money for new uniforms. Pretzels, p , sell for \$2 each and \$2.50 for a soda, s . Total sales equaled \$336. Twice as many sodas as pretzels were sold. How many sodas and pretzels were sold?

What does the solution mean? _____

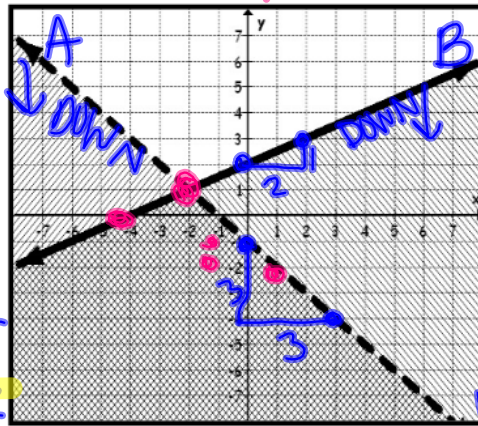
10. The difference between the length and the width of a rectangle is 4 inches. The perimeter of the rectangle is 28 inches. What is the length, l , and the width, w , of the rectangle?

What does the solution mean? _____

11. Debbie and Joey decided to earn money during the summer. Debbie had \$8 to start with and earns \$8 an hour at her job. Joey had \$16 to start with and earns \$6 per hour at his job. What is the minimum number of whole hours Debbie needs to work in order to have more money than Joey?

Use the graph to answer the following questions.

$$y = mx + b$$



	UP	DOWN
dotted	$>$	$<$
solid	\geq	\leq

$$A: y < -x - 1$$

$$B: y \leq \frac{1}{2}x + 2$$

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

12. Which of the following accurately describe the system of inequalities?

I. $y \leq \frac{1}{2}x + 2$ ✓
 $y < -x - 1$ ✓

II. $y \leq 2x + 2$
 $y < -x - 1$

III. $y \leq 2(x - 1)$
 $y < -x - 1$

IV. $x - 2y \geq -4$
 $x + y < -1$

$$x - 2y \geq -4$$

$$-x - 2y \geq -4$$

$$-2y \geq -x - 4$$

$$-2y \geq -x - 4$$

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

$$x + y < -1$$

$$-x - y < -1$$

$$y < -x - 1$$

- A. I only
~~B. II only~~
 C. I and IV
~~D. II and III~~
~~E. IV only~~

SHADING

13. Which of the following do not accurately describe a solution to the system of inequalities?

- I. $(-2, 1)$ dotted NO
 II. $(-1, -1)$ YES
 III. $(-1, -2)$ YES
 IV. $(-4, 0)$ YES
 V. $(1, -2)$ NO dotted

I & V

- A. I only
 B. V only
 C. II and III
 D. I, IV and V
 E. I, II and III

Solution is in double-shaded

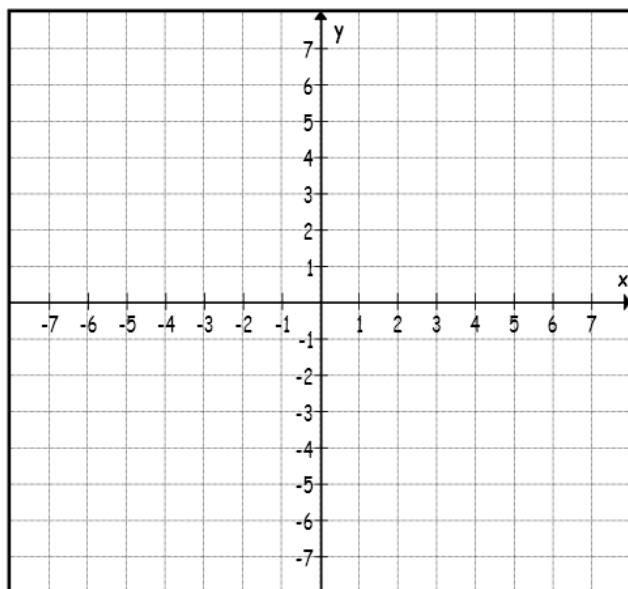
NOT DOTTED

Solve each system of inequalities below by graphing. Name one solution point.

14. $4x + 5y \geq 20$

$y \geq x + 1$

Solve for y



15. $3x + 2y \geq 12$

$x - y < 5$

