

Unit 2 Review

Solve the equation and identify the property of equality that justifies the missing step(s) to solve the given equation.

Equation	Steps
$\frac{1}{3}x + 4 = 7$	Given
$\frac{1}{3}x = 3$	Subtraction Property
$x = 9$	Division or Multiplication Property

Equation	Steps
$3(x - 9) = 2(2x + 3)$	Given
$3x - 27 = 4x + 6$	Distributive Property
$3x = 4x + 33$	Addition property
$-x = 33$	Subtraction property
$x = -33$	DIVISION Property

4) Kacy has forgotten how to solve the equation $8 = \frac{2}{3}(x - 6)$. Write step by step instructions that illustrate the different properties used to solve this equation.

$$8 = \frac{2}{3}x - 4 \rightarrow \text{Distributive prop.}$$

$$12 = \frac{2}{3}x \rightarrow \text{Addition prop.}$$

$$x = 18 \rightarrow \text{multiplication prop.}$$

5) How many solutions are possible for the system of equations: $\begin{cases} 3x - 4y = 12 \\ -6x + 8y = -24 \end{cases}$? Explain your answer.

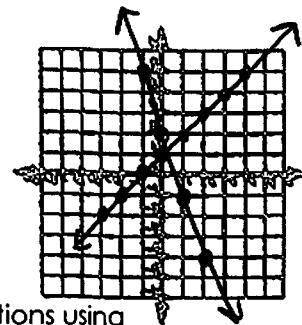
Infinite solutions

6) Is $(4, 1)$ a solution to the system: $\begin{cases} 5x + 2y = 22 \\ x - 2y = 3 \end{cases}$?

NO

7) Graph the system of equations in order to determine the solution of: $\begin{cases} y = x + 1 \\ y = -3x + 2 \end{cases}$

$$\approx \left(\frac{1}{4}, \frac{5}{4}\right)$$



8) Solve this system of equations using

elimination: $\begin{cases} x + y = 12 \\ \frac{1}{2}x + \frac{1}{4}y = 4 \end{cases}$

$$(4, 8)$$

9) Solve this system of equations using

substitution: $\begin{cases} y - 2x = 0 \\ 3x + 3y = 17 \end{cases}$

$$\left(\frac{17}{9}, \frac{34}{9}\right) \rightarrow (1.89, 3.78)$$

Unit 2 Review

Directions: Write & Solve the system:

10) The first equation has $m = -\frac{1}{2}$ & it passes through the point $(4, -2)$. The table for the second equation is given:

x	y
3	-0.25
6	-1
8	-1.5

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

$$y = -\frac{1}{4}x + \frac{1}{2}$$

$$(-2, 1)$$

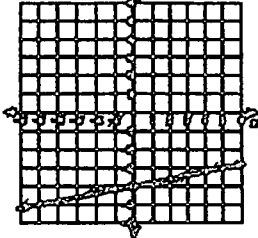
11) The first equation passes through $(0, 3)$ & $(2, 1)$. The second equation has a slope of 1 and passes through $(5, 4)$.

$$y = -1x + 3$$

$$y = 1x - 1$$

$$(2, 1)$$

12) The first equation has zero slope and passes through $(-3, 5)$. The second equation is shown in the graph below:



$$y = 5$$

$$y = \frac{1}{5}x - 4$$

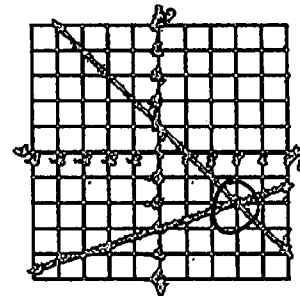
$$(45, 5)$$

13) Both equations are shown in the graph below:

$$y = -x + 1$$

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

$$(3, -2)$$



14) Write a system of equations and solve: the sum of two numbers is 21. One number is 15 more than the other. Find the numbers.

$$x + y = 21$$

$$x = y + 15$$

$$(18, 3)$$

15) The attendance at a school concert was 578. Admission cost \$2.00 for adults and \$1.50 for children. The receipts were \$985. How many adults and how many children attended the concert?

$x = \text{Adult}$
 $y = \text{child}$

$$x + y = 578$$

$$2x + 1.5y = 985$$

236 Adults
342 children

16) Bob charges \$22.85 plus 19 cents per mile for a taxi ride. Betty charges \$21.95 plus 18 cents per mile for a taxi ride. For what mileage will the cost be the same?

$$y = .19x + 22.85$$

$$y = .18x + 21.95$$

-90 miles

NOT POSSIBLE \Rightarrow Bob will always be more.

17) There are 27 coins in your pocket. The coins are either nickels or quarters, and the value of your pocket change is \$3.75. How many nickels do you have?

$$x + y = 27$$

$$.05x + .25y = 3.75$$

$$15 \text{ nickels}$$

Unit 2 Review

18) Four pencils and two pens cost \$.74. Six pencils and five pens cost \$1.53. How much greater is the pen than the pencil?

$$4x + 2y = .74$$

$$6x + 5y = 1.53$$

$$x = .08$$

$$y = .21$$

Pens are .13 more than pencils

19) The perimeter of a rectangle is 160 feet. One fourth the length is the same as twice the width. Find the dimensions of the rectangle.

$$2w + 2l = 160$$

$$\frac{1}{4}l = 2w$$

$$l = 71.2$$

$$w = 8.9$$

20) Solve the equation: $2 + \frac{4x}{5} = -16$

$$x = -22.5$$

21) What is the solution to: $8(x - 3) + 2(x + 1) - 8x = 10$

$$x = 17$$

22) Solve the inequality & graph on a number line:
 $5x - 10 > 25$

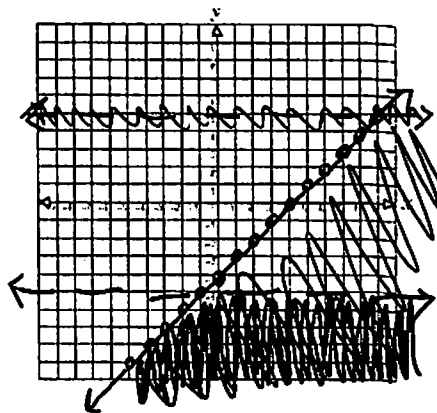


23) Solve the system of equations:
 $-4x + y = -1$
 $4x + 2y = 16$

$$(1.5, 5)$$

24) Graph the system of inequalities:
 $y \leq x - 4$
 $-2y + 3 > 13$

$$y < -5$$



25) Is (0, 0) a solution to the system of inequalities in question #5?

26) Solve the system of equations graphically:

$$y = x - 3$$

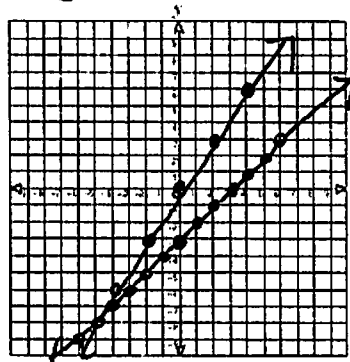
$$y = \frac{3}{2}x$$

$$x - 3 = \frac{3}{2}x$$

$$-3 = \frac{1}{2}x$$

$$x = -6$$

$$(-6, -9)$$



27) Ramon sells cars and trucks. He has room on his lot for 510 vehicles. From experience he knows that his profits will be greatest if he has 190 more cars than trucks. How many of each vehicle should he have?

$$C + T = 510$$

$$C = T + 190$$

$$C = 350$$

$$T = 160$$

28) Shirley is 21 years older than Laura. In six years, Shirley will be twice as old as Laura. How old are they now?

$$S = L + 21$$

$$S + 6 = 2L$$

~~100~~

$$L = 27$$

$$S = 54$$

Unit 2 Review

29) Tommie missed school when the class solved the equation $\frac{2x-3}{5} = 4x-2$. Explain the steps in solving the equation and what the solution represents.

$$\begin{aligned} \swarrow \frac{2x-3}{5} &= (4x-2) \cdot 5 & \boxed{x = \frac{7}{18}} \\ 2x-3 &= 20x-10 \\ 7 &= 18x \end{aligned}$$

30) Write an equation of a line that would be parallel to the equation $4x + 5y = 20$.

$$y = -\frac{4}{5}x + 10$$

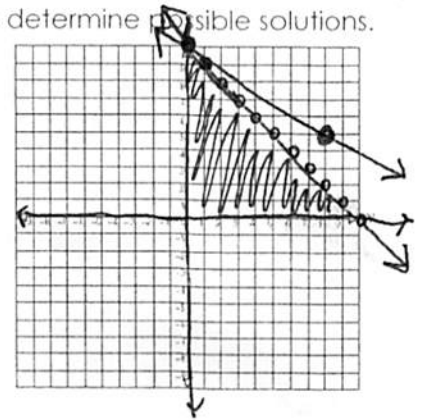
31) Write an equation of a line that would be perpendicular to the equation $4x + 5y = 20$.

$$y = \frac{5}{4}x - 3$$

32) Betsy makes \$5 an hour for babysitting and \$8 an hour for cleaning houses. Betsy wants to work a minimum of 10 hours per week. Graph a system of inequalities to illustrate how many hours Betsy needs to work at each job if she wants to earn at least \$80 each week. Explain how to use the graph to determine possible solutions.

$$\begin{aligned} 5x + 8y &\geq 80 \\ x + y &\leq 10 \\ x &\geq 0 \\ y &\geq 0 \end{aligned}$$

$$\begin{aligned} 8y &\geq -5x + 80 \\ y &\geq -\frac{5}{8}x + 10 \\ y &\leq -x + 10 \end{aligned}$$



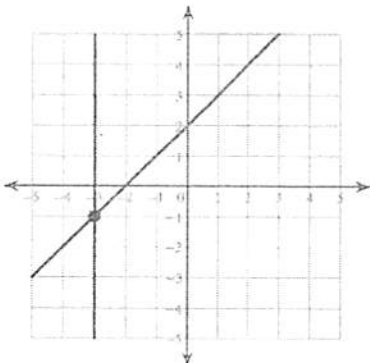
33) Solve: $3(8)^x = 1536$

$$\boxed{x = 3}$$

34) Solve: $9(2)^x - 2 = 574$

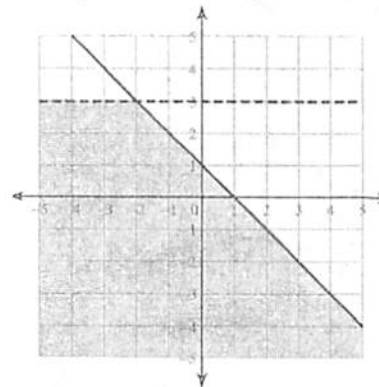
$$\boxed{x = 6}$$

35) Write and solve a system of equations:



$$\begin{aligned} x &= -3 \\ y &= x + 2 \\ (-3, -1) \end{aligned}$$

36) Write a system of inequalities & name a solution:



$$\begin{aligned} y &< 3 \\ y &\leq -x + 1 \\ (0, 0) \end{aligned}$$