

Name: \_\_\_\_\_ Date: \_\_\_\_\_ Hour: \_\_\_\_\_

Show all of your work for credit.

- 1) Use system of equations by **Substitution** to solve for x and y:  $y = 4 + x$  [4]  
 $5x - 3y = 0$

$$5x - 3(4 + x) = 0$$

$$5x - 12 - 3x = 0$$

$$2x = 12$$

$$x = 6$$

$$y = 4 + 6$$

$$y = 10$$

- 2) Use system of equations by **Substitution** to solve for x and y: [5]  
 $3(4x - 3y = 6)$   
 $-2(6x + 7y = 32)$

$$12x - 9y = 18$$

$$-12x - 14y = -64$$

$$-23y = -46$$

$$y = 2$$

$$4x - 3(2) = 6$$

$$4x - 6 = 6$$

$$4x = 12$$

$$x = 3$$

- 3) Two classes of East High School students use cars and trucks to go to a championship football game because all of the school buses were already in use. They use 12 vehicles to go on the trip. Each car has 4 students and each truck has 5 students. 58 students went on the trip.

Write a system of equations to determine exactly how many trucks and cars were used. [6]

Equation One:  $4c + 5t = 58$   
 $c + t = 12$

Number of Cars 2

Equation Two:  $4c + 5t = 58$   
 $-4c - 4t = -48$   
 $t = 10$

Number of Trucks 10

- 4) At Jumbo's Burger Bar, they serve Jumbo burgers and regular cokes. Two Jumbo burgers and three regular cokes cost \$5.95. One Jumbo Burger costs \$2.15.

Write a system of equations and solve to find the cost of one regular coke. [5]

Equation One:  $2b + 3c = 5.95$

Cost of one Coke .55

Equation Two:  $b = 2.15$

$$2(2.15) + 3c = 5.95$$

$$4.30 + 3c = 5.95$$

$$3c = 1.65$$

$$c = .55$$

5) Write the equation of a line with a gradient of  $\frac{1}{2}$  and goes through point A(6,4). [3]

$m = \frac{1}{2}$   $x, y$

$$y = \frac{1}{2}(6) + b$$

$$y = 3 + b$$

$$1 = b$$

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

6) Find the midpoint of the line segment that joins the points A(0, 3) and B(2,2). [2]

$$\left( \frac{2+0}{2}, \frac{3+2}{2} \right) = \left( 1, \frac{5}{2} \right)$$

7) Find the gradient of the line segments joining the following pairs of points: Q(1, 3) and P(6, 8) [2]

$$m = \frac{\text{rise}}{\text{run}} = \frac{y_2 - y_1}{x_2 - x_1}$$

$$\frac{6-1}{8-3} = \frac{5}{5} = 1$$

$m = 1$

8) A line is represented by the equation  $y = \frac{3}{4}x + 12$ . [6]

What is the y-intercept? 12

What is the x-intercept? -16

What is the gradient?  $\frac{3}{4}$

$$\frac{4}{3} y - 12 = 3m x \cdot \frac{4}{3}$$


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$$\frac{4}{3}(y-12) = x$$

$$\frac{4}{3}y - 16 = x$$

List three possible points on this line. Point 1(     ,     ) Point 2(     ,     ) Point 3(     ,     )

many solutions possible

9) Line one is represented by the equation  $y = \frac{3}{4}x + 12$ . Line two intersects line one at  $90^\circ$ . Line two also passes through point (6,7). Write equation that represents line two. [4]

$L_1$   $m = \frac{3}{4}$   $L_2 = -\frac{4}{3}$

$$y - 7 = -\frac{4}{3}(x - 6)$$

$$y - 7 = -\frac{4}{3}x + 8$$

$$y = -\frac{4}{3}x + 15$$

$$7 = 6(-\frac{4}{3}) + b$$

$$7 = -8 + b$$

$$15 = b$$

$y = -\frac{4}{3}x + 15$