

Part I: Selected Response

Place your answers on the answer sheet provided for Part I. Do not return the sheets containing the questions for part I. (5 marks)

- 1) If a line has a y-intercept of 7 and goes through the point (5, 9), which answer below indicates the slope of that line?

- a) $-\frac{5}{2}$
- b) $\frac{5}{2}$
- c) $-\frac{2}{5}$
- d) $\frac{2}{5}$

$$\begin{matrix} (x_1, y_1) & (x_2, y_2) \\ 5, 9 & 0, 7 \\ \frac{7-9}{0-5} = \frac{-2}{-5} = \frac{2}{5} \end{matrix}$$

- 2) If a line has a slope of $-\frac{5}{9}$ and passes through the point (3, -1), which answer below represents the equation for that line?

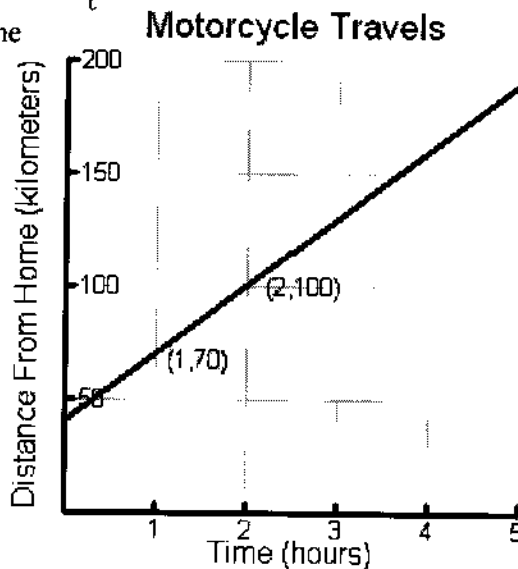
- a) $y = -\frac{5}{9}x + \frac{2}{3}$
- b) $y = -\frac{5}{9}x - \frac{2}{3}$
- c) $y = -\frac{5}{9}x + \frac{22}{9}$
- d) $y = -\frac{5}{9}x - \frac{22}{9}$

$$\begin{aligned} y &= mx + b \\ -1 &= -\frac{5}{9}(3) + b \quad \rightarrow \frac{6}{9} = \frac{2}{3} = b \\ -1 &= -\frac{15}{9} + b \\ -\frac{9}{9} + \frac{15}{9} &= b \\ \frac{6}{9} &= b \end{aligned}$$

- 3) Given the graph to the right, what speed did the motorcycle travel?

- a) 15 km/h
- b) 30 km/h
- c) 35 km/h
- d) 40 km/h

$$\frac{100-70}{2-1} = \frac{30}{1}$$



4) Using the same graph, how far away from home was the motorcycle when the data was starting to be recorded?

- a) 30 km
- b) 38 km
- c) 40 km
- d) 42 km

$$y = mx + b$$

$$70 = 30(1) + b$$

$$70 = 70 + b$$

$$70 - 70 = 70 - 70 + b$$

$$0 = 0 + b$$

$$0 = b$$

5) If the line $2x - 4y - 8 = 0$ were graphed, what would the x-intercept be?

- a) -4
- b) -2
- c) 2
- d) 4

$$2x - 4(0) - 8 = 0$$

$$2x - 8 = 0$$

$$2x - 8 + 8 = 0 + 8$$

$$2x = 8$$

$$\frac{2x}{2} = \frac{8}{2}$$

$$x = 4$$

PART II: Constructed Response

Students are required to answer all questions in the space provided. All workings should be shown. Submit the answer sheet for Part I and all pages of Part II. Place your name on each page.

Long Answers: (40 marks) All workings are to be scanned and e-mailed to your teacher. Be sure to show all possible workings, graphs appropriately labeled and math sentences written for word problem solutions.

6) A line passes through the point (4, -5) and has an x-intercept of -3.

a) Find the equation of the line. Be sure to show all possible workings and leave your results in simplest fractional form. (NO DECIMAL NUMBERS!!!) (6 marks)

$$M = \frac{y_2 - y_1}{x_2 - x_1} = \frac{0 - (-5)}{-3 - 4} = \frac{5}{-7}$$

$$y = -\frac{5}{7}x + \frac{-15}{7}$$

$$y = mx + b$$

$$0 = -\frac{5}{7}(-3) + b$$

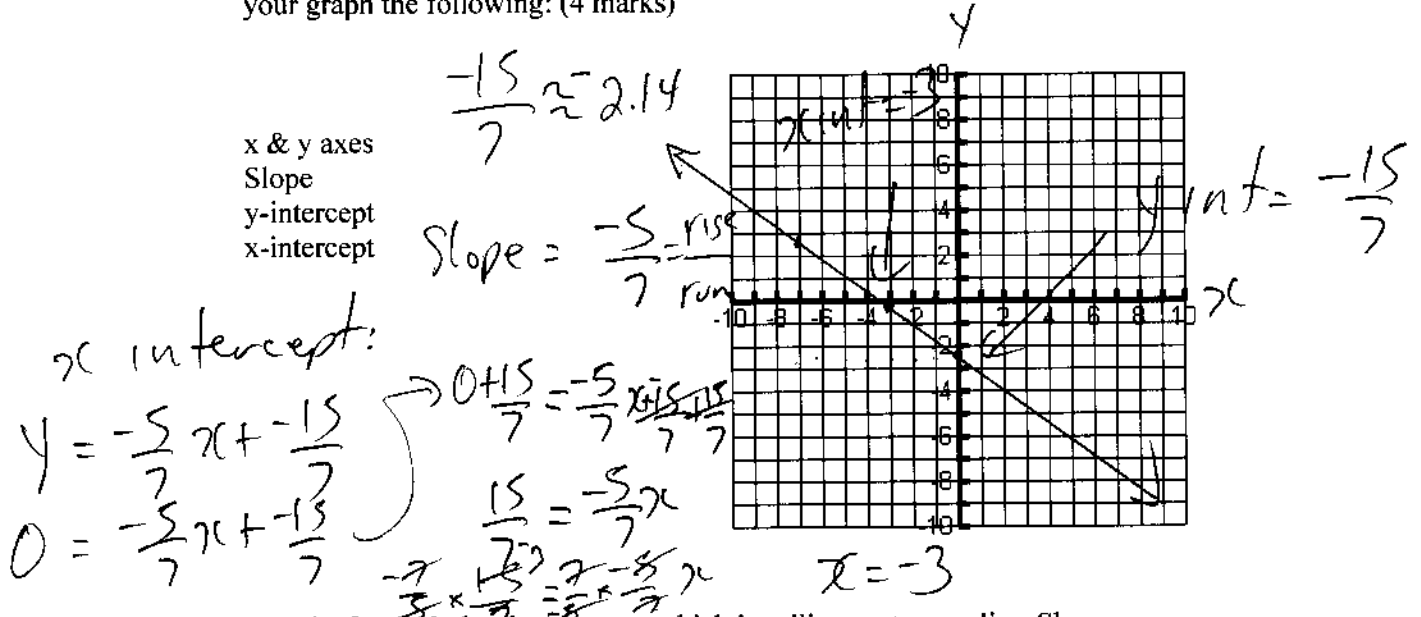
$$0 = \frac{15}{7} + b$$

$$0 - \frac{15}{7} = \frac{15}{7} - \frac{15}{7} + b$$

$$-\frac{15}{7} = 0 + b$$

$$-\frac{15}{7} = b$$

- b) Graph the line you found in part (a) on the grid to the right. Be sure to indicate on your graph the following: (4 marks)



- 7) Tara works for a wholesale company which is selling party supplies. She earns a weekly salary of \$206 if she sells \$100 in party supplies and she earns \$230.00 if she sells \$500 in party supplies

- a) Find the linear equation that represents her weekly earnings. Be sure to label variables appropriately. (7 marks)

$(100, 206)$ $(500, 230)$ $y = mx + b$
 x_1, y_1 x_2, y_2

$$m = \frac{y_2 - y_1}{x_2 - x_1} = \frac{230 - 206}{500 - 100} = \frac{24}{400} = 0.06$$

$$230 = 0.06(500) + b$$

$$230 = 30 + b$$

$$230 - 30 = b$$

$$200 = b$$

- b) What is the base wage the wholesale company pays Tara? (1 mark)

Base wage = \$200

- c) What is the rate of pay for Tara for each dollar of sales? (1 mark)

She earns \$0.06 per dollar of sales or 6 cents for each dollar of sales.

- d) If Tara were to sell \$1500 in party supplies in a week, what would her earnings be? Show all workings. (2 marks)

$$y = 0.06x + 200$$

$$y = 0.06(1500) + 200$$

$$y = 290$$

To sell \$1500 in Supplies would result in \$290 in earnings

- e) If Tara earns \$2000 in a week, how much has she sold? Show all workings. (2 marks)

$$2000 = 0.06x + 200$$

$$2000 - 200 = 0.06x + 200 - 200$$

$$\frac{1800}{0.06} = \frac{0.06x}{0.06} \quad 30,000 = x$$

Tara has sold \$30,000 in goods or Supplies

- 8) Brian is an airline pilot with Provincial Airlines. He is paid a bi-weekly wage of five hundred dollars plus fifty cents for every kilometer he flies. Air Labrador is trying to recruit Brian to work for them. They are offering him a bi-weekly wage of six hundred and dollars plus thirty cents for every kilometer he flies.

- a) Write equations to represent both airlines. Be sure to define all variables. (3 marks)

let x = kilometers Provincial
 y = earnings
 $y = 0.50x + 500$

Air Labrador
 $y = 0.30x + 600$

- b) Algebraically determine the number of kilometers Brian would have to fly and still make the same wage? What would that wage be? (4 marks)

$$y = 0.50(500) + 500$$

$$y = 250 + 500$$

$$y = 750$$

$$0.50x + 500 = 0.30x + 600$$

$$0.50x + 500 - 500 = 0.30x + 600 - 500$$

$$0.50x = 0.30x + 100$$

$$0.50x - 0.30x = 0.30x - 0.30x + 100$$

$$\frac{0.20x}{0.20} = \frac{100}{0.20}$$

$$x = 500$$

The distance is 500km and the wage is \$750.00

- c) Brian usually flies more than 600 kilometers every week. Which company should he fly for? Give reasons for your answer and support your answer with calculations. (2 marks)

Intersection
point
(500, 750)

$$y = 0.50x + 500$$

$$y = 0.50(600) + 500$$

$$y = 800$$

$$y = 0.30x + 600$$

$$y = 0.30(600) + 600$$

$$y = 780$$

Brian will make more with provincial if he flies more than 600 km

- 9) Solve for the variable indicated:

a) $3(x-4) + 10 = 9 + 5(x+3)$ (3 marks)

$$3x + 12 + 10 = 9 + 5x + 15$$

$$3x + 22 = -6 + 5x$$

$$3x + 5x - 22 = -6 + 5x + 5x$$

$$8x - 22 = -6$$

$$8x - 22 + 22 = -6 + 22$$

$$\frac{8x}{8} = \frac{16}{8}$$

$$x = 2$$

b) $4(5+x) + (x+3) = 2 + 7(x+5)$ (3 marks)

$$20 + 4x + x + 3 = 2 + 7x + 35$$

$$-5x + 17 = 7x + 33$$

$$-5x - 7x + 17 = 7x - 7x + 33$$

$$-12x + 17 = 33$$

$$-12x + 17 - 17 = 33 - 17$$

$$-12x = 16$$

$$\frac{-12x}{-12} = \frac{16}{-12}$$

$$x = \frac{25}{6}$$

10) Find the slope and y-intercept for the following equations.

a) $2x - 4y + 8 = 0$ (2 marks)

$$\begin{aligned} 2x - 4y + 8 &= 0 \\ 2x - 4y + 8 &= 0 - 2x \\ -4y + 8 &= -2x \\ -4y + 8 - 8 &= -2x - 8 \\ -4y &= -2x - 8 \\ \frac{-4y}{-4} &= \frac{-2x - 8}{-4} \\ y &= \frac{2}{4}x + 2 \\ y &= \frac{1}{2}x + 2 \end{aligned}$$

b) $5x + \frac{1}{3}y - \frac{2}{3} = 0$ (3 marks)

$$\begin{aligned} 5x + \frac{1}{3}y - \frac{2}{3} &= 0 - 5x \\ \frac{1}{3}y - \frac{2}{3} &= -5x \\ \frac{1}{3}y - \frac{2}{3} + \frac{2}{3} &= -5x + \frac{2}{3} \\ \frac{1}{3}y &= -5x + \frac{2}{3} \\ 3 \times \frac{1}{3}y &= 3 \times -5x + 3 \times \frac{2}{3} \\ y &= -15x + 2. \end{aligned}$$

11) Solve for the indicated variable.

a) $A = 2\pi r^2 + 2\pi rh$ Solve for h (3 marks)

b) $v = u + at$ solve for a (3 marks)

$$\begin{aligned} A - 2\pi r^2 &= 2\pi r^2 - 2\pi r^2 + 2\pi rh \\ A - 2\pi r^2 &= 2\pi r h \\ \frac{A - 2\pi r^2}{2\pi r} &= \frac{2\pi r h}{2\pi r} \\ \frac{A - 2\pi r^2}{2\pi r} &= h \end{aligned}$$

$$\text{or } \frac{A}{2\pi r} - r = h$$

$$\begin{aligned} v - u &= at \\ \frac{v - u}{a} &= \frac{t}{a} \\ \frac{v - u}{a} &= t \end{aligned}$$

$$c) \frac{2x}{5} + \frac{3}{4} = \frac{4x}{5} - \frac{1}{2} \quad (3 \text{ marks}) \quad \text{L.C.D.} = 20$$

$$4 \cdot \frac{2x}{5} + \frac{3}{4} = \frac{4x}{5} - \frac{1}{2}$$

$$8x + 15 = 16x - 10$$

$$8x - 16x + 15 = 16x - 16x - 10$$

$$-8x + 15 = -10$$

$$-8x + 15 + 15 = -10 + 15$$

$$\frac{-8x}{-8} = \frac{-25}{-8}$$

$$x = \frac{25}{8}$$

$$d) \frac{5(y+6)}{4} + 3 = \frac{-(1-10y)}{3} \quad (3 \text{ marks})$$

$$\text{L.C.D.} = 12$$

$$12 \cdot \left(\frac{5(y+6)}{4} + 3 \right) = 12 \cdot \left(\frac{-(1-10y)}{3} \right)$$

$$15(y+6) + 36 = -4(1-10y)$$

$$15y + 90 + 36 = -4 + 40y$$

$$15y + 126 = -4 + 40y$$

$$15y - 15y + 126 = -4 + 40y - 15y$$

$$126 = -4 + 25y$$

$$126 + 4 = -4 + 4 + 25y$$

$$\frac{130}{25} = \frac{25y}{25}$$

1	d
2	a
3	b
4	c
5	d