

Name: _____

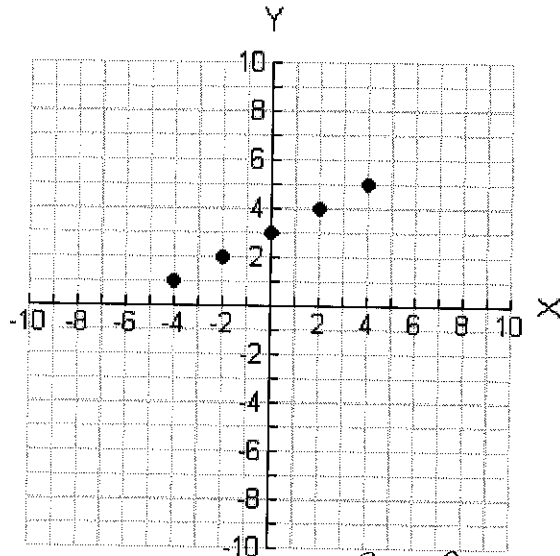
Section A. Multiple Choice (10 marks) Please send the answers only using the answer sheet attached. Do not send in the copies of the multiple choice questions.

1) Darrell sells cars for an automobile dealership in St. John's. He earns a base salary of \$200.00 each week plus \$80.00 for every car he sells. Brian decides to generate a graph to represent Darrell's earnings. Which answer below best describes the data Brian graphed?

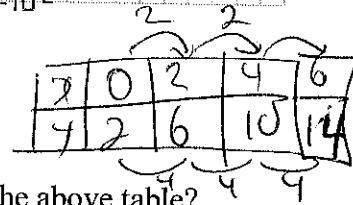
- a. Continuous and linear
- b. Continuous and non-linear
- c. Discrete and linear
- d. Discrete and non-linear

2) Which answer below best describes the range for the function to the right?

- a. Domain: $\{x | -4 \leq y \leq 4, x \in I\}$
 Range: $\{y | 1 \leq x \leq 5, y \in I\}$
- b. Domain: $\{x | -4 \leq y \leq 4, x \in R\}$
 Range: $\{y | 1 \leq x \leq 5, y \in R\}$
- c. Domain: $\{x | -4 \leq y \leq 4, x \in I\}$
 Range: $\{1, 2, 3, 4, 5\}$
- d. Domain: $\{-4, -2, 0, 2, 4\}$
 Range: $\{y | 1 \leq x \leq 5, y \in R\}$



| | | | |
|---|---|----|----|
| x | 2 | 4 | 6 |
| y | 6 | 10 | 14 |



3) Which equation below will represent the data contained in the above table?

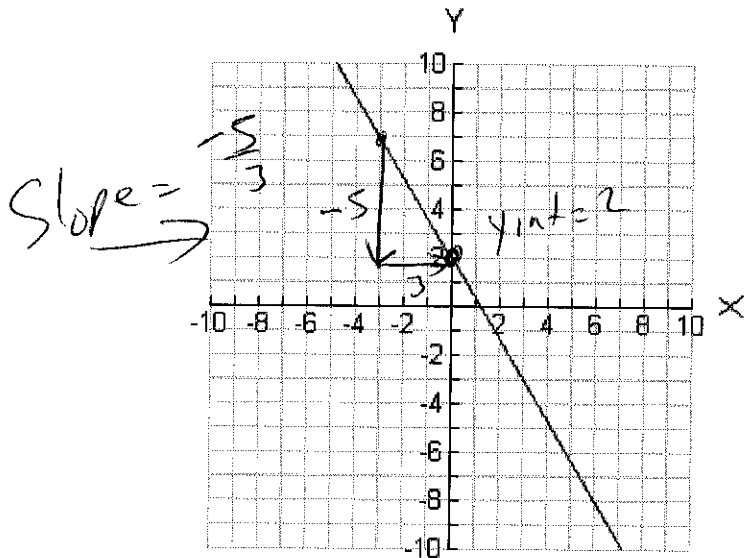
- a. $y = 4x + 2$
- b. $y = 4x + 4$
- c. $y = 2x + 2$
- d. $y = 2x + 4$

$y\text{-int} = 2$
 Slope = 2

Name: _____

4) What is the equation for the line graphed on the right?

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



5) If $7x - 4 = -5x + 8$, what is the value for x ?

- a. -1
- b. $-\frac{1}{3}$
- c. $\frac{1}{3}$
- d. 1

$$\begin{aligned}
 7x + 5x - 4 &= -5x + 5x + 8 \\
 12x - 4 &= 8 \\
 12x - 4 + 4 &= 8 + 4 \\
 12x &= 12 \\
 \frac{12x}{12} &= \frac{12}{12} \\
 x &= 1
 \end{aligned}$$

6) Tara's Excavation Services charges an administrative fee of \$200.00 to rent their truck plus \$60.00 for each ton of soil that needs to be removed from a worksite. If C represents the total cost for rental of the truck and t represents the amount of soil (in tons) removed, which equation below represents the cost for Tara's Excavation Services?

- a. $C = 260t$
- b. $C = 200t + 60$
- c. $C = 60t + 200$
- d. $C = \$260t + 60$

$$\begin{aligned}
 \text{Slope} &= 60 \\
 y_{\text{int}} &= 200. \\
 C &= 60t + 200
 \end{aligned}$$

Name: _____

- 7) If a line goes through the point $(-2, 8)$ and has a x-intercept of 6 , which answer below indicates the slope of that line?

- a. -9
 b. -1
 c. 1
 d. 9

x_1, y_1 $(-2, 8)$ x_2, y_2 $(6, 0)$ $\frac{0-8}{6-(-2)} = \frac{-8}{8} = -1$

- 8) A line passes through two points, $(-7, 3)$ and $(-4, 9)$. Which answer below represents the equation for that line?

- a. $y = 2x + 17$
 b. $y = -2x + 17$
 c. $y = -\frac{6}{11}x + \frac{75}{11}$
 d. $y = \frac{6}{11}x + \frac{75}{11}$

x_1, y_1 x_2, y_2
 $\frac{9-3}{-4-(-7)} = \frac{6}{3} = 2$
 $y = mx + b$
 $y = 2x + b$
 $9 = 2(-4) + b$
 $9 = -8 + b$
 $9 + 8 = -8 + 8 + b$
 $17 = b$

- 9) What is $3x - 5y + 7 = 0$ written in slope intercept form?

- a. $y = \frac{3}{5}x + \frac{7}{5}$
 b. $y = -\frac{3}{5}x - \frac{7}{5}$
 c. $y = 15x + 35$
 d. $y = \frac{5}{3}x + \frac{5}{7}$

$3x - 5y + 7 = 0$
 $3x - 5y + 7 = 0 - 3x$
 $-5y + 7 = -3x$
 $-5y + 7 - 7 = -3x - 7$
 $-5y = -3x - 7$
 $\frac{-5y}{-5} = \frac{-3x - 7}{-5}$
 $y = \frac{3}{5}x + \frac{7}{5}$

- 10) What is $A = \pi r^2 + \pi r s$ solved for s ?

- a. $\frac{\pi r^2 - A}{\pi r}$
 b. $\frac{A - \pi r^2}{\pi r}$
 c. $\frac{A + \pi r^2}{\pi r}$
 d. $\frac{A}{\pi r} - \pi^2 r^3$

$A = \pi r^2 + \pi r s$
 $A - \pi r^2 = \pi r^2 - \pi r^2 + \pi r s$
 $A - \pi r^2 = \pi r s$
 $\frac{A - \pi r^2}{\pi r} = \frac{\pi r s}{\pi r}$

Name: _____

Multiple Choice Answer Sheet

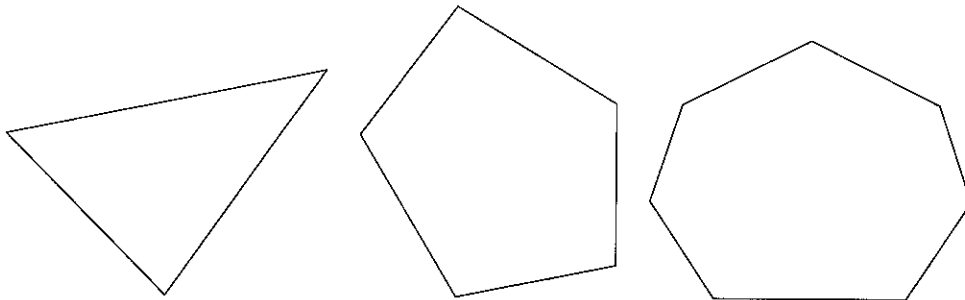
| | |
|----|---|
| 1 | c |
| 2 | d |
| 3 | c |
| 4 | a |
| 5 | d |
| 6 | c |
| 7 | b |
| 8 | a |
| 9 | a |
| 10 | b |

e??

Name: _____

Section B Long Answers (30 Marks). Please include all workings.

11) Below is a picture of polygons and the table below shows the relationship between the number of sides in a polygon and the sum of the interior angles in the polygon.



a. Continue the pattern for the sum of the interior angles. (1 mark)

| Number of Sides | Sum of Interior Angles |
|-----------------|------------------------|
| 3 | 180° |
| 5 | 540° |
| 7 | 900° |
| 9 | 1260 |
| 11 | 1620 |

$$\frac{360}{2} = 180$$

b. Write an equation to represent the relationship seen in the above table. Clearly define all variables. (2 marks)

Slope = 180°
 let x = sides
 y = Sum of angles

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

$$= \frac{180 - 540}{3 - 5} = \frac{-360}{-2} = 180^\circ$$

$$y = mx + b$$

$$180 = 180(3) + b$$

$$180 = 540 + b$$

$$180^\circ - 540^\circ = b$$

$$-360 = b$$

$$y = 180x + -360$$

Name: _____

- c. If the pattern was continued for a polygon with 20 sides, what would be the sum of the interior angles? Use your equation in (b) above as a part of your solution. (2 marks)

$$Y = 180(20) + 360$$

$$Y = 3240$$

The sum of the interior angle is 3240°

- d. If the sum of the interior angles was 4500° , how many sides would it have? Use your equation in (b) to help explain your answer. (2 marks)

there

$$4500 = 180x + 360$$

$$4500 + 360 = 180x + 360 + 360$$

$$\frac{4860}{180} = \frac{180x}{180}$$

$$27 = x$$

| Age (years) | Price (\$) |
|-------------|------------|
| 2 | 15,925 |
| 5 | 10,490 |

x_1, y_1
(2, 15925)
 x_2, y_2
(5, 10490)

- 12) The average retail price in the Spring of 2000 for a used Camaro Z28 coup depends on the car as shown in the above table.

- a. Find a linear function to model the price of the car as a function of age. (4 marks)

$$m = -1181.67$$

$$b = 19548.35$$

$$\text{or } m = \frac{-5435}{3}$$

$$b = \frac{58645}{3}$$

$$y = -1811.67x + 19548.35$$

$$x = \text{age}$$

$$y = \text{price}$$

$$m = \frac{y_2 - y_1}{x_2 - x_1} = \frac{10490 - 15925}{5 - 2}$$

$$= \frac{-5435}{3}$$

$$= -1811.67$$

$$y = mx + b$$

$$10490 = -1811.67(5) + b$$

$$10490 = 9058.35 + b$$

$$10490 + 9058.35 = 9058.35 + b$$

$$19548.35 = b$$

Name: _____

- b. In a sentence or two, interpret the meaning of the slope and the y-intercept of the line. (2 marks)

Slope \Rightarrow price decreases \$1811.67 each year.
 y-int \Rightarrow original price was \$19548.35

- c. Using your equation from part (a), predict the average retail price for a 7-year-old Camaro. (2 marks)

$$x = 7$$

$$y = 1811.67(7) + 19548.35$$

$$y = 6868.31$$

The price after 7 years is \$6868.31

- d. Using your equation from part (a), when will the Camaro be worth \$1400? (2 marks)

$$y = 1400 \quad 1400 = -1811.67x + 19548.35$$

$$1400 - 19548.35 = -1811.67x + 19548.35 - 19548.35$$

$$-18148.35 = -1811.67x$$

$$\frac{-18148.35}{-1811.67} = \frac{-1811.67x}{-1811.67}$$

$$10 = x$$

The Camaro will be worth \$1400 after 10 years.

- 13) Greg and Grant both work as waiters in restaurants. Greg receives a base salary of \$250.00 every week plus \$5.00 in tips for each table he serves. Grant receives a base salary of \$200.00 plus \$7.50 in tips for each table he serves.

- a. Write equations to represent the earnings for Greg and Grant. Be sure to define all variables. (2 marks)

$x =$ tables
 $y =$ earnings

Greg: $y = 5.00x + 250$

Grant: $y = 7.50x + 200$

Name: _____

Greg and Grant will have to serve 20 tables to earn \$350.00

- b. How many tables will Greg and Grant have to serve to earn the same amount? What will that amount be? (4 marks)

$$y = 5.00(20) + 2$$

$$y = 100 + 250$$

$$y = 350$$

$$5.00x + 250 = 7.50x + 200$$

$$5.00x - 5.00x + 250 = 7.50x - 5.00x + 200$$

$$250 = 2.50x + 200$$

$$250 - 200 = 2.50x + 200 - 200$$

$$\frac{50}{2.50} = \frac{2.50x}{2.50}$$

$$20 = x$$

14) Solve for the variable indicated:

- a. $2(5x - 11) + 7 = 3(x - 7) - 15$ (3 marks)

$$10x - 22 + 7 = 3x - 21 - 15$$

$$10x - 15 = 3x - 36$$

$$10x - 3x - 15 = 3x - 3x - 36$$

$$7x - 15 = -36$$

$$7x - 15 + 15 = -36 + 15$$

$$7x = -21$$

$$\frac{7x}{7} = \frac{-21}{7}$$

$$x = -3$$

- b. $\frac{2s+7}{3} = \frac{s+3}{5} + \frac{1-s}{1}$ (4 marks)
 L.C.D. = 15

$$15 \left(\frac{2s+7}{3} \right) = 15 \left(\frac{s+3}{5} \right) + 15 \left(\frac{1-s}{1} \right)$$

$$10s + 35 = 3s + 9 + 15 - 15s$$

$$10s + 35 = -12s + 24$$

$$10s + 12s + 35 = -12s + 12s + 24$$

$$22s + 35 = 24$$

$$22s + 35 - 35 = 24 - 35$$

$$22s = -11$$

$$\frac{22s}{22} = \frac{-11}{22}$$

$$s = -\frac{1}{2}$$