

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.

Fill in the answers on the sheet provided.

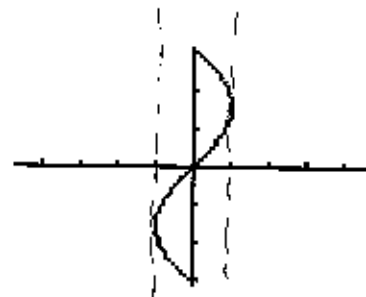
Number of People (p)	0	2	4	6
Cost in \$(C)	100	110	120	130

1. Which answer below best describes this data?

- a. Continuous and Linear
- b. Continuous and Non-Linear
- c. Discrete and Linear
- d. Discrete and Non-Linear

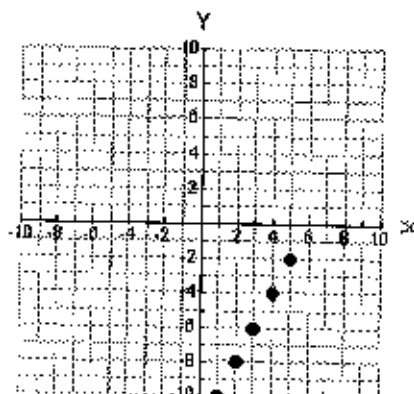
2. Which answer below best describes the domain for the function to the right?

- a. $\{x|x \in R\}$
- b. $\{x|x \in I\}$
- c. $\{x|-1 \leq x \leq 1, x \in R\}$
- d. $\{x|-1 \leq x \leq 1, x \in I\}$



3. Which answer below best describes the range of the data graphed to the right?

- a. $\{y|1 \leq y \leq 5, y \in I\}$
- b. $\{y|-10 \leq y \leq -2, y \in R\}$
- c. $\{y|1 \leq y \leq 5, y \in R\}$
- d. $\{-10, -8, -6, -4, -2\}$

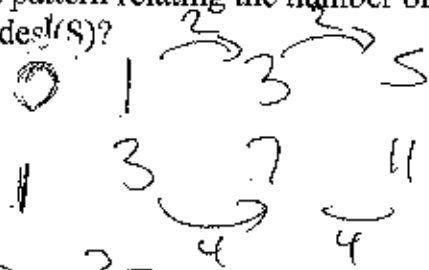




4. Which answer below best describes a pattern relating the number of small triangles (t) to the number of sides (S)?

Check
 $S = 2(3) + 1$
 $S = 6 + 1 = 7$

- a. $S = 4t + 1$
- b. $S = 2t + 1$
- c. $S = 4t - 1$
- d. $S = 4t - 1$



x	0	1	4	7	10	13
y	3	5	11	17	23	29

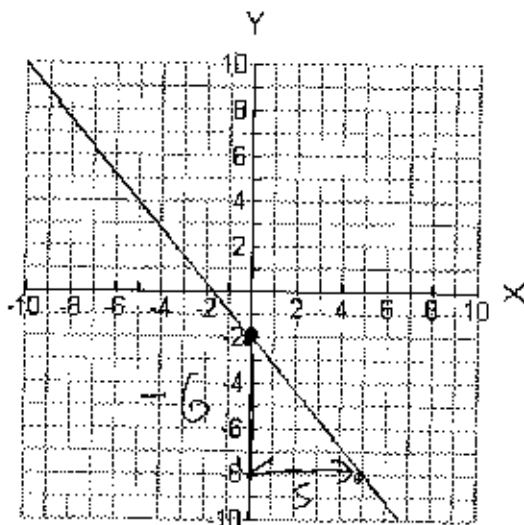
5. Which answer below best represents the relationship for the above data?

- a. $y = 2x + 3$
- b. $y = 3x + 2$
- c. $y = 6x + 5$
- d. $y = 2x + 5$

Check
 $\frac{6}{3} = 2$
 $y = 2(4) + 3$
 $y = 8 + 3 = 11$

6. What is the equation for the line graphed on the right?

- a. $y = x - 2$
- b. $y = \frac{6}{5}x - 2$
- c. $y = -\frac{6}{5}x - 2$
- d. $y = -x - 2$



10. If Irene decides to use Eddy's Limosuine Services and has \$200.00 to spend, how long, in hours, can she use the limosuine for?

- a. 10
- b. 15
- c. 20
- d. 25

$$\begin{aligned} 200 &= 10h + 50 \\ 200 - 50 &= 10h + 50 - 50 \\ 150 &= 10h \\ \frac{150}{10} &= \frac{10h}{10} \\ 15 &= h \end{aligned}$$

Multiple Choice Answer Sheet

1	d
2	C
3	d
4	b
5	a
6	C
7	b
8	a
9	b
10	b

Section B Long Answers (35 Marks). Please include all workings.



a. Fill in the table below based on the above diagrams (2 marks)

	Number of Small 90° Triangles	Number of Small Line Segments
26	0	1
26	2	5
26	4	9 } 4
29	6	13 } 4
	8	17 } 4
	10	21 } 4
	12	25 } 4
	14	29 } 4

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

$T = \text{triangles}$
 $S = \text{segments}$
 $S = 2t + 1$

c. A diagram contains one hundred 90° triangles. How many small line segments would there be? Use your equation in (b) above as a part of your solution. (2 marks)

$S = 2(100) + 1$
 $S = 200 + 1 = 201$
 There will be 201 line segments.

d. If there were 401 line segments in a picture, how many triangles would there be? Use your equation in (b) above as a part of your solution. (4 marks)

$$\begin{aligned}401 &= 2T + 1 \\400 - 1 &= 2T + 1 - 1 \\400 &= 2T \\ \frac{400}{2} &= \frac{2T}{2} \\200 &= T\end{aligned}$$

There would be 200 triangles.

12. Solve the following for x . Leave answers in simplest fractional form.

a. $-25 = -15 - \frac{x}{3}$ (2 marks)

$$\begin{aligned}-25 + 15 &= -15 + 15 - \frac{x}{3} \\-10 &= -\frac{x}{3} \\-10 \times -3 &= -\frac{x}{3} \times -3 \\30 &= x\end{aligned}$$

b. $\frac{2}{5}x + \frac{3}{4} = \frac{4}{5}x - \frac{1}{2}$ (2 marks)

$$\begin{aligned}\frac{2}{5}x + \frac{3}{4} &= \frac{4}{5}x - \frac{1}{2} \\ \frac{2}{5}x + \frac{3}{4} - \frac{2}{5}x &= \frac{4}{5}x - \frac{1}{2} - \frac{2}{5}x \\ \frac{3}{4} &= \frac{2}{5}x - \frac{1}{2} \\ \frac{3}{4} + \frac{1}{2} &= \frac{2}{5}x - \frac{1}{2} + \frac{1}{2} \\ \frac{3}{4} + \frac{2}{4} &= \frac{2}{5}x \\ \frac{5}{4} &= \frac{2}{5}x \\ \frac{5}{4} \times \frac{5}{2} &= \frac{2}{5}x \times \frac{5}{2} \\ \frac{25}{8} &= x \\ 3.125 &= x\end{aligned}$$

c. $3(-2x+4) = 2(2x+8)$ (3 marks)

$$\begin{aligned} -6x + 12 &= 4x + 16 \\ -6x - 4x + 12 &= 4x - 4x + 16 \\ -10x + 12 &= 16 \\ -10x + 12 - 12 &= 16 - 12 \\ -10x &= 4 \\ \frac{-10x}{-10} &= \frac{4}{-10} \\ x &= -\frac{2}{5} \end{aligned}$$

d. $2(5x-11) - 6 = 3(x-7) - 15$ (4 marks)

$$\begin{aligned} 10x - 22 - 6 &= 3x - 21 - 15 \\ 10x - 28 &= 3x - 36 \\ 10x - 3x - 28 &= 3x - 3x - 36 \\ 7x - 28 &= -36 \\ 7x - 28 + 28 &= -36 + 28 \\ 7x &= -8 \\ \frac{7x}{7} &= \frac{-8}{7} \\ x &= \frac{-8}{7} \end{aligned}$$

13. As fundraising director of the student council you are responsible for selling bags of candy. On the first day you sold 7 bags and every day after your sales increased by 3 bags.

a. Write an equation to represent the above situation. Be sure to define all variables. (2 marks)

$d = \text{Day}$
 $S = \text{Sales}$

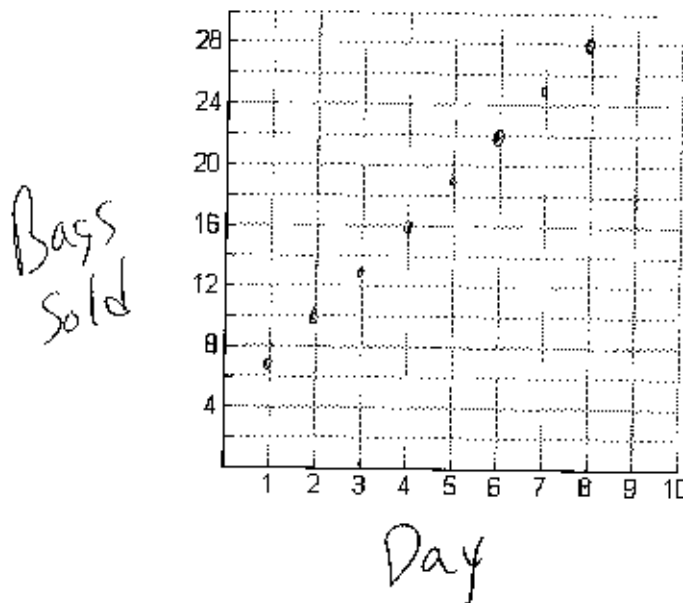
$$S = 3d + 4$$

b. Using set notation describe the domain and range. (3 marks)

Domain $\{x \mid x \geq 1, x \in \mathbb{I}\}$

Range $\{7, 10, 13, \dots\}$

Sales of Candy



d	S
1	7
2	16
3	13
4	16
5	19
6	22
7	25
8	28
9	31
10	34

- c. On the above grid graph the data for the first 10 days. Is the data discrete or continuous? Explain your answer. (3 marks)

The data is discrete. Can't have $\frac{1}{2}$ bag of candy.

- d. How many bags were sold on day 22? Use the equation you obtained in (a) above? (2 marks)

$$S = 3(22) + 4$$
$$S = 66 + 4 = 70$$

On day 22 there were 70 bags sold

e. How many days would it take for you to sell 80 bags of candy? Use the equation you obtained in (a) above? (4 marks)

$$80 = 3d + 4$$

$$80 - 4 = 3d + 4 - 4$$

$$\frac{76}{3} = \frac{3d}{3}$$

$$25.3 = d$$

you will need at least
26 days to sell 80 candy.