

**Part 2: Constructed Response**

1. Cooper Cabs charges \$3.50 plus \$0.25 per km. The most Joe can spend on a cab ride is \$5.50.

a). Write and solve an inequality to determine the farthest Joe can travel for \$5.50.

$d \rightarrow \text{km}$

$$0.25d + 3.50 \leq 5.50$$

$$\frac{0.25d}{0.25} \leq \frac{2.00}{0.25}$$

$$d \leq 8$$

Joe can travel 8 km.

(b) Graph the solution on a number line.



2. This cylindrical post attached to a triangular block serves as part of a fence. What is the total surface area of this object?

S.A. Cylinder  $h = 8 \text{ cm}$   $r = 1 \text{ cm}$

$$S.A. = 2\pi r^2 + 2\pi rh$$

$$= 2(3.14)(1)^2 + 2(3.14)(1)(8)$$

$$= 56.52 \text{ cm}^2$$

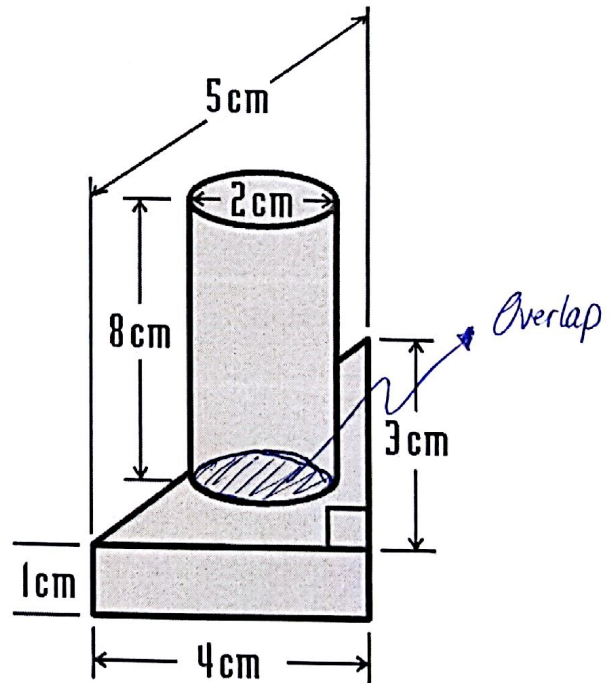
Triangular Prism

$$S.A. = 2\left(\frac{bh}{2}\right) + (4 \times 1) + (3 \times 1) + (5 \times 1)$$

$$= (4 \times 3) + 4 + 3 + 5$$

$$= 12 + 12$$

$$= 24 \text{ cm}^2$$



$$\text{Total} = \text{Cylinder} + \text{Tri. Prism} - \text{Overlap}$$

$$= 56.52 + 24 - 6.28$$

$$= 74.24 \text{ cm}^2$$

3. It costs \$10.00 to join an online movie download website. It costs an additional \$2.00 for each movie downloaded.

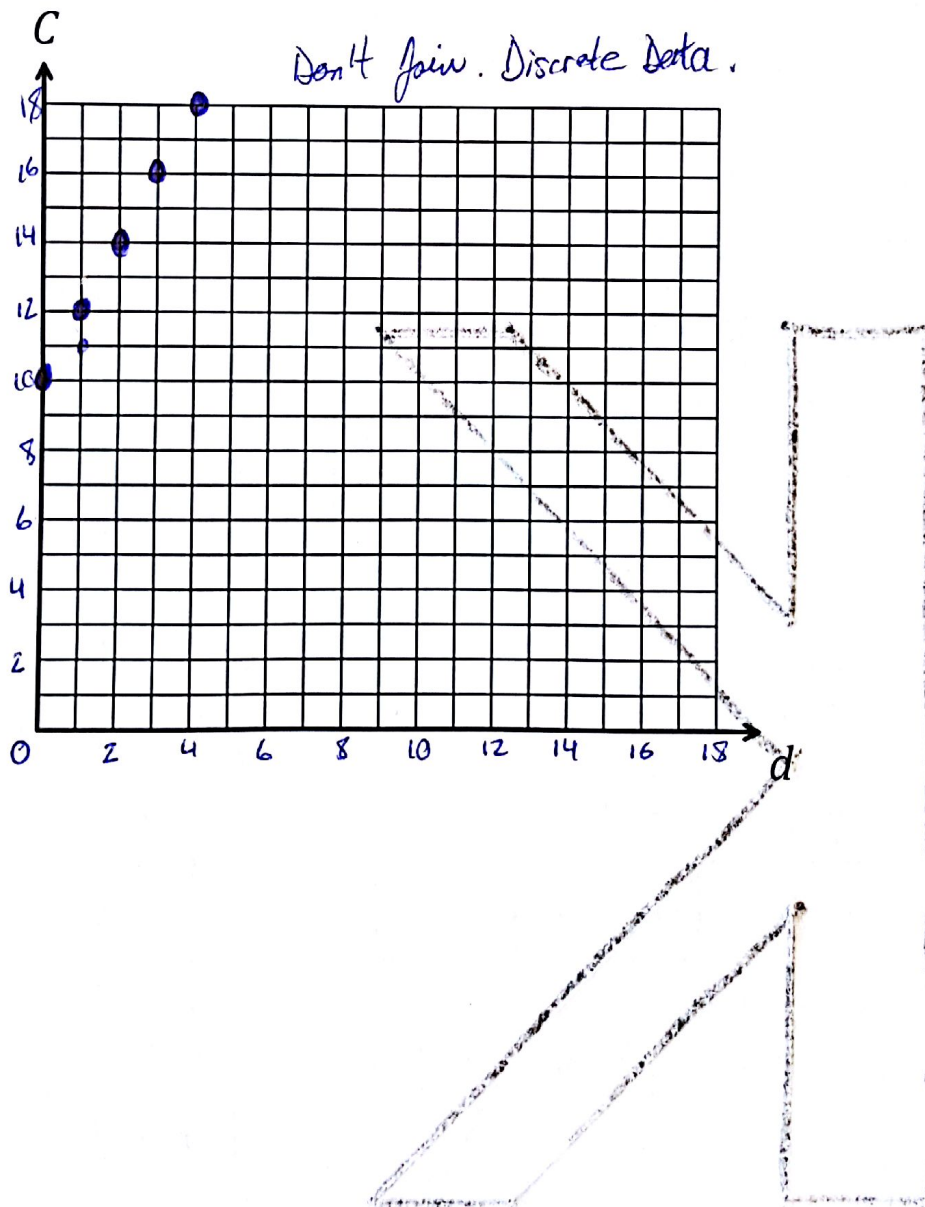
(a) Complete the table of values for the situation.

Movies downloaded ( $d$ )	0	1	2	3	4
total cost (\$) ( $C$ )	10.00	12.00	14.00	16.00	18.00

(b) Write an equation that relates the number of movies downloaded to the total cost.

$$C = 2d + 10$$

(c) Graph the relation.

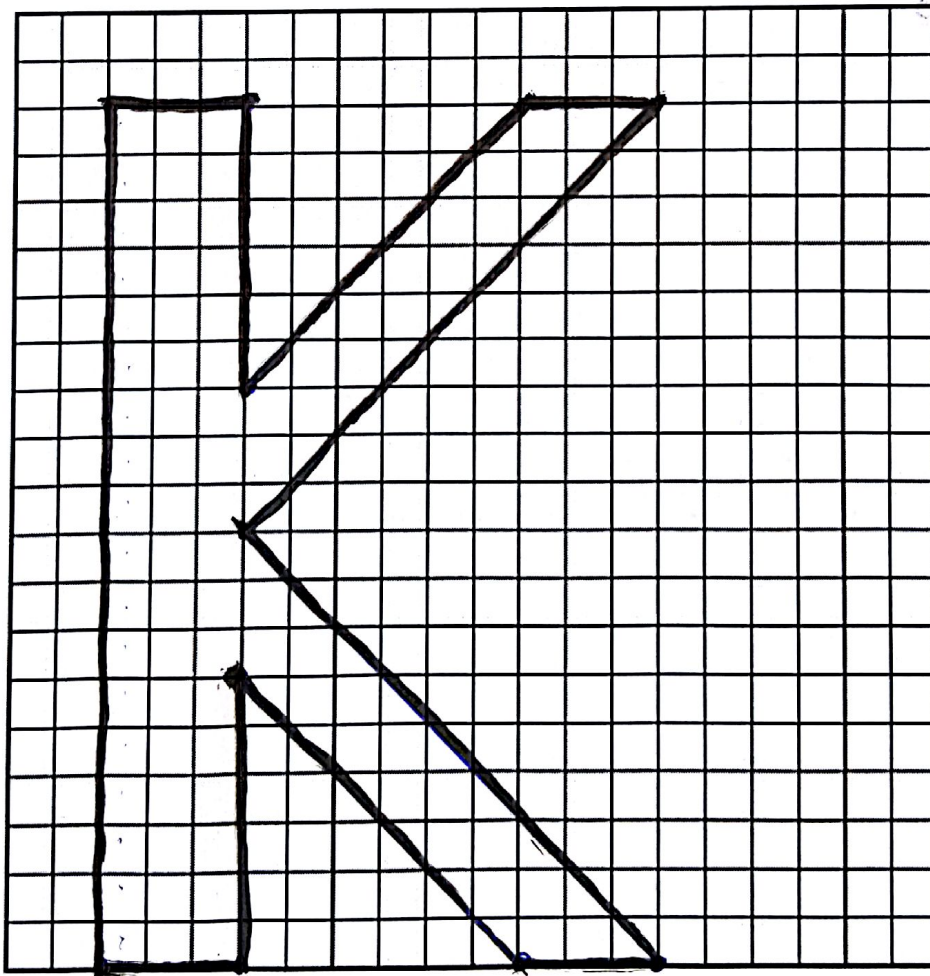
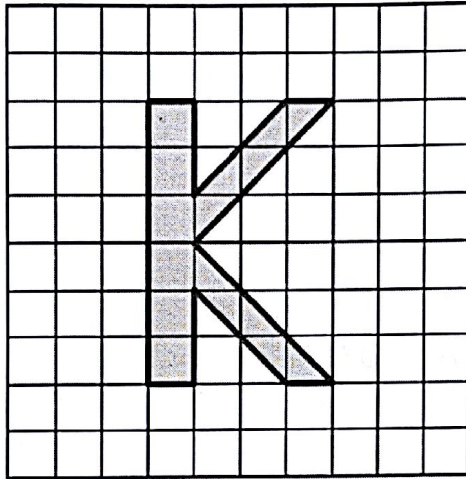


4. A skyscraper in downtown Calgary is 110 stories high. A scale drawing has a scale of 1.5 centimetres: 1 story. How tall is the skyscraper on the scale drawing?

1.5 cm / story

$$110 \times 1.5 = 165 \text{ cm tall}$$

5. Use a scale factor of 3 to draw an enlargement of this letter K.



6. A biologist wanted to know the average mass of codfish living in the waters off the South Coast of Newfoundland. He took 5 fish from each of 3 different locations off the South Coast and weighed them.

(a) Why did the biologist choose to take a sample to collect the data?

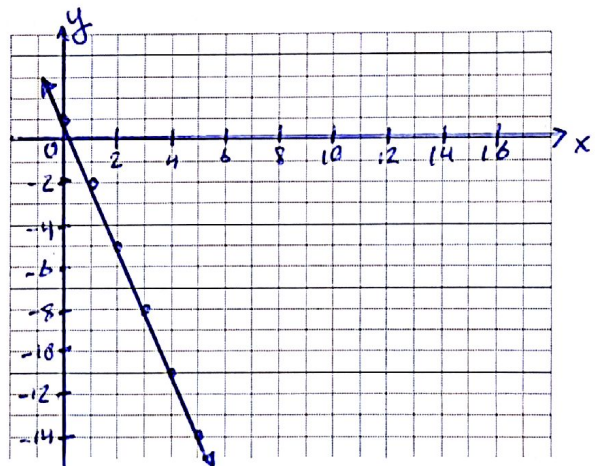
*It would be impossible to catch and weigh all the codfish living in the waters off the South Coast.*

(b) Do you think the results will be valid for the entire population of codfish?

*No. The sample size is too small. You would not be able to make a general statement for thousands of fish based on 15 you caught.*

7. Graph the line  $y = -3x + 1$  using a table of values  
(Pick your own x-coordinates)

x	y
0	1
1	-2
2	-5
3	-8
4	-11



8. Solve:  $3x - 8 = -2x + 7$ .

$$\begin{array}{r} +2x \\ 3x - 8 = -2x + 7 \end{array}$$

$$\begin{array}{r} +8 \\ 5x - 8 = 7 \end{array}$$

$$\frac{5x}{5} = \frac{15}{5}$$

$$x = 3$$

9. Your school is planning a field trip to Gros Morne National Park. The cost of the trip is a flat fee of \$500 plus \$50 per student.

a) Complete the table below.

Table A:

Number of Students	0	2	4	6	8
Cost of Trip	500	600	700	800	900

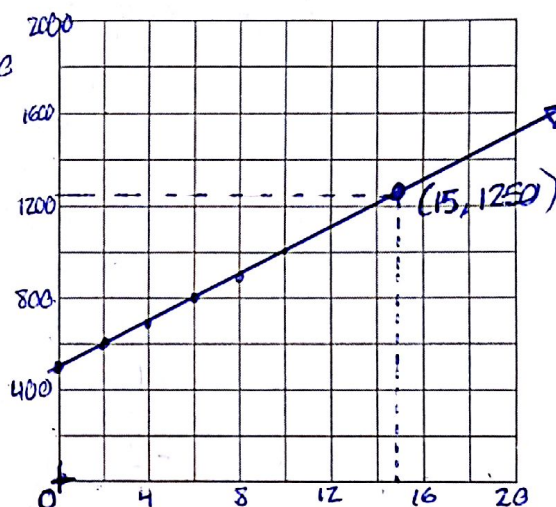
b) If the total cost of the trip was \$1250, write and solve an equation to determine the number of students who went on the trip.

$c = \text{cost of the trip}$        $C = 50n + 500$

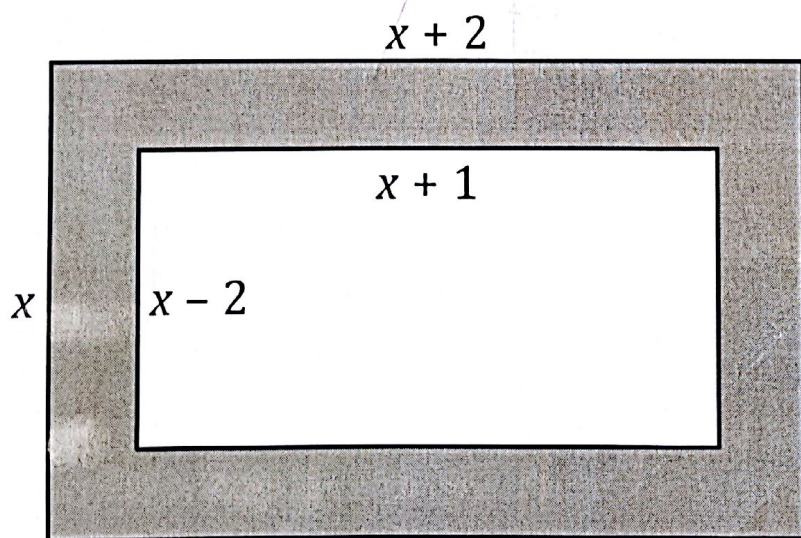
$n = \text{number of students}$        $1250 = 50n + 500$

$n = 15$        $\frac{750}{50} = \frac{50n}{50}$

c) Graph the information from Table A and extend the graph to confirm your answer in (b). Label your graph.



10. Determine the area of the shaded region for the figure shown in simplest form.



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

↑  
Shaded Region

11. Continue the following pattern for one more drawing.

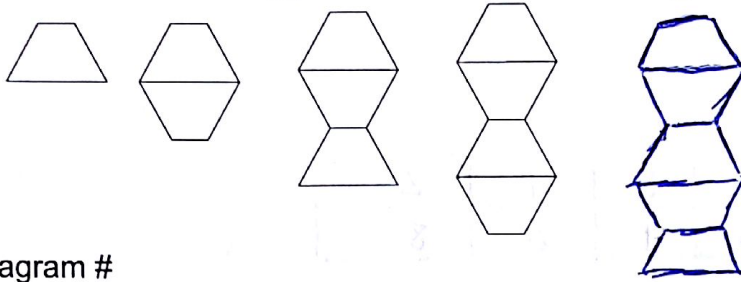


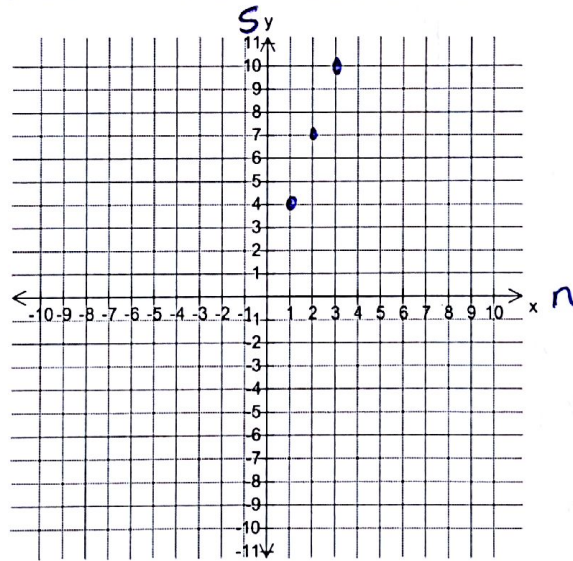
Diagram #  
One      Two      Three      Four

a) Complete the table for the given data.

Diagram #	1	2	3	4	5	6
# of line segments	4	7	10	13	16	19

b) Graph the data.

BE CAREFUL TO LABEL THE AXIS CORRECTLY AND TO USE A PROPER SCALE.



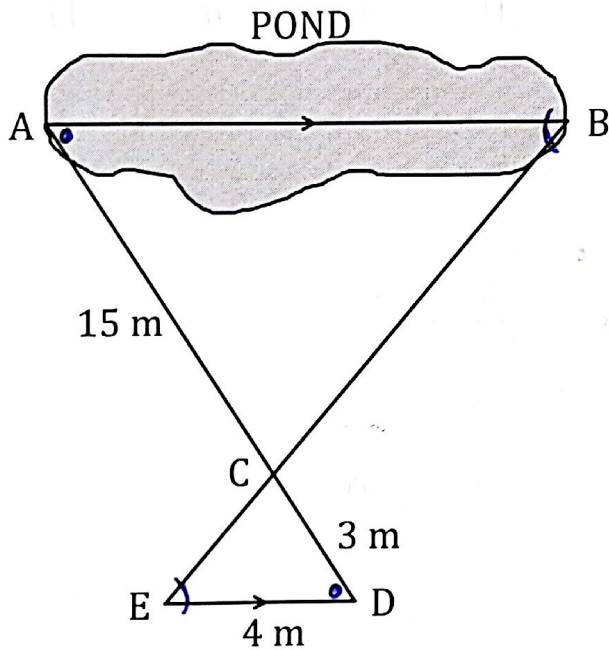
c) Write an equation to represent the relation. Let  $n = \text{diagram \#}$  and  $s = \text{\# of sides}$ .

$$s = 3n + 1$$

12. Create and complete a table of values for the equation  $y = 2x + 4$  when  $x = -2, -1, 0, 1, 2$ .

x	-2	-1	0	1	2
y	0	2	4	6	8

13. Alice marked out the following triangles to determine the length of the pond,  $\overline{AB}$ .



- (A) Write a similarity relation.

$$\triangle CED \sim \triangle CBA$$

- (B) Determine the length of the pond,  $\overline{AB}$ .

$$\frac{\overline{AB}}{\overline{DE}} = \frac{\overline{AC}}{\overline{DC}} \quad \text{H. } \frac{\overline{AB}}{4} = 5 \cdot 4$$

$$\frac{\overline{AB}}{4} = \frac{15}{3} \quad \overline{AB} = 20 \text{ m}$$

16. Solve:  $8x < 3x + 7$   
 $\begin{array}{r} -3x \quad -3x \\ 8x < 3x + 7 \end{array}$

$$\begin{array}{r} 5x < +7 \\ \hline 5 \quad 5 \\ x < \frac{7}{5} \end{array}$$

17. Solve:  $2(x+3) = -3x+11$   
 $\begin{array}{r} +3x \quad -6 \quad +3x \quad -6 \\ 2x+6 = -3x+11 \end{array}$   
 $5x = 5 \quad x = 1$

18. Calculate:  $-2 + \frac{2}{3} \times 12$

$$\begin{aligned} & -2 + \frac{2}{3} \times 12 \\ & = -2 + \frac{24}{3} \\ & = -2 + 8 \\ & = 6 \end{aligned}$$



14. Sam walks toward a motion sensor.

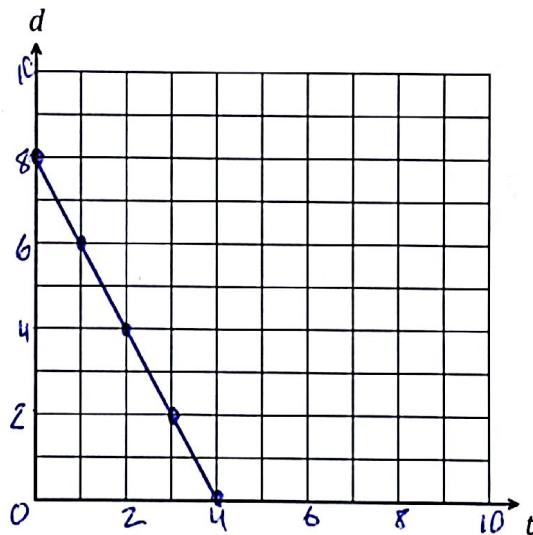
The distance from the sensor is determined by the equation  $d = -2t + 8$

where  $d$  represents distance in metres and  $t$  represents time in seconds.

(A) Complete the table of values.

Time (s)	0	1	2	3	4
Distance (m)	8	6	4	2	0

(B) Graph the information from the above table.



15. Simplify:  $(4x^2 - 5xy - 6y^2) - (8xy + 4y^2 + 5x^2)$

$$= 4x^2 - 5xy - 6y^2 - 8xy - 4y^2 - 5x^2$$

$$= 4x^2 - 5x^2 - 6y^2 - 4y^2 - 5xy - 8xy$$

$$= -x^2 - 10y^2 - 13xy$$