

Grade 9 Applied Mathematics Exam Review

Strand 1: Number Sense and Algebra

1. Complete each proportion.
(a) $24:6 = x:1$ (b) $5:4 = 30:x$

2. One can of orange juice concentrate is mixed with three cans of water.
(a) State the ratio of concentrate to water. _____:_____

- (b) How much orange juice can you make with one 250 mL can of concentrate?

- (c) How many 250 mL cans of concentrate are needed to make 5L of orange juice?
(1L = 1000 mL)

3. Express each as a unit rate. Be sure to include the appropriate units. Round your answers to two decimal places where necessary.
(a) \$6.99 for 24 cans of pop _____

- (b) \$39.96 for 40 L of gas _____

- (c) 3200 m in 50 minutes _____

4. Determine the better buy.
A box of 10 pens for \$1.99 OR A box of 12 pens for \$2.29

5. Express as a percent.
(a) 3 out of 5 (b) $\frac{125}{120}$ (c) 28:32

6. A knitting pattern for a child's sweater calls for 28 rows in the body. An adult sweater in the same pattern is 150% bigger than the child's sweater. How many rows are in the body of the adult sweater?

7. Simplify.

(a) $4n + 8 - 2n + 3$

(b) $2a^2 + 5a + 5 - 6a + 3a^2 - 7$

(c) $(3x^2 - 2x) + (4x^2 - 3x + 1)$

(d) $(3x + 4) - (2x + 5) + (x - 3)$

(e) $5(2x + 1)$

(f) $3x(x^2 + 2x - 4)$

8. Solve for the unknown.

(a) $x - 3 = 4$

(b) $2x + 5 = -7$

(c) $4 = 3x + 1$

(d) $2x + 7 = 6x - 1$

(e) $4y = 6(1 + y)$

(f) $4 - 3x = 2x - 16$

9. The perimeter of a rectangle can be represented by $P = 2l + 2w$. If the perimeter of a rectangle is 59 cm and the width is 12 cm, determine the length.

Strand 2: Linear Relations

1. The cost to print flyers is given by: $C = 20 + 0.05n$, where n is the number of flyers printed and C is cost in dollars.

(a) Determine the cost of printing 800 flyers.

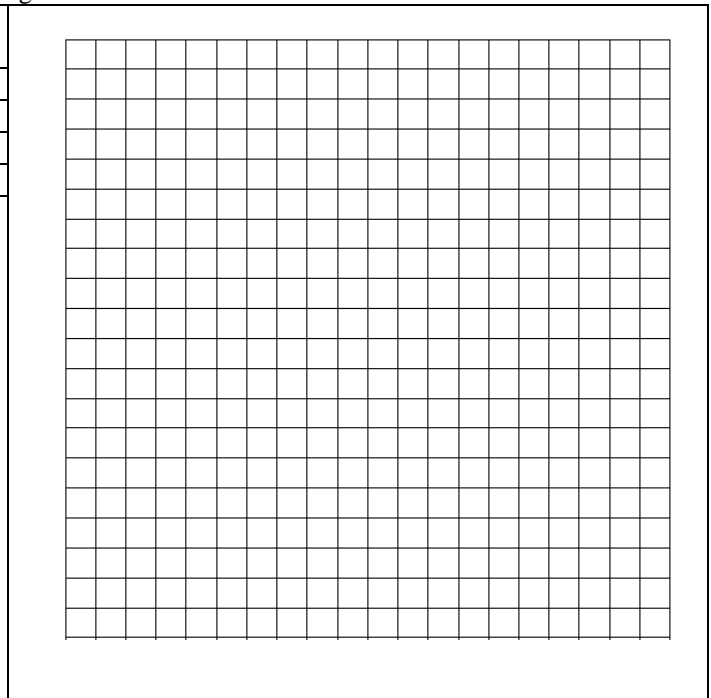
(b) Determine the number of flyers printed if the cost is \$37.50.

(c) Does the equation represent a linear relation? How do you know?

(d) What is the rate of change in the equation?
What does it represent in this situation?

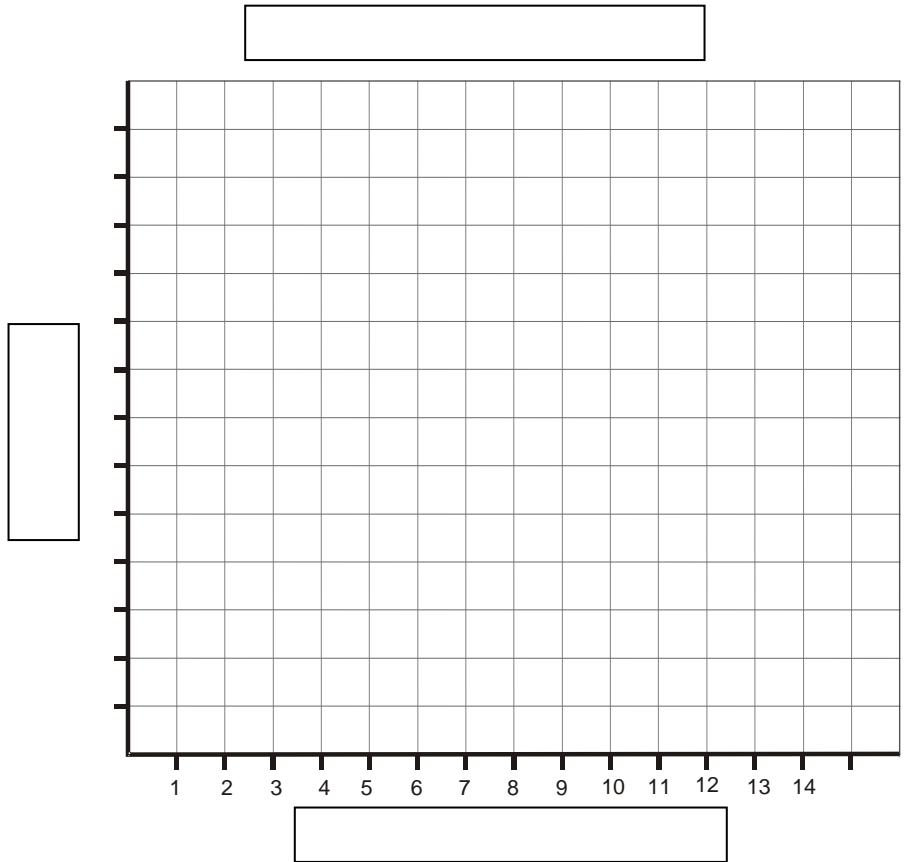
(e) Graph the relationship using the following table of values.

n number of flyers	C Cost in dollars
0	
200	
400	
600	



2. A painting company charges \$100 for a house plus \$10 for each hour.
- Make a table of values for the total cost for painting a house up to 10 hours.
 - Graph the relationship.

Number of Hours	Cost (\$)



- (c) Write an equation to model the relationship. C is the cost and n is the number of hours.

_____ = _____

- (d) Does this relation represent a partial or direct variation? Explain.

- (e) Determine the cost for 3.5 hours. Show your work.

- (f) If the cost to paint a house is \$225, how many hours did it take? Show your work.

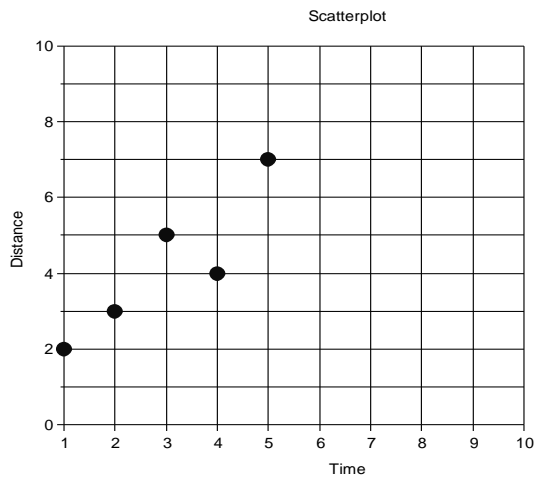
3. Determine if the following relationships are linear or non-linear.

(a)

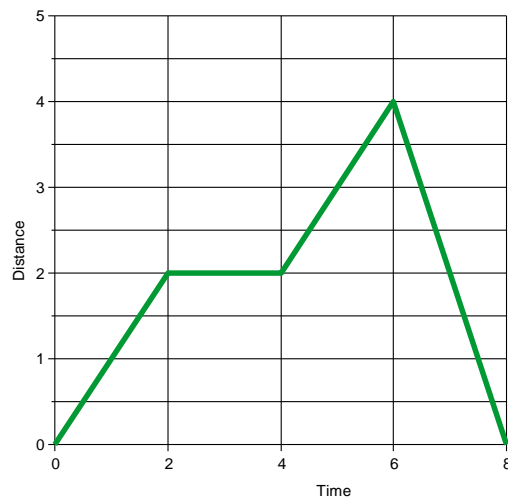
Number of Litres	Cost	First Differences
1	4	
2	8	
3	16	
4	32	

(b) $C = 3 + 2r$

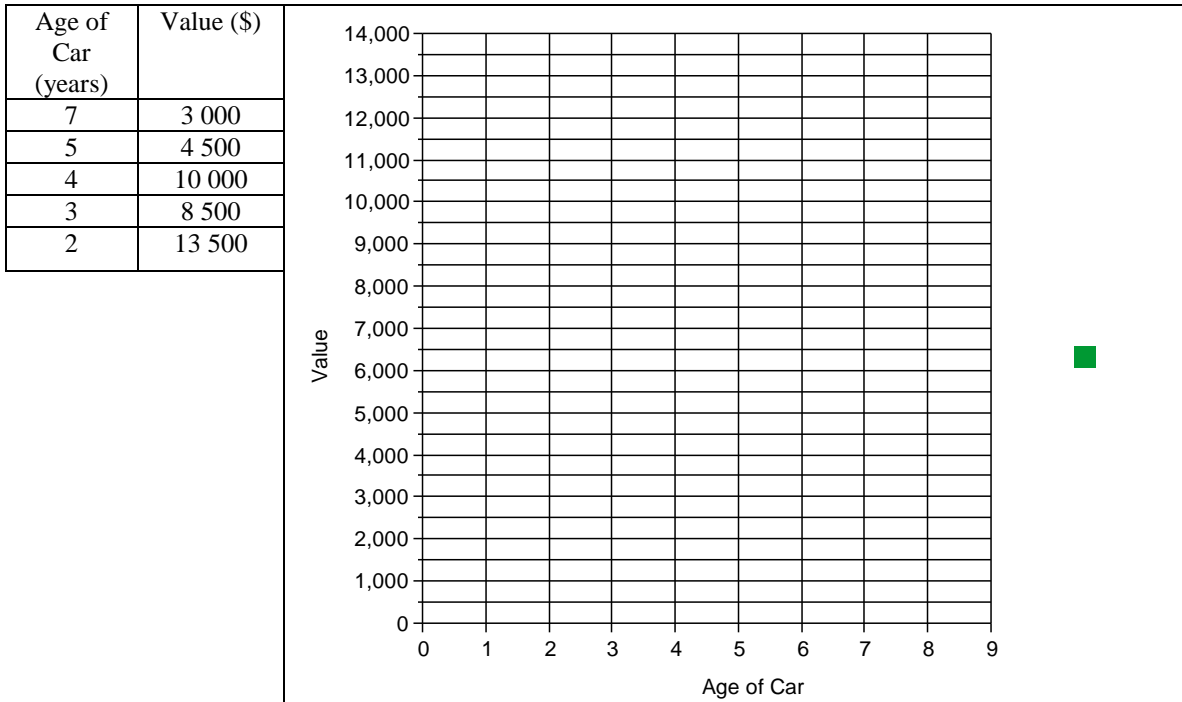
(c)



4. Write a story for the following distance-time graph.

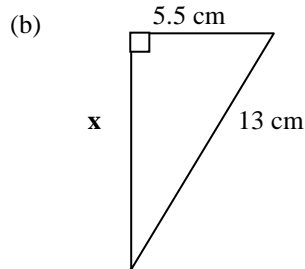
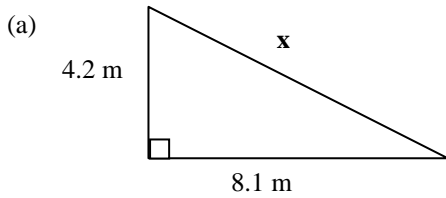


5. Given the following table, draw a scatter plot to examine the relationship between the age of a car and its value. Draw a line of best fit.

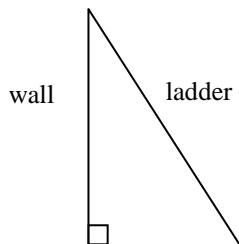


Strand 3: Measurement and Geometry

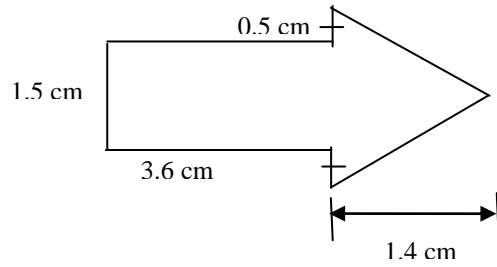
1. Find the length of the unknown side for each triangle.



2. A 3.4 m ladder leans against a wall. If the base of the ladder is 1.5 m from the wall how high up the wall does the ladder reach?

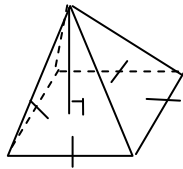


3. Find the area of this figure.



4. You want to put in a rectangular garden that is as large as possible. You want to surround the garden with plastic edging. You have 12 m of edging. What dimensions for the garden will let you have the largest amount of area for planting?

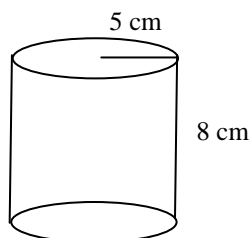
5. The tent shown has a square base with each side length of 2 m. The height of the centre pole is 2.4m.



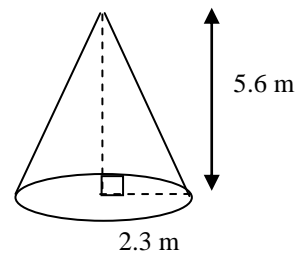
- (a) What is the area of the base?
- (b) Find the volume of the air inside the tent.

6. Determine the volume of the following 3-D figures.

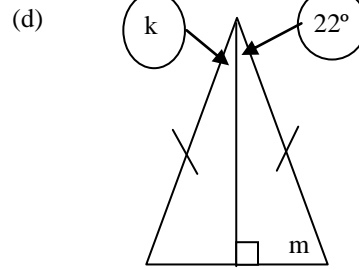
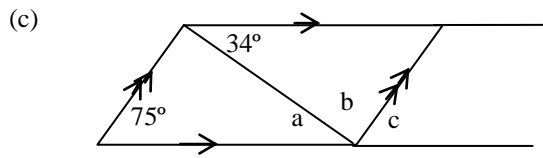
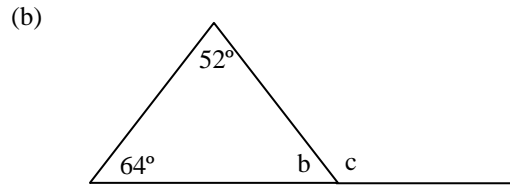
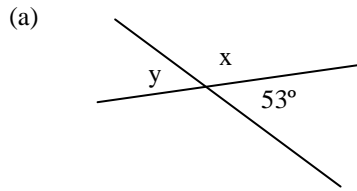
(a)



(b)



7. Calculate the measure of the missing angles.



Answers

Question #	Strand 1: Number Sense and Algebra	Strand 2: Linear Relations	Strand 3: Measurement and Geometry
1.	(a) $x = 4$ (b) $x = 24$	(a) \$60 (b) 350 flyers (c) yes (d) 0.05 (e) 20, 30, 40, 50	(a) 9.1m (b) 11.8 cm
2.	(a) 1:3 (b) 1000mL=1L (c) 5 cans	(a) (0,100), (2, 120), (4, 140), (6, 160), (8, 180), (10, 200) (c) $C = 100 + 10n$ (d) partial, initial value is 100 (e) $C = \$135$ (f) 12.5 hours	3.1 m up the wall
3.	(a) 29¢/can (b) 99.9¢/L (c) 64m/min	(a) no (b) yes (c) yes	7.15 cm ²
4.	12 for \$2.29	Answers will vary...must include a stop for 2 minutes from 2 minutes to 4 minutes	3m by 3m
5.	(a) 60% (b) 104% (c) 87.5%	Scatter plot	(a) 4m ² (b) 3.2 m ³
6.	42 rows		(a) 628 cm ³ (b) 31 m ³
7.	(a) $2n + 11$ (b) $5a^2 - a - 2$ (c) $7x^2 - 5x + 1$ (d) $2x - 4$ (e) $10x + 5$ (f) $3x^3 + 6x^2 - 12x$		(a) $x = 127^\circ$, $y = 53^\circ$ (b) $b = 64^\circ$, $c = 116^\circ$ (c) $a = 34^\circ$, $b = 71^\circ$, $c = 75^\circ$ (d) $j = 22^\circ$, $m = 68^\circ$
8.	(a) $x = 7$ (b) $x = -6$ (c) $x = 1$ (d) $x = 2$ (e) $y = -3$ (f) $x = 4$		
9.	Width is 17.5 cm.		