GRADE SEVEN MATH SUMMER REVIEW

Unit 1 – Operations with Numbers

1. Calculate the following using the order of operations:

(a) $9 + 6 \times 2^2$

=

=

=

(b) $12 + 24 \div 6$

(c) $4 \times 2^3 \div (10 - 6)$

(d) $(4-1)^2 + (8+2)^2$

2. Insert brackets to make the following true: 8 + 7 x 3 + 9 = 92

3. Write each mixed number as an improper fraction.

(a) $2\frac{2}{3}$ (b) $1\frac{4}{5}$ (c) $3\frac{4}{7}$

Write each improper fraction as a mixed number.

(a) $\frac{14}{3}$ (b) $\frac{9}{5}$ (c) $\frac{4}{3}$

4. Order the fractions from largest to smallest.

(a) $\frac{3}{5}, \frac{2}{3}, \frac{4}{9}, \frac{7}{11}$ (b) $\frac{3}{4}, \frac{11}{12}, \frac{5}{6}, \frac{13}{15}$

5. Write each fraction as a decimal.

(a) $\frac{7}{10}$ (b) $\frac{3}{8}$ (c) $\frac{9}{16}$

6. Write each decimal as a fraction.

(a) 0.0024 (b) 3.325 (c) 0.26

7. Calculate:

(a) $\frac{4}{9}+\frac{2}{6}$ (b) $\frac{4}{5}-\frac{2}{7}$ (c) $4\frac{2}{3}-3\frac{3}{5}$

(d) $\frac{3}{4}+\frac{1}{6}-\frac{3}{8}$ (e) $3\frac{2}{5}+\frac{5}{6}-2\frac{1}{2}$

(f) $\frac{2}{3}\times\frac{6}{8}$ (g) $1\frac{1}{3}\times 2\frac{3}{4}$ (h) $\frac{7}{8}\div\frac{1}{4}$ (i) $3\frac{3}{8}\div 2\frac{3}{4}$

8. Complete the following chart:

Fraction	Decimal	Percent
$\frac{3}{4}$		
	0.55	
		85%
$2\frac{1}{5}$		

9. Calculate the following using the order of operations:

(a) $\frac{2}{3}+\frac{1}{4}\times\frac{8}{3}$

(b) $2\frac{3}{4}\times\left(3\frac{1}{4}-2\frac{3}{5}\right)\div\frac{2}{3}$

(c) $6+\left(\frac{4}{9}+\frac{5}{6}\right)\div\frac{10}{3}$

(d) $\frac{7}{9}\times\frac{1}{2}-\frac{7}{12}\div1\frac{3}{4}$

10. $\frac{3}{4}$ of the students in the class are right-handed. $\frac{2}{5}$ of these students have blonde hair. What fraction of students are right-handed and have blonde hair?

11. The Parkers had $100 to split amongst their kids for their allowance. Any money that was left was going to be used to treat the kids to ice cream cones. The oldest child got $\frac{1}{4}$ of the money, the middle child got $\frac{5}{16}$ of the money and the youngest child got $\frac{2}{5}$ of the money. What fraction of the money did the Parkers give to their kids? How much money did the Parkers have left to spend on ice cream?

Unit 2: Growth (exponents)

1. Complete the chart.

Power	Exponent	Base	Answer
3^7			
		4	64
	6		729
5^3			

2. Using the exponent rules, write the following as a single power. ***DO NOT EVALUATE!***

(a) $a^4 \times a^7$ (b) $y^6 \div y^4$ (c) $\left(x^3\right)^2$ (d) $5^3 \times 5^4 \div 5^2$ (e) $4^7 \div 4^4 \times 4^2$ (f) $(2^3)^2$

= = = = = =

3. Write the following in scientific notation.

(a) 12 700 (b) 11 500 000 (c) 1 000 000

= = =

4. Write the following in standard form.

(a) 3.2×10^4 (b) 4.25×10^7 (c) 6×10^5

= = =

5. Using a factor tree, break down the following number into its prime factors. Write your final answer in exponential form.

90

90 = ___ x ___ x ___

6. Find the square root of the following (round to the nearest tenth if necessary):

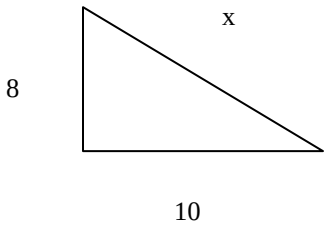
(a) $\sqrt{49}$ = _____ (b) $\sqrt{95}$ = _____ (c) $\sqrt{130}$ = _____

7. Evaluate the following:

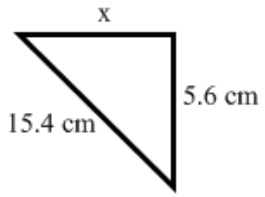
(a) $3+(5-2)^3 \div 9$ (b) $5+\frac{(6-2)^2}{2^3}$ (c) $\frac{(6-3)^3}{(5-2)^2}$

8. Using the Pythagorean Theorem, find the missing side (round to the nearest tenth if applicable).

(a)



(b)



9. A ship left port and sailed 5 km east and then 7 km north. How far was the ship from the port after it did this?

10. A 12 m ladder was placed 4 m from a building. How high up the building would the ladder reach?

Unit 3 – Data Management

1. Explain what random sampling is.

2. Find the mean, median, and mode of the following:

   (a) 16, 18, 22, 29, 35

   (b) 31, 25, 29, 27, 35, 25

3. The average score of five bowling games was 114. If Billy scored an average of 113 on four of these games, what was the fifth score?

4. A spinner has five sections labeled 1 to 5.
   (a) How many possible outcomes are there?

   (b) What is the probability of spinning a 4?

   (c) What is the probability of spinning an odd number?

   (d) In 100 spins, how many times would you expect the spinner to land on 4?

Unit 4 – Geometry

1. Angles that add to 90 degrees are called:
(a) right (b) obtuse (c) complementary (d) supplementary

2. The supplement of 55 degrees is 35 degrees. TRUE FALSE

3. The complement of 25 degrees is _____.

4. A triangle that has one right angle and two equal sides would be classified as _____ and _____ .

5. The sum of the interior angles in a quadrilateral is:
(a) 180 degrees (b) 360 degrees (c) 540 degrees (d) 720 degrees

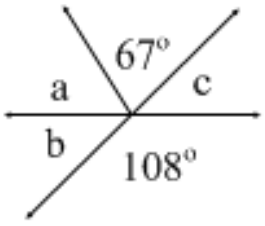
6. The sum of the exterior angles of any polygon is 180 degrees. TRUE FALSE

7. The sum of the interior angles of a nonagon (nine-sided figure) is _____.

8. A triangle that has one obtuse angle and no equal sides is classified as:
(a) obtuse scalene (b) obtuse isosceles (c) acute scalene (d) acute isosceles

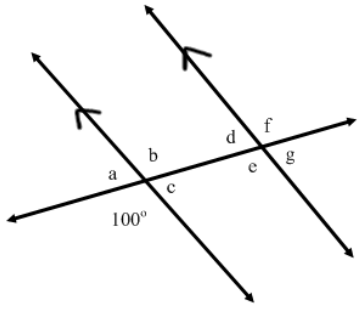
9. Find the missing angles:

(a) a = _____ b = _____ c = _____



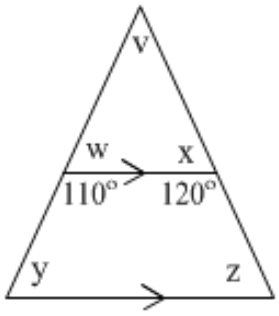
(b) a = _____ b = _____ c = _____ d = _____

e = _____ f = _____ g = _____

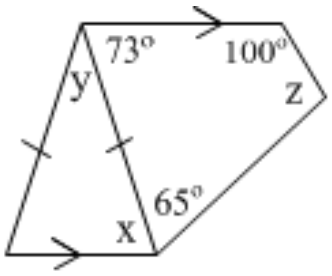


(c) v = _____ w = _____ x = _____

y = _____ z = _____

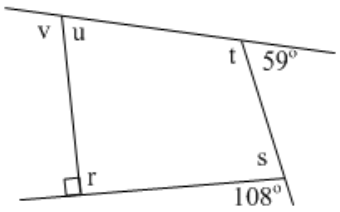


(d) x = _____ y = _____ z = _____

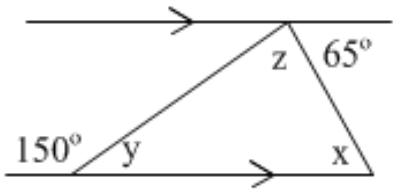


(e) r = _____ s = _____ t = _____

u = _____ v = _____



(f) x = _____ y = _____ z = _____



Unit 5 – Integers

1. Write the opposite:

(a) -3 (b) 2 (c) -8 (d) 0

2. List the following integers from smallest to biggest:

(a) 4, 0, -2, -1 _____ (b) -6, -1, 1, -5 _____

3. $(-3+8)^2 - 18 \times 2$

4. $5 - (2-6) \div 2$

5. $(3^2 - 17) \div (-2)$

6. $-4 + 2 \times (-6)$

7. $\dfrac{18 \div 9 \times 4}{6-(-2)}$

8. $-25 - 17(3^2 - 8)$

Unit 6 – Algebra

1. Simplify by collecting like terms:

(a) 11m – m

(b) $-10b^2 + 3b^2$

(c) -12y – y

(d) 8y – 2z + 7y

(e) 5x + 10 + 5y – 3x + 1

(f) $3+4t^2-5t-t^2-7$ (g) -7t + 2 + 8r + 9r – 8t

2. Complete the chart:

Expression	Term(s)	Variable(s)	Constant(s)	Co-efficient(s)	Classification
$6x^2y$					
$-2x^2-8$					
$4y^2-5-6y^2$					

3. Solve each one step equation:

(a) 2x = 12 (b) 5y = 25 (c) $\frac{d}{3}=5$

(d) $\frac{e}{6}=7$ (e) r + 7 = 12 (f) d + 3 = 25

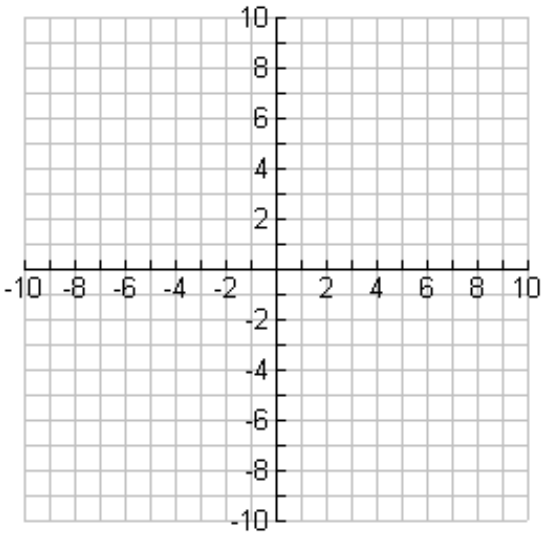
(g) g – 4 = 8 (h) h – 5 = 12 (i) u – 12 = 23 + 7

4. Solve each two step equation:

(a) $2x + 5 = 11$ (b) $3a - 5 = 7$ (c) $\frac{n}{6} + 12 = 15$

(d) $\frac{a}{5} - 3 = 0$ (e) $7 + 3x = 28$ (f) $6 - 18a = 42$

5. On the following grid, **label the x axis and y axis, graph the following points, and fill in the blanks.**



A (-3, 4) This point is in Quadrant _____.

B (0, 5) This point is on the ____ axis.

C (-8, 0) This point is on the ____ axis.

D (-2, -5) This point is in Quadrant _____.

E (0,0) This point is called the _____.

6. Complete the table of values and graph each linear equation.

(a)

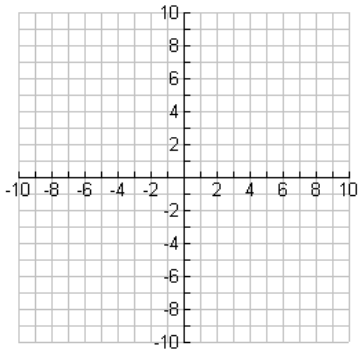
y = 2x	
x	**y**
1	
3	
5	

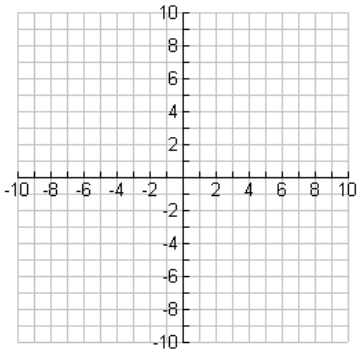
(b)

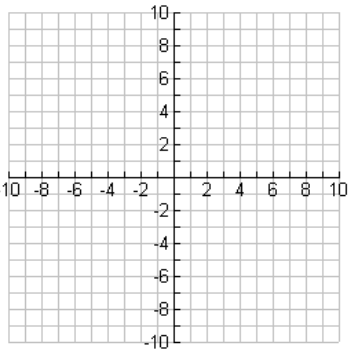
y = x - 3	
x	**y**
-3	
0	
1	
3	

(c)

y = -3x + 2	
x	**y**
-2	
0	
1	
2	







Unit 7 – Rate, Ratio and Proportions

1. Solve each of the following (no work necessary):

(a) $\frac{2}{3} = \frac{n}{18}$ (b) $\frac{3}{4} = \frac{n}{100}$ (c) $\frac{1}{4} = \frac{2}{n}$

2. Solve each of the following using cross multiplying and dividing (show work):

(a) $\frac{4}{5} = \frac{n}{420}$ (b) $\frac{2}{13} = \frac{n}{260}$ (c) $\frac{1}{4} = \frac{n}{30}$

(d) $\frac{2}{12} = \frac{n}{30}$ (e) $\frac{20}{n} = \frac{3}{12}$

3. Eight cases of merchandise cost $60. What would 12 cases cost?

4. If Cory can deliver 450 flyers in 3 h, how many flyers can he deliver in 5 h?

5. What is the unit rate?
(a) 4 bananas for $0.50. (b) 2 L of pop for $1.50 (c) 500 km in 6 hours.

6. What is the better deal 2.5 kg of tide for $6.99 or 900 g of tide for $2.50?

7. Aidan planted 3 pine trees for every 4 oak trees that Griffin planted.
(a) How many pine trees did Aidan plant if Griffin planted 60 oaks?

(b) How many pines did Aidan plant if together he and Griffin planted 84 trees?
(HINT: part to part or part to whole?)

Unit 7 – Percent

1. Express as a percent:

(a) 0.23 (b) 0.825 (c) $\frac{24}{30}$ (d) $\frac{23}{25}$

2. Write as a decimal and fraction:

(a) 55% (b) 7% (c) 123% (d) 1.5%

3. Calculate:

(a) 5% of 45 (b) 0.5 % of 200

4. A concert hall has a capacity of 4590 audience members. How many seats are left empty when the hall is 80% full?

5. Complete the chart:

Price	Percent Off	Discount	Sale Price
$219.50	30%		
$955.00	15%		

6. The Camera Shop is selling a camera for 20% off the regular price of $349.98. The Photo Place is selling the same camera for 25% its regular price of $379.99. Which store has the lower sale price and by how much?

7. Complete the chart:

Price	Total Tax	Total Cost
$220.00		
$479.99		

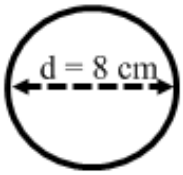
8. A pair of ice skates regularly costs $65. They are discounted 20%. Calculate the total cost including tax.

9. A shirt is regularly $40. You see it on sale for $32. What is the percent discount?

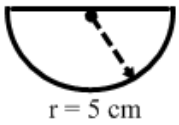
Unit 8 – 2-D Measurement

1. Find the perimeter and area of the following (**to the nearest tenth**):

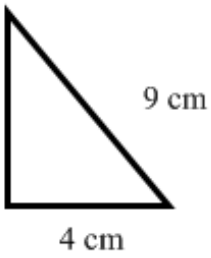
(a)



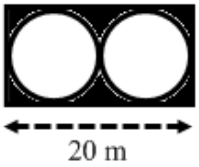
(b)



(c)

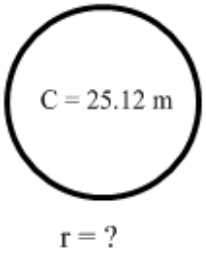


2. Find the area of the shaded region.

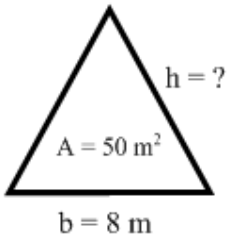


3. Find the missing information (**to the nearest tenth**):

(a)



(b)



4. Solve each formula for the indicated variable (use your knowledge of algebra):

(a) $A = lw$ for w

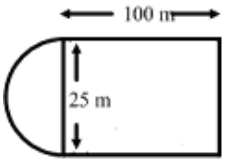
(b) $A = \frac{bh}{2}$ for b

(c) $C = 2\pi r$ for r

(d) $A = \pi r^2$ for r

5. What is the area of a square whose perimeter is 54.4 metres?

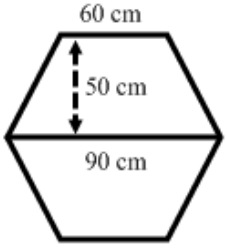
6. What is the area and perimeter of the figure below (to the nearest tenth)?



7. A family has decided to replace the carpet and baseboards in its guest bedroom that is 4.2 metres long and 3.5 metres wide.
   (a) How much would the carpet cost if it is priced at \$25.95 per m^2?
   (b) How much would the baseboards cost if they are priced at \$0.85 per metre?

8. A circular garden, 2.4 metres in diameter is surrounded by a small fence.
   (a) How long is the fence?
   (b) What is the area of the garden?

9. A table top consists of two joined trapezoids as shown in the diagram below. What is the total area of the table top?



Unit 8 – Conversions

Complete the following conversions:

1) 75 mm = _____ dm

2) 124 m^2 = _____ mm^2

3) 46 mm = _____ dam

4) 4 cm^2 = _____ dm^2

5) 5.02 dm = _____ hm

6) 501 dm^2 = _____ dam^2

7) 18 dam = _____ cm

8) 25 hm^3 = _____ dm^3

9) 5.9 m^3 = _____ dm^3

10) 12.4 km^3 = _____ m^3

11) Complete the following conversions:

(a) 1250 mL = _____ L

(b) 65 mg = _____ g

(c) 35 kg = _____ g

(d) 25 kL = _____ L

(e) 50 g = _____kg

(f) 35 t = _____ g

(g) 1250 mL = _____cm^3 = _____ g

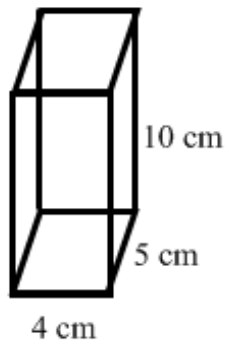
(h) 5 m^3 = _____ cm^3 = _____mL = _____L = _____ kL

(i) 56.89 m^3 = _____ cm^3 = _____ mL = _____ g = _____ kg

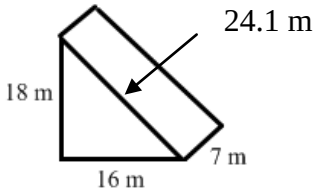
Unit 8 – 3D Measurement

1. Calculate the surface area and volume of the following. Round to the nearest tenth.

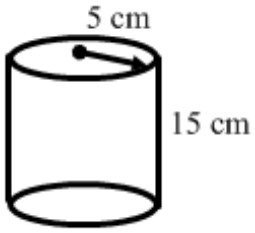
(a)



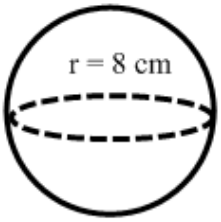
(b)



(c)



(d)



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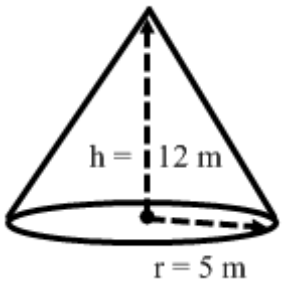
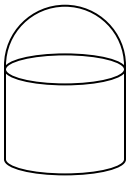


2. Find the volume and surface area of the following composite figure :



r = 3.1 mm
h = 4.5 mm

3. A leather volleyball has a diameter of 10 cm. How much leather is needed to make the volleyball? How much air will it hold?

4. A cylindrical can that is 14 cm tall and has a diameter of 4 cm is to be 75% filled with water. What is the volume of the water in the can?

5. What is the better deal: a Toblerone bar that is 3 cm wide, 12 cm long, and 3.5 cm tall for $2.00 or a solid chocolate ball that has a radius of 3 cm for $3.75?

SAMPLE SUMMATIVE TEST

Please use this sample test to help you identify if further review is needed or if you are well prepared for Grade 8 math.

KNOWLEDGE

PART A: Multiple Choice. Place your answer in the space provided.
Each question is worth 1 mark. [7 marks]

1. One and twenty-four hundredths is:

a) 0.124 b) 1.024 c) 1.24 d) 124.00 e) 12 400 _____

2. Of the five numbers, 1.1, 1.01, 1.001, 1.0101, 1.00101, the one that is the least is:

a) 1.1 b) 1.01 c) 1.001 d) 1.0101 e) 1.00101 _____

3. $\frac{(0.3)^3}{0.9}$ equals:

a) 3 b) 1 c) 0.3 d) 0.03 e) 0.003 _____

4. What is 0.5% of 200?

a) 100 b) 10 c) 1 d) 0.1 e) 0.01 _____

5. If a = 2, then $4a^3$ is equal to:

a) 24 b) 32 c) 64 d) 128 e) 512 _____

6. A boy weighs 90 pounds and a girl weighs 74 pounds. The ratio of the girls' weight to their combined weight is:

a) 37:82 b) 82:37 c) 45:82 d) 37:45 e) 82:45 _____

7. A square piece of paper is folded in half to form a rectangle. This rectangle has a perimeter of 18 cm. The area of the original square, in square centimeters, was:

a) 9 b) 12 c) 18 d) 24 e) 36 _____

PART B: Place your answer in the space provided.
Each is worth 1 mark except where indicated.
[15 marks]

1. Evaluate the following: **Where applicable, express your answers in fraction form.**

(a) $4\frac{1}{2} \div 2\frac{1}{4}$ 1(a)_____

(b) $\frac{4}{18} + \frac{2}{3}$ 1(b)_____

(c) $\frac{3}{5} - \frac{2}{8}$ 1(c)_____

(d) $1\frac{3}{5} \times 2\frac{1}{3}$ 1(d)_____

2. Express 0.35 as a fraction (in lowest terms): 2 _____

3. (a) Write 3.57×10^6 in standard form. 3(a)_____

(b) Write 852 000 in scientific notation. 3(b)_____

4. If x = -2 and y = 3. What is the value of 2x – 3y? 4 _____

5. Find the **unit price** of 350 g of cheese for $7.20. **Round your answer to the nearest cent.** 5 _____

6. Simplify. Leave your answer as an exponent:

(a) $2^{11} \times 2$ 6(a)_____

(b) $5^8 \div 5^4 \times 5^2$ 6(b)_____

(c) $\left(3^5\right)^2$ 6(c)_____

7. What is the probability of rolling doubles with two dice? 7 _____

8. In the expression, $5x^2 - 8x + 2$,

(a) What is the **constant**? 8(a)_____

(b) What is the **co-efficient** of the **second term**? 8(b)_____

PART C: PROVIDE COMPLETE SOLUTIONS.

1. Simplify the following: **(NOTE: Leave answer as a simplified fraction)**

[K - 4 marks]

a) $2\frac{2}{5} \div \left(\frac{4}{3} - \frac{2}{5}\right)$

b) $\frac{2}{5} + 2\frac{2}{5} \times 1\frac{1}{3}$

2. Simplify the following: [K - 4 marks]

a) $8 + 16 \div 4 \times 14 - 5 \times 2$

b) $\frac{6 - 5 \times 2}{(6-4)^2}$

3. Solve: [K - 8 marks]

(a) $y + 4 = 13$ (b) $x - 7 = 11$ (c) $4n = 24$

(d) $\frac{w}{3} = 7$ (e) $4t - 3 = 9$ (f) $9 - 4x = 28 - 7$

4. Complete the following conversions: [K - 3 marks]

(a) 95 m = _____ dm (b) 4000 dm = _____ cm (c) 4.35 cm^2 = _____ m^2

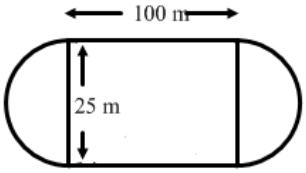
(d) 1.2 m^2 = _____ mm^2 (e) 0.75 km^3 = _____ m^3 (f) 5 m^3 = _____ cm^3

5. Simplify by collecting like terms: [K – 2 marks]

(a) $3x - 7y + 2 - 4x + 2y - 8$ (b) $3x^2 - 8x - 5 + 4x^2 - x + 6$

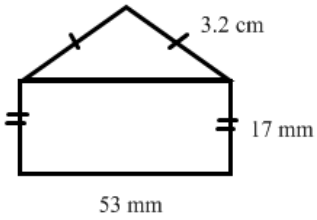
6. Calculate the perimeter and area of **ONE** of the following shapes: **(Show all work!)**
[K - 4 marks]

(a) Perimeter = _____ Area = _____

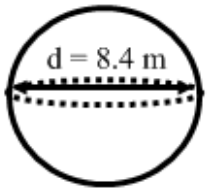


OR

(b) Perimeter = _____ Area = _____



7. Find the surface area and volume: **(Show all work!)** [K - 4 marks]



8. Find the mean, median, and mode of the given data: [K – 3 marks]

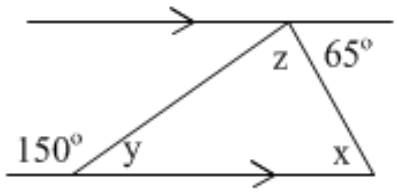
4, 5, 7, 3, 4, 8, 8, 9, 11, 4, 6

Mean: _____ (to the nearest tenth)

Median: _____

Mode: _____

9. Find the missing angles: [K – 3 marks]



x = _____

y = _____

z = _____

COMMUNICATION

Choose <u>ONE</u> of the following questions to answer.

1. Explain the difference between a monomial and a binomial and give an example of each. [C – 2 marks]

<u>OR</u>

2. Explain what bias is and give one example of what you could do to reduce bias. [C – 2 marks]

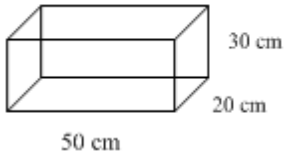
<u>APPLICATION</u>

1. Martin treats his soccer team to a pizza party after a game. There are 12 boys on the team. Each boy will get two cans of pop and two slices of pizza. Gino's Pizza charges $1.20 for 3 cans of pop and $0.75 for one slice of pizza. Tony's pizza charges $2.00 for 4 cans of pop and $6.50 for an 8 slice pizza. Which pizzeria gives the best deal and by how much?

   [A – 3 marks]

2. You want to make a rectangular prism fish tank that is 20 cm wide, 30 cm high and 50 cm long. [A – 4 marks]

   (a) What amount of glass is needed to make the fish tank? (HINT: no top)



   (b) How much water will the tank hold (in mL)?

3. A 7 m ladder is leaning against a wall. The base of the ladder is 3 m from the wall. How high up the wall does the ladder reach? **Round your answer to the nearest tenth. Include a labeled diagram for full marks.**

[A – 3 marks]

4. Alexandra wants to make some punch in celebration of school almost being over! The package says to add 1 part concentrate to 3 parts water.

[A – 4 marks]

(a) If she adds 24 parts water, how much concentrate does she need to add?

(b) If Alexandra wants to make 10 L of punch to share will all of her friends, how much concentrate and how much water will she need to mix together?

5. A $75 dollar sweater is on sale for 30% off. How much will the sweater cost? (**After the discount and including tax)** [A – 2 marks]

PROBLEM SOLVING

Choose THREE of the following four questions to answer.

1. Two positive numbers have a sum of 7 and a product of 12. Find the sum of the squares of these two numbers. [PS – 2 marks]

2. The average of Matthew's five math test marks was 84%. He received marks of 89, 78, 82, and 85 on four of them. Unfortunately, he lost one of his tests. What is the mark of his lost test?

[PS – 2 marks]

3. In triangle ABC, angle A = 120^{o} and angle B is five times angle C. Find the number of degrees in angle C.

[PS – 2 marks]

4. The sum of a number, its square, and its square root is 276. Find the number.

[PS – 2 marks]