Carlingford High School

Mathematics

Year 9 Term 2 Examination

5.2 Course

2018

Name: _____ Class: 5.2___

Circle your teacher's name: Mrs Lobejko Ms Wilson/Mrs Lego

Miss Aung Mr Wilson

Time allowed: 50 minutes

- Board approved calculators may be used.
- Show all necessary working.
- Marks may be deducted for careless or untidy work.
- Questions marked with an asterisk * are extension level questions.
- Complete the examination in blue or black pen.

Topic	Surface Area and Volume	Algebraic Skills	Literacy	Total
Mark	/29	/35	/8	/72
Extension*	/8	/4		/12
Total	/37	/39	/8	/84

Section A: Surface Area and Volume

1. Convert the following: (4 marks)

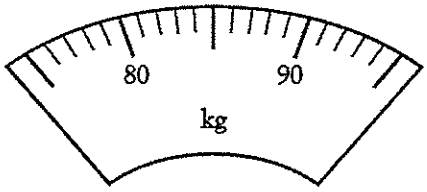
   a) 410 cm = _____m

   b) 0.0087 KL = _____L

   c) 310 g = _____kg

   d) 7310 m^2 = _____ ha

2. Find the limits of accuracy for the measuring scale below: (1 mark)



3. The roof of the Sydney Opera House is covered with 1.056 million tiles. If each tile covers 175 cm^2, what area is covered by the tiles? Circle the correct answer.

   A. 184.8 m^2

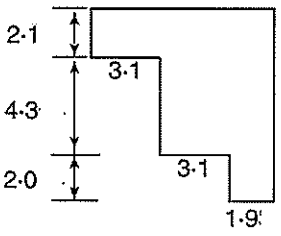
   B. 18 480 m^2

   C. 184 800 m^2

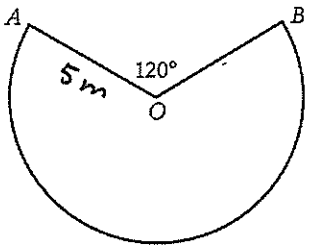
   D. 1 848 000 m^2

4. Calculate the perimeter of the figures below. All measurements are in metres.

a) [2]



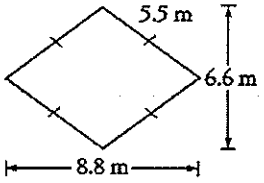
b) [2]



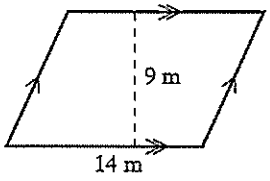
(Answer to one decimal place.)

5. Find the area of each of the shapes below.

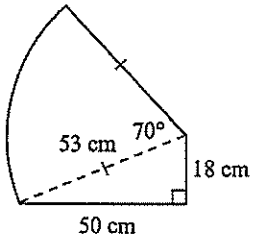
a) [2]



b) [2]

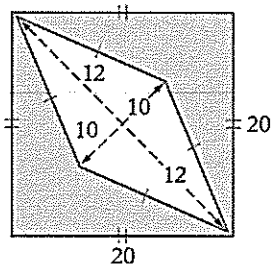


b) [3]



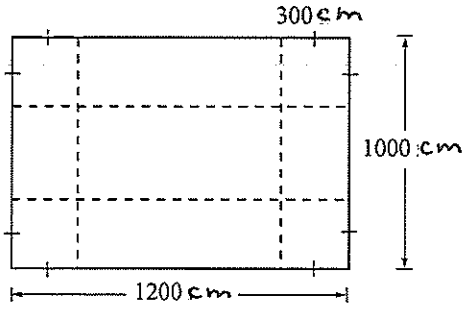
(Answer to one decimal place.)

6. Calculate the shaded area. Measurements are in mm. (3 marks)



*7. Calculate the dimensions of a cube that has a surface area of 338 cm^2. Answer correct to one decimal place. (3 marks)

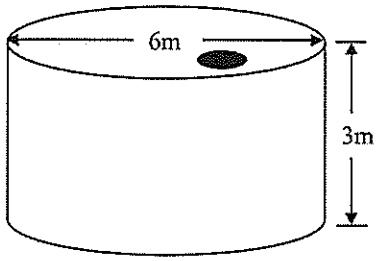
8. A sheet of cardboard 1200 cm by 1000 cm has squares of side-length 300 cm cut from each corner. The sides are folded up to form an open rectangular box.



a) Calculate the surface area of the rectangular box. [2]

*b) Jen wants to paint the outside of the box blue. If two coats of paint are required and a 2 L can of paint covers 82000 cm^2, calculate how many tins of paint are needed. [2]

9. The diagram of a closed metal water tank is shown below. The tank has a hole in the top to allow rainfall in. The area of this hole is 0.6 square metres.

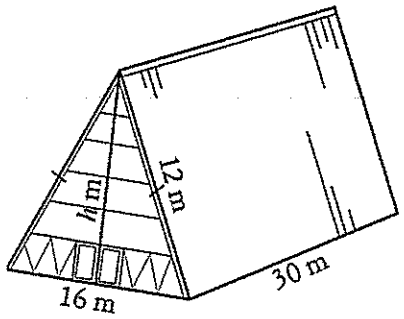


*a) Calculate the amount of metal used to construct the tank. Answer to one decimal place. [3]

b) Find the volume of the tank in cubic metres. Answer to three decimal places. [2]

c) What is its capacity, correct to the nearest litre, when full. [2]

10. A triangular prism has a width of 16 m, a length of 30 m and a slant height of 12 m, as shown in the diagram below.



a) Find the perpendicular height, h, of the prism, correct to one decimal place. [1]

b) Find the volume of the triangular prism. [2]

Section B: Algebraic Skills

1. Simplify fully: (1 mark each)

a) $5a + 2b - 3a + b =$_____

b) $5p^2 + 2p - 3p^2 =$_____

c) $5a \times 6f =$ _____

d) $-6x \div 18xy =$ _____

e) $\frac{63k^2}{-7k} =$ _____

f) $10p^2 \times 4c \div 5ap =$ _____

g) $(-2x) \times (-3x) \times 7 =$_____

h) $20z - 14z \div 2 =$_____

2. Simplify fully:

a) $\frac{3x}{5} + \frac{2x}{5} =$ [1]

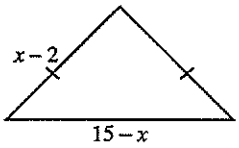
b) $\frac{5}{g} - \frac{2}{g} =$ [1]

c) $\frac{4x}{6} - \frac{x}{3} =$ [2]

3. Write an algebraic expression, in simplest form, for each of the following.

a) If Sue travelled x km in 2 hours, and then y km in the next three hours, how far has Sue travelled altogether? [1]

b) Write an expression for the perimeter of the rectangle below. [2]



5. Simplify the following fully:

a) $\frac{3b}{2} \times \frac{4}{5b} =$ [1]

b) $\frac{8a}{3b} \div \frac{2a}{9b} =$ [2]

4. Evaluate each of the following if $m = -6$ and $n = 3$. Answer to one decimal place, where necessary.

a) $16 - m + n =$ [1]

b) $\sqrt{m^2 + 5n} =$ [2]

6. Expand and fully simplify each expression:

a) $9(r - 2) =$ [1]

b) $3y(2x - 5y) =$ [1]

c) $-(7 - 2m) =$ [1]

d) $7n - 4 + 3(n - 1) =$ [2]

*e) $3x(2x - 1) - x(2x + 2) - 5x$ [2]

=

7. Expand and simplify completely the following binomial products.

a) $(c+2)(c+3) =$ [1]

b) $(y+1)(y-5) =$ [1]

c) $(10r-1)(r-10) =$ [2]

*9. Simplify the following expression fully:

$$\frac{15w}{7x} \div \frac{40y}{9x} \times \frac{16xy}{45w}$$ [2]

8. Factorise the following expressions completely: (1 mark each)

a) $3f + 6 =$

b) $24x + 30 =$

c) $6t^2 + 27t =$

d) $a(a-3) + 6(a-3) =$

e) $(y-6) - y(y-6) =$

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Literacy: (8 marks)

Use the following words to complete the following sentences.

capacity	substitution	approximations
volume	exact	pronumerals
area	like	perimeter

1. All measurements are only _____.
   No measurement is ever _____.
2. In algebra, letters of the alphabet are used to represent numbers. Such letters are called _____.
3. _____ involves replacing the pronumeral in an algebraic expression with one or more numbers.
4. Terms that have identical pronumeral parts are called _____ terms.
5. The _____ of a shape is the amount of surface covered by the shape.
6. The _____ of a solid is the amount of space it occupies.
7. The _____ of a container is the amount of fluid it holds

End of Exam