Carlingford High School

Mathematics

Year 10 5.2 Term Two Examination

2017

Time allowed: 55 minutes

Name:_____ Class: 10MAT2__

Please circle your teacher:	**Mrs Wilson / Mrs Young**	**Mrs Lobejko**	**Mr Jiang**

Instructions:

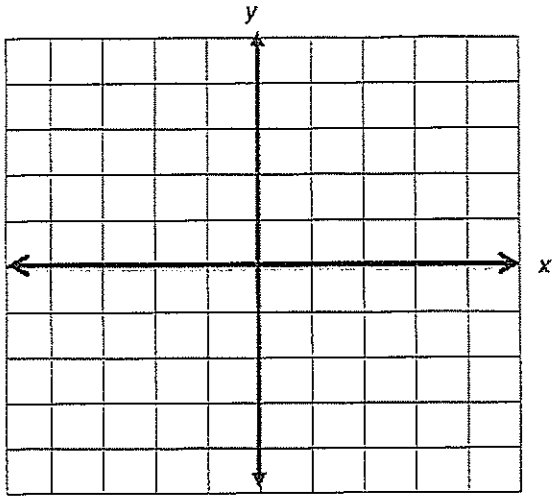
- Use blue or black pen
- Board approved calculators may be used
- Show all necessary working out in the space provided
- Marks may be deducted for untidy setting out
- Extension level questions are marked with an asterisk (*)

Topic	Linear Relationships	Surface Area & Volume	Data Analysis	Total
Mark	/20	/16	/17	/53
Extension *	/2	/4	/3	/9
Total	/22	/20	/20	/62

Linear Relationships (22 marks)

1 For the points $A(-1, 3)$ and $B(4,2)$:

a) Show the interval AB on the number plane. **1**



b) Find the midpoint of the interval AB **2**

b) Calculate the length of the interval AB, correct to one decimal place **2**

c) Calculate the gradient of the interval AB **2**

2 For the line $y = 2 - x$, what is the

a) gradient? _____ **1**

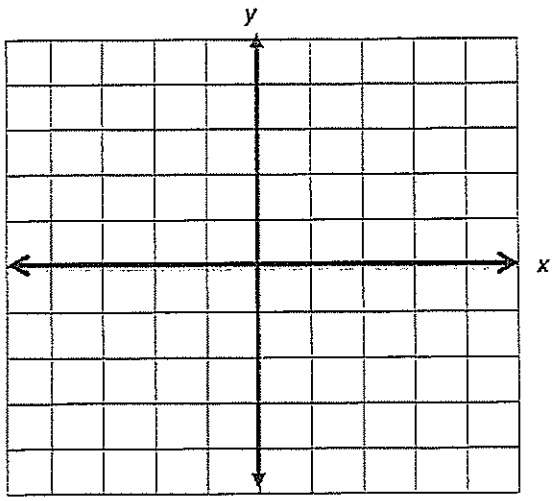
b) y-intercept? _____ **1**

3 Complete the sentences. **2**

The equation of the line $3x - 2y + 4 = 0$ is written in _____ form.

The line $y = 3$ is _____ to the y –axis.

4 a) Graph $y = 3 - 2x$ and $x = 1$ on the number plane below. **2**



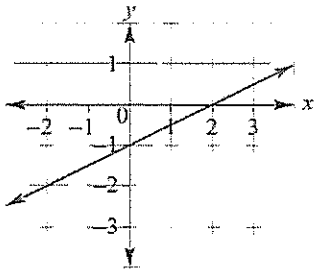
b) What is the intersection point of the lines $y = 3 - 2x$ and $x = 1$? _____ **1**

c) Test if (-7, 17) lies on the line $y = 3 - 2x$. **1**

_____

_____

5 Find the equation of this line. **2**



_____

_____

_____

6 a) Write the equation of the line $3x - 2y + 4 = 0$ in gradient-intercept form. **2**

_____

_____

b) What is the gradient of a line perpendicular to $3x - 2y + 4 = 0$? _____ **1**

7 * Write down the equation of a line which is parallel to $y = 2x - 1$ and passes through the point $(-1,1)$. **2**

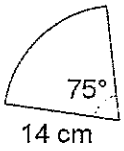
_____

_____

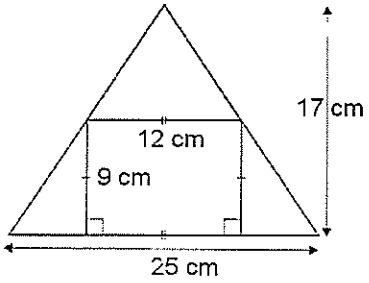
_____

Surface Area & Volume (20 marks)

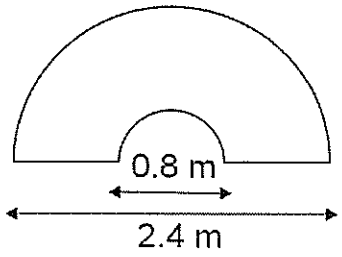
1 a) Calculate the area of this sector, correct to two decimal places. **2**



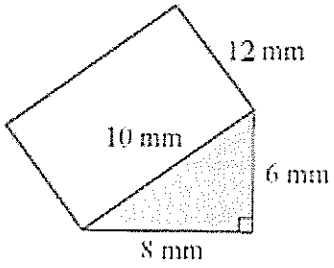
b) Find the shaded area. **2**



c) Find the area of this garden bed, correct to 1 decimal place. **2**



Find the surface area of this triangular prism. **2**



2 A cube has a surface area of 294 cm^2. Find the length of one of its edges. **2**

Data Analysis (20 marks)

1 Kylie recorded the number of minutes she had to wait for a bus to school:

6 4 6 2 1 0 2 8 3 2 10 7 1 3 1

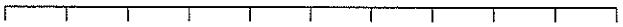
Find the

a) Range _____ **1**

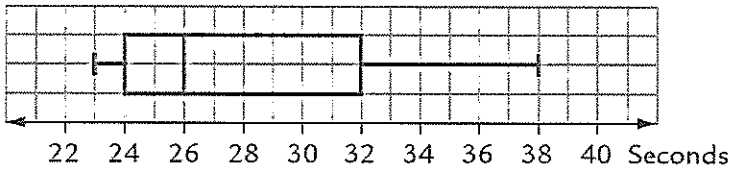
b) Median time _____ **1**

d) Interquartile range _____ **1**

e) Complete a box and whisker plot for this data. **2**



2 Kieran is training to compete in freestyle at the State Championships. His coach recorded his lap times during a training session.



a) What was Kieran's best time? _____ **1**

b) What percentage of his laps did Kieran complete in 32 seconds or less? _____ **1**

c) During the training session, Kieran swam 72 laps. How many laps took Kieran longer than 32 seconds to swim? **1**

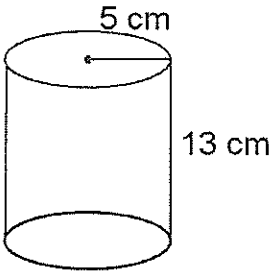
_____

* d) Use the box and whisker plot to find the approximate percentage of laps completed in 25 seconds or less. **1**

_____

_____

3 For this closed cylindrical can, find, correct to 1 decimal place:



a) Its surface area. **2**

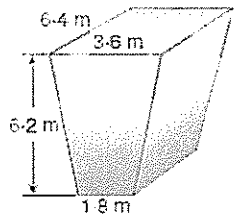
b) Its volume **2**

* c) If the can contains 1 litre of fluid

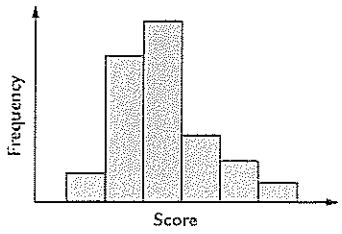
i) What percentage of the can remains empty? **2**

ii) To what height does the fluid reach? **2**

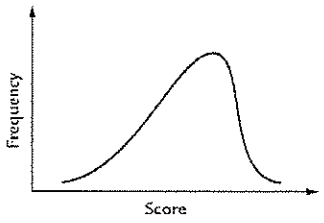
4 A bridge is to be supported by concrete supports in the shape of trapezoidal prisms as shown in the diagram below. Calculate the volume of concrete needed for each support, giving your answer correct to the nearest cubic metre. **2**



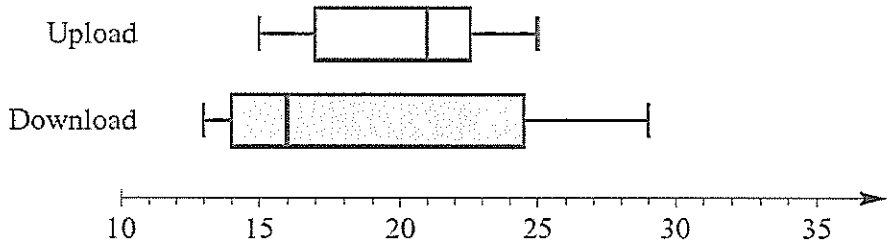
3 Classify each distribution as symmetrical, positively skewed or negatively skewed. **3**



Stem	Leaf
1	8
2	4 5 9
3	1 5 6
4	2



4 This parallel box and whisker plot shows the amount of data (in MB) Anthony uploaded and downloaded each day in March.



a) What is the difference between the median amount of data uploaded and downloaded each day? **1**

* b) Compare the two sets of data, referring to the shape of the distributions and to measures of spread. **2**

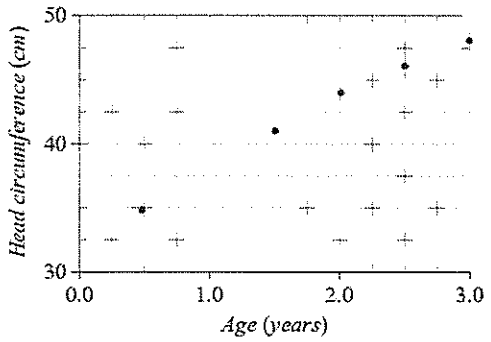
5 This double stem and leaf plot shows the ages of people on a ride at the Easter Show.

Males		Females
772	0	8
88721	1	2269
8654321	2	1578
20	3	124

a) What was the age of the oldest person on the ride? _____ 1

b) What was the median age of the females on the ride? _____ 1

6 This scatter plot shows the age of a child vs head circumference.



a) What is the dependent variable? _____ 1

b) Is the relationship between the two variables positive or negative? _____ 1

c) Describe the strength of the linear relationship between the variables. 1

_____

End of Exam. Please check your work.