Carlingford High School

Mathematics

Year 10 Term 2 Examination

5.3 Course

2018

Name: _____ Class: _____

Circle your teacher's name: Mrs Lobejko Mrs Lego Ms Aung

Time allowed: 50 minutes

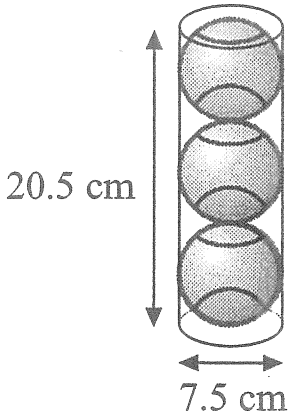
- Board approved calculators may be used.
- Show all necessary working.
- Marks may be deducted for careless or untidy work.
- Complete the examination in blue or black pen.

	SURFACE AREA & VOLUME	DATA ANALYSIS	Total
	/22	/30	/52
Extension*	/3	/2	/5
Total	/25	/32	/57

YEAR 10 5.3

SURFACE AREA and VOLUME (25 marks)

1. Tennis balls can be purchased in a cylindrical tin containing three balls. Find the **volume**, correct to 4 significant figures of the :

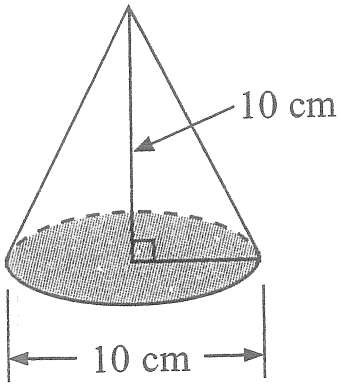


(a) cylindrical tin [2]

(b) 3 tennis balls [2]

(c) air surrounding the tennis balls. [1]

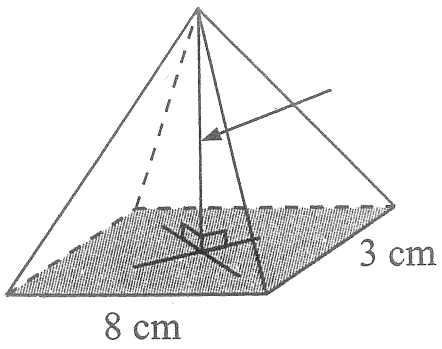
2. Given the cone below, calculate in exact form:



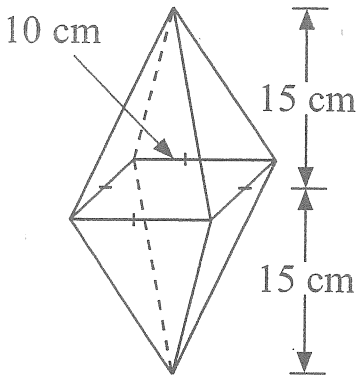
(a) Volume [2]

(b) Surface area. [3]

3. Given the volume of a rectangular pyramid is $48.5\ m^2$, find the altitude of the pyramid, correct to 2 decimal places. [2]



4. Given the composite shape below find the:



(a) Volume (1dp) [2]

(b) Surface area (1dp) [3]

5. Two similar triangles have their area in the ratio $4:9$. If the length of the base of the smaller triangle is $5cm$, find the length of the base of the larger triangle. [2]

6. A bottle is $12cm$ high and contains $450ml$ of liquid . A similar bottle is $18cm$ high. How much liquid does it contain? (to the nearest ml) [3]

✱ 7. If a cylinder with diameter $2r$ and height $2r$ has the same surface area as a sphere of radius R, show $R = \sqrt{\frac{3}{2}}r$. [3]

DATA ANAYSIS (32 marks)

1. Describe the shape of the distribution below: [2]

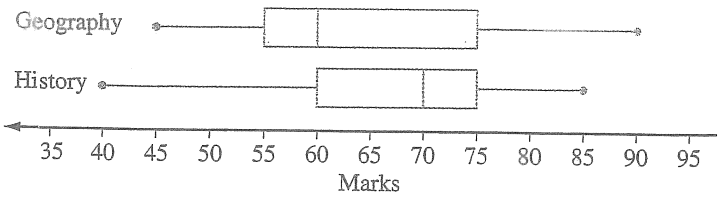
Stem	Leaf
2	2 7
3	0 2 5 6 8
4	4 6 7 7 8 9
5	0 2 2 8 9
6	4 5 5
7	6 6
8	2 7
9	0

2. Write a five point summary and draw a box and whisker plot for the following data. [4]

7 8 5 6 14 10 4 4 4 9 8 15 13

3. Consider the parallel box plots which display the marks of 28 students in Geography and History. [5]

Answer TRUE/FALSE to the statements.



- In Geography more students scored between 60 and 75 than between 55 and 60.
- 75% of students in History scored from 60 to 85 marks.
- In History, 14 students scored more or the same mark, as the median mark in Geography.
- More students scored 60 or more in History than they did in Geography.
- The interquartile range for Geography is five less than the interquartile range for history.

4. The times two sprinters take to run $100m$ are as follows:

Runner A:	11.9	12.0	12.0	12.1	12.2	12.3	12.7	15.2
Runner B:	12.3	12.3	12.3	12.5	12.6	12.8	12.9	13.1

For each of the runners, find the:

(a) Interquartile range [2]

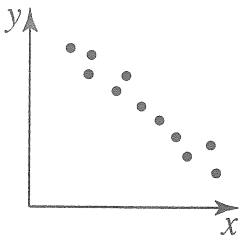
(b) Standard deviation [2]

(c) Mean time [2]

(d) Which runner is more consistent? Why? [2]

(e) Which runner is the better sprinter? Give reasons. [2]

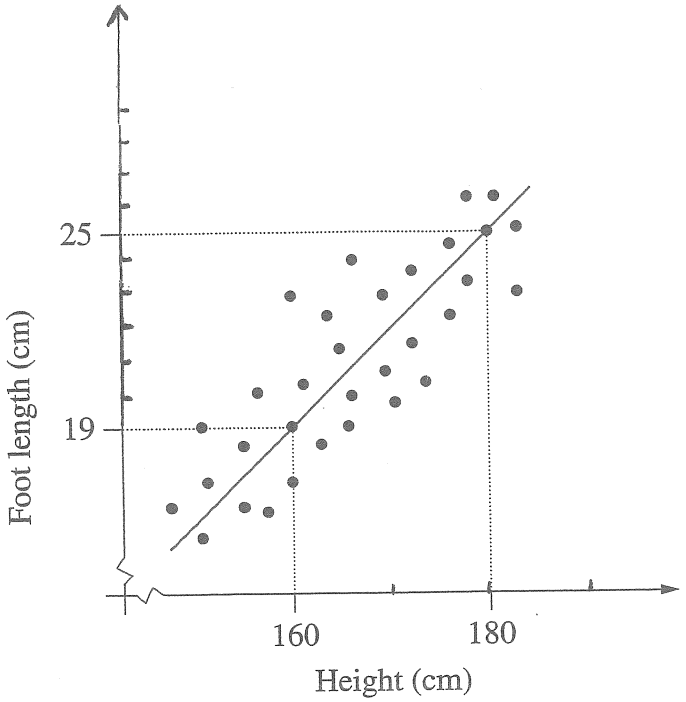
5. (a) Describe the relationship shown in the scatter plot. [2]



(c) Give an example of two variables that could follow such a relationship. [1]

6.

Each member of a group of males had his height and foot length measured and recorded. The results were graphed.



Each member of a group of males had his height and foot length measured and recorded. The results were graphed.

(a) What is the line called? [1]

(b) Using the point gradient formula find the equation of the line. [2]

(c) **Use the graph** to extrapolate the foot length of a male with a height of $190cm$. [1]

7. Describe one way that a graph could be drawn that could make it misleading or exaggerated. [2]

✱ 8. Jade scored 82% in both her Maths and English exams. The mean of both exams is 70%. If the standard deviation of the Maths exam is 5% and the standard deviation of the English exam is 12%, in which subject did Ja perform better. Give reasons. [2]

END OF EXAM