Carlingford High School

Mathematics

Year 9 5.2 Term 4 Examination 2018

Name: _____

Circle your teacher's name:

Mrs Lobejko Miss Aung Mr Wilson Mrs Lego

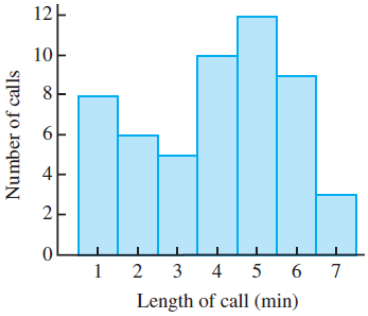
Time allowed: 50 minutes

- Show all necessary working.
- Answer all questions in the spaces provided.
- Marks may be deducted for careless or untidy work.
- **Complete the examination in black pen.**

Topic	Data	Indices	Rates & Ratio	Total
Mark	/31	/27	/16	/74

Data-31 marks

1. Sarah's mobile phone calls



a) Complete the table for the above graph. 4

Score(x)	Freq(f)	fx	cf
1			
2			
3			
4			
5			
6			
7			
	∑f=	∑fx=	

b) How many calls did Sarah make? 1

c) Identify any clustering. 1

d) Find the 4

i) Mean

ii) Mode

iii) Median

iv) Range

2. Should a ***survey or census*** be used for the following investigations? 2

a) determining the students opinion on the colour for a school jacket._____

b) determining the number of Carlingford households earning between $80 000 and $100 000.

_____

3. School students were surveyed at a local McDonald's resturant to find their favourite takeaway food. Is this a representative sample? ***Give reasons***. 2

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4. Classify each of the following types of data as categorical (***C***), numerical discrete (***ND***) or numerical continuous (***NC***). 3

a) number of people in your family ___

b) your height _____

c) eye colour _____

5. ***Rewrite each survey question*** to remove any bias or confusion. 1

a) How big are you?

b) Do you support wasting money on a space program? 1

6. Scores on a Maths test

Girls:
9, 13, 14 , 21, 27, 30, 34, 36, 39, 42, 42, 45, 45, 47, 49, 51, 51, 53

Boys:
7, 7, 8, 12, 13, 15, 17, 19, 19, 19, 20, 21, 21, 35, 37, 46, 51

a) Draw an ordered back-to-back stem and leaf plot for the data above. 3

b) For both sets of data find the **6**

i) Mean

ii) Median

iii) Range

c) Describe the shape of the ***boys*** distribution. **1**

d) Who performed better? ***Give reasons***. **2**

Indices-27 marks

7. Fully simplify each expression, writing the answer in index notation. 10

a) $2^4 \times 2^3$

b) $10x^5 \times 2x^2$

c) $3y^4 \times 2x^3 \times 4y^2$

d) $16d^5 \div 8d^3$

e) $(3x)^3$

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

g) $4xy^9 \div 12xy^2$

h) $2x^0$

i) $\frac{21y^2}{3y^5}$

8. Simplify each expression *using a positive index*.

a) $\frac{a}{b^{-1}}$ 1

b) $\frac{a^5 \times a^{-2}}{(a^3)^2}$ 2

c) $\left(\frac{x^3}{x^2}\right)^5 \times \left(\frac{x^4}{x}\right)^{-2}$ 2

9. Express each number in scientific notation. 3

a) 3000

b) 0.08

c) 2406000

10. Express each number in decimal form. 2

a) 3.85×10^3

b) 1.06×10^{-4}

11. Write each of the following in scientific notation correct to 3 significant figures. 3

a) 17349

b) 3562.81

c) $0.0\dot{5}$

12. Evaluate in scientific notation correct to 4 significant figures. 4

a) $(5.4 \times 10^8) \times (9.3 \times 10^6)$

b) $\frac{6.022 \times 10^{-4}}{5.97 \times 10^{20}}$

Rates and ratios-16 marks

13. ***Fully simplify*** each ratio 6

a) $12 : 30$

b) $1\frac{1}{3} : \frac{4}{5}$

c) $0.05 : 0.2$

d) $12 : 20 : 16$

e) 25mm : 3 cm

f) 14 days : 5 weeks

14. Convert

a) 5 m/s to m/hr 1

b) 5 m/sec to km/hr 2

c) 70c/min to $/hr 2

15. Sarah, Emily and Noa share the profits from there plumbing business in the ratio of 2:3:5 How much does each receive for a profit of $2000? 2

16. Adi contributes $3 and Bouri, $4 for block of chocolate. If Bouri receives 800gm, how much does Adi receive? 3