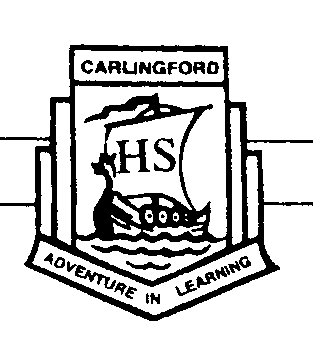
**Carlingford High School**



**Mathematics**

**Year 9 5.2 Term 4 Examination**

**2019**

**Name:** \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Circle your teacher's name**:

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| Mrs Virmani / Mr Fardouly Ms Lobejko Mr Gong |

***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 blue or black pen.**

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| **Topic** | **Data** | **Indices** | **Rates & Ratio** | **Equations** | **Total** |
| **Mark** | **/ 21** | **/ 20** | **/ 18** | **/ 19** | **/ 78** |

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| **Data (21 marks)** | | | | | |
| **1** | **Symmetrical distribution outlier bias Skewed distribution cluster**  Fill in the blank part by choosing the correct phrase from the word bank.  **a).** A distribution in which all scores are  distributed equally on both sides of the  centre. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  **b).** An extreme score that is very different  from the other scores in a set of data.  \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  **c).** Scores in a data set that are close or  bunched together. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | **[1]**  **[1]**  **[1]** | **2**  **3** | **d).** Calculate the mean for the set of scores.  **e).** Calculate the mean for the set of scores  without the outlier.  **f).** How does the outlier affect the mean ?  For the frequency table given:   |  |  |  |  | | --- | --- | --- | --- | | **Score (*x*)** | **Freq (*f*)** | ***fx*** | ***c.f*** | | **26** | **4** |  |  | | **27** | **6** |  |  | | **28** | **7** |  |  | | **29** | **3** |  |  | | **Total** |  |  |  |   **a).** Complete the *fx* column.  **b).** Complete the *c*.*f*  column.  **c).** Find the mode. \_\_\_\_\_\_\_\_\_\_  **d).** Calculate the mean.  **e).** Find the median. \_\_\_\_\_\_\_\_\_\_\_\_ | **[1]**  **[1]**  **[1]**    **[1]**  **[1]**  **[1]**  **[1]**  **[1]** |
| **2** | **For the set of scores**  32 37 42 38 41 87 35 37 41 37  **a).** Find the range. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_    **b).** Write down the mode. \_\_\_\_\_\_\_\_\_\_  **c).** Write down the outlier. \_\_\_\_\_\_\_\_\_ | **[1]**  **[1]**  **[1]** |

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| **4** | Decide if you would use a **census** or a **sample** to investigate:  **a).** the number of students at a high school.  **b).** a favourite car brand. | **[1]**  **[1]** | **6** | The stem and leaf plot shows the number of sit ups completed each day by Michael and Ricky.    **a).**  Michael’s median score =  **b).**  Given Ricky’s median score is 38.  Comment on who performed better  and why? | **[1]**  **[2]** |
| **5** | Classify each type of data as **categorica**l or **numerical (quantitative)**:  **a).** the rainfall in NSW  **b).** types of cake | **[1]**  **[1]** |

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| **Indices (20 marks)** | | | | | |
| **1**  **2**  **3** | Unjumble the following:-  **a).** abes \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  **b).** procalicer \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  Simplify each expression, writing the answer in index notation.  **a).** 5*v*7*w*3 × 4*v*3*w*2 =  **b).** 20*a*3*b*4 ÷4*ab*3 =  **c).** (– 4*n*2)3=  Simplify each expression.  **a).** (– *e*)0 =  **b).** – *e*0 = | **[1]**  **[1]**  **[2]**  **[2]**  **[2]**  **[1]**  **[1]** | **4**  **5**  **6** | Simplify each expression using a positive index where necessary.  **a).** (3*b*) – 1  =  **b).** 3*b* – 2  =  **c).**  Round each value correct to 3 significant figures.  **a).** 15752 ≈ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  **b).** 0.9054 ≈ \_\_\_\_\_\_\_\_\_\_\_\_\_\_  Express each number in scientific notation.  **a).** 260 000 = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  **b).** 0.000 000 07 = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | **[1]**  **[1]**  **[2]**  **[1]**  **[1]**  **[2]**  **[2]** |

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| **Rates & Ratio (18 marks)** | | | | | |
| **1**  **2**  **3** | **Rate inversely Ratio**  **Simplify directly**  Fill in the blank space with the correct word.  **a).** A \_\_\_\_\_\_\_\_\_ compares quantities of the  same type measured in the same units.  **b).** To \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ a ratio, keep  dividing each term by the HCF, until  each term is as small as possible.  **c).** Two variables are \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  proportional to each other if one variable  is a constant multiple of the other, and  when one variable changes, the other one  changes by the same factor.  Simplify each ratio.  **a).** 15 : 36 = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  **b).** \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  **c).** 9 : 27 : 36 = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  **d).** 800g : 5 kg = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  Two people invest in a business in the ratio 4 : 6. If the larger investment is $480 000, find the amount of the smaller investment. | **[1]**  **[1]**  **[1]**  **[1]**  **[1]**  **[1]**  **[1]**  **[1]**  **[2]** | **4**  **5**  **6** | Convert the following:  **a).** 5 m/s to m/h = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  **b).** 2.5 tonnes/h to kg/day = \_\_\_\_\_\_\_\_\_\_\_\_\_  = \_\_\_\_\_\_\_\_\_\_\_\_\_  If Jack’s reaction time is 0.9 seconds, how far will his car travel in this time if its speed is 80 km/h ?  The mass, *M*, in grams of a chemical is directly proportional to its volume, *V*, cm3.  **a).** Write the formula for *M* in terms of *V*, given that *M* = 160 when *V* = 80.  **b).** Calculate the mass of 412 cm3 of the chemical. | **[1]**  **[1]**  **[1]**  **[2]**  **[2]**  **[1]** |

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| **Equations (19 marks)** | | | | | |
| **1**  **2** | **solution solve quadratic linear subject**  Fill in the blank part by choosing the correct phrase from the word bank.  **a).** A \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ equation involves a variables squared.  **b).** The \_\_\_\_\_\_\_\_\_\_\_\_\_\_ of a formula is the variable on its own on the left-hand-side of the equal sign.  **c).** The answer to an equation or problem, the correct value(s) of the variable that makes an equation true. \_\_\_\_\_\_\_\_\_\_\_\_\_  Solve each equation.  **a).** 3*x* – 5 = 10  **b).**  **c).** 2*y* – 71 = – 5*y* – 8  **d).** | **[1]**  **[1]**  **[1]**  **[2]**  **[2]**  **[2]**  **[2]** | **2**  **3**  **4**  **5** | **e).** 5*p* – 2(*p* – 6) = 18 – 3*p*  Solve 8*y*2 = 40, leave your answer in surd form.  The length of a rectangle is 6 cm longer than it is wide. The perimeter of the rectangle is 76 cm. Find the dimensions of the rectangle, show all necessary working.  If 6 more than a number is the same as 5 more than double the number, what is the number ? Show all necessary working. | **[2]**  **[2]**  **[2]**  **[2]** |

**End of Exam**