# Carlingford High School

# Year 7 Mathematics

## Term 4 Examination

## 2018

**Time allowed: 50 minutes**

Student Name: _____

Circle your class:

7C 7A 7R 7L 7I 7N 7G

**Instructions:**

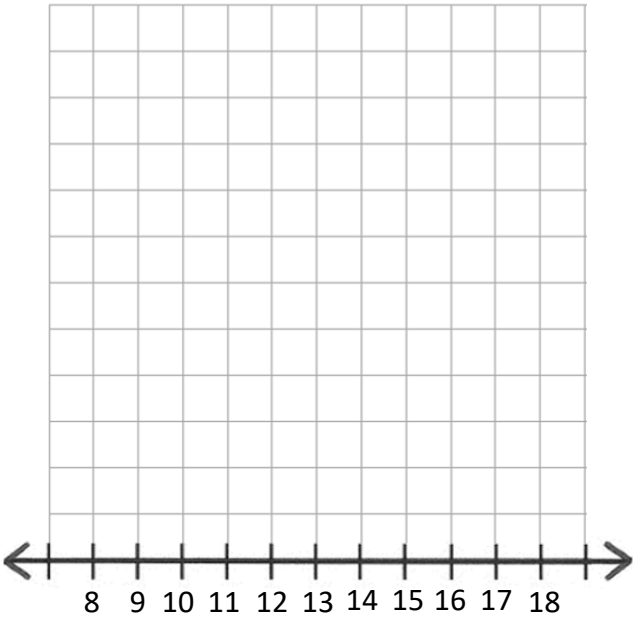
- Calculators are NOT allowed.
- Use black pen. Pencil may be used for graphs and diagrams.
- Write all answers in spaces provided.
- Show all necessary working.
- Extension questions are marked with an asterisk (*).

| Section | 1. Data | 2. Number Theory | 3. Probability | Total |
|---|---|---|---|---|
| Mark | / 22 | / 29 | / 27 | / 78 |

## Section 1: Data

**Q 1)** Over two weeks, the number of packets of chips sold from a vending machine each day was recorded: 10, 8, 12, 11, 12, 18, 13, 11, 12, 11, 12, 12, 13, 14.

**(a)** Draw a dot plot to represent this data. **2**




**(b)** What was the most number of packets of chips sold in a day? **1**

**(c)** How many packets of chips are most commonly sold? **1**

**(d)** Which score is an outlier? **1**

**Q 2)** The marks scored out of 100 in a maths test by a Year 7 class were recorded:

| Stem | Leaf |
|---|---|
| 4 | |
| 5 | 2 7 |
| 6 | 7 7 7 |
| 7 | 2 5 |
| 8 | 6 8 9 |
| 9 | 0 1 1 3 4 5 6 8 9 |
| 10 | 0 |

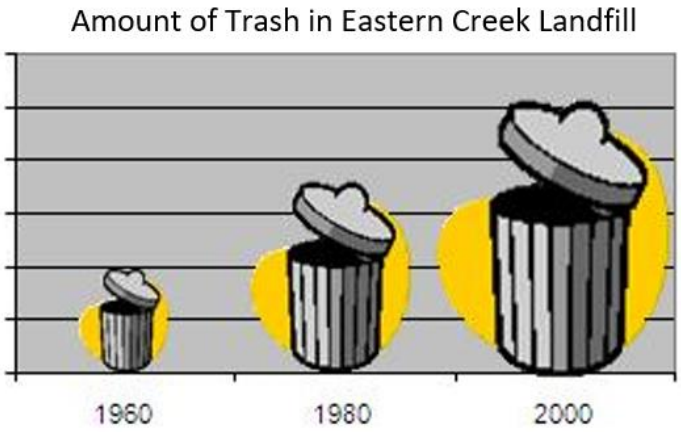
**(a)** How many students are in the class? **1**

**(b)** Which mark occurred the most? **1**

**(c)** What was the range of marks? **2**

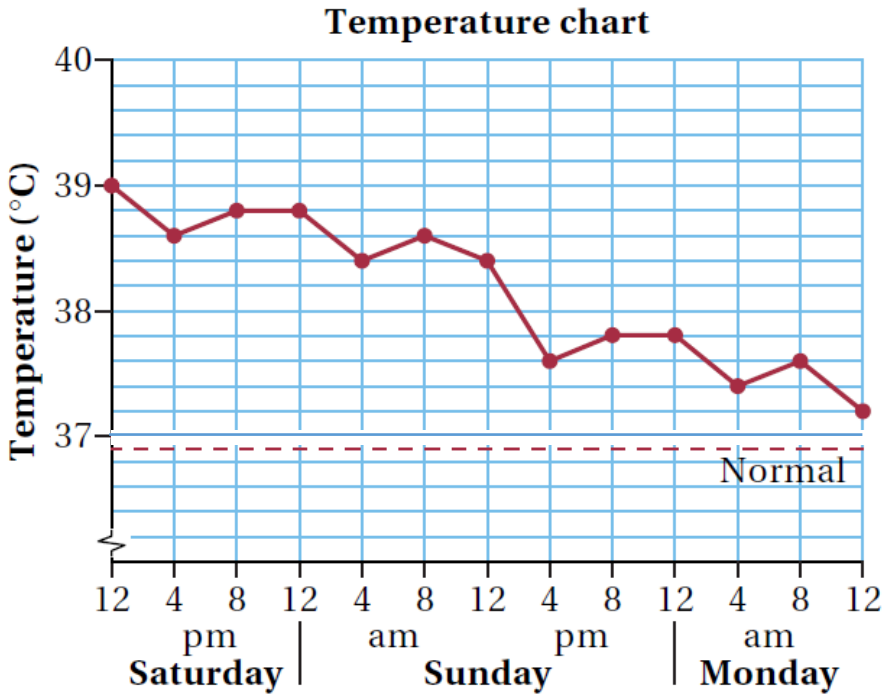
**(d)** Where are the marks clustered? **1**

**Q 3)** How is the graph on the right misleading? **2**




---

**Q 4)** Lina was sick and had a fever (high temperature). This graph shows her temperature that was taken every 4 hours.

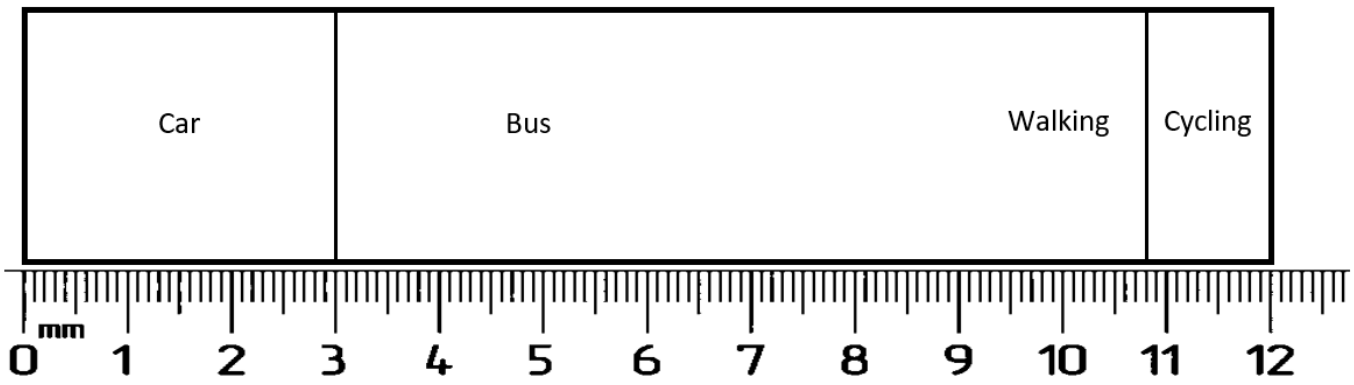



**(a)** What was Lina's temperature at 4pm on Saturday? **1**

**(b)** What was the change in her temperature from 8am Sunday to 8am Monday? **2**

**(c)** Lina took some medicine to treat the fever. About what time and day do you think she took the medicine? Why? **2**

**Q 5)** This **incomplete** divided bar graph shows the mode of transport to school by students in a school. Students go to school either by car, bus, walking or cycling.




**(a)** If 600 students go to the school, how many students does each centimetre represent? **1**

**(b)** How many students go to school by car? **1**

**(c)** There are 300 students who catch the bus to school. Draw a vertical line on the graph between 'Bus' and 'Walking' to show this. **1**

**(d)** What fraction of students cycle to school? Write the fraction in simplest form. **2**

## Section 2: Number Theory

**Q 1)** From the numbers

1, 2, 3, 4, 5, 6, 7, 8, 9, 10

List all the numbers above that are:

**(a)** Prime numbers **1**

**(b)** Square numbers **1**

**Q 2)** 3216 is divisible by which of the following numbers? Circle all that apply. **2**

2 , 3 , 4 , 5 , 6

**Q 3)** For the numbers 8 and 12, what is the:

**(a)** Lowest common multiple? **1**

**(b)** Highest common factor? **1**

**Q 4)** Some characters in Roman numerals are:

| I | V | X | L | C | D | M |
|---|---|---|---|---|---|---|
| 1 | 5 | 10 | 50 | 100 | 500 | 1000 |

**(a)** Write 97 in Roman numerals. **1**

_____

**(b)** Write MMDCCIV in basic numbers **1**

_____

**Q 5)** In $4^7$, the 4 is called the _____ and the 7 is called the _____. **2**

**Q 6)** Write $5^4$ in expanded form. **1**

**Q 7)** Evaluate:

**(a)** $5^2$ _____ **1**

**(b)** $3^3$ _____ **1**

**(c)** $(-4)^2$ _____ **1**

**(d)** $\sqrt{36}$ _____ **1**

**(e)** $\sqrt[3]{27}$ _____ **1**

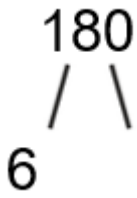
**(f)** $\sqrt{8^2 + 6^2}$ _____ **2**

**Q 8)** Between which two consecutive whole numbers does $\sqrt{52}$ lie?

(Note: Consecutive numbers follow each other in order.) **1**

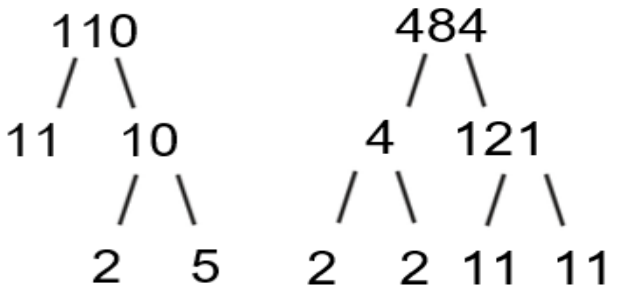
_____ and _____

**Q 9)** Complete the prime factor tree for 180. **3**




***Q 10)** Find the LCM of 18 and 21. **2**

**Q 11)** The factor trees of 110 and 484 are provided below.




**(a)** Write 484 as a product of its prime factors, in index notation. **1**

**(b)** Find $\sqrt{484}$. **2**

***(c)** Find the HCF of 110 and 484. **2**

## Section 3: Probability

**Q 1)** Describe the likelihood of each of the following events occurring as: certain, likely, even chance, unlikely or impossible.

**(a)** A student will get 85% or more on a math test without paying attention in class, completing homework or studying. **1**

**(b)** The day following Monday is Tuesday. **1**

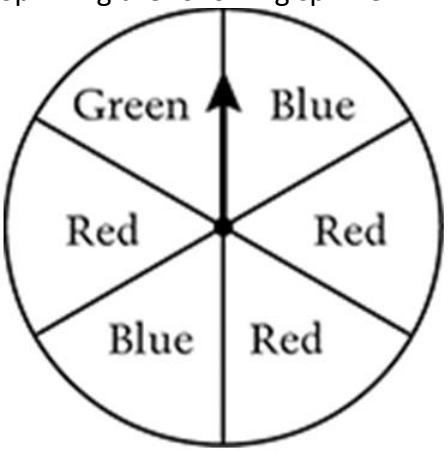
**Q 2)** For each of the following, list the sample space, and state whether the outcomes are equally likely or not.

**(a)** Rolling a standard six-sided die. **2**

(i) Sample space:

(ii) Are the outcomes equally likely?

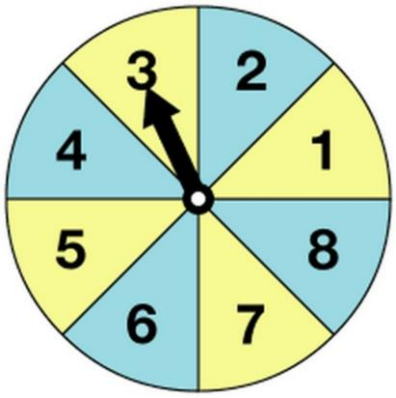
**(b)** Spinning the following spinner. **2**




(i) Sample space:

(ii) Are the outcomes equally likely?

**Q 3)** The following spinner is spun.




Find the probability that the arrow lands on:

**(a)** 4 _____ **1**

**(b)** A number less than 6 _____ **1**

**(c)** A number greater than 0 _____ **1**

**(d)** A multiple of 2 _____ **1**

**(e)** A multiple of 2 or a multiple of 3 **1**

_____

**(f)** A multiple of 2 and a multiple of 3 **1**

_____

**Q 4)** In a soccer match between France and Australia, what is the complementary event of 'Australia Winning'? **1**

**Q 5)** Tom randomly draws a card from a standard deck of cards. **An image of a deck of cards has been provided on the last page**.

Find the probability that the card is:

**(a)** a 6 _____ **1**

**(b)** a Heart _____ **1**

**(c)** a 6 of Hearts _____ **1**

**(d)** a picture card _____ **1**

**(e)** a black card _____ **1**

**(f)** Not an Ace _____ **1**

**Q 6)** There is a 63% chance that it will rain tomorrow. What is the probability of the complementary event? **1**

**Q 7)** Ashwin takes note of the colour of 100 vehicles that pass his shop. He recorded the results in the following table:

| Colour | Frequency |
|---|---|
| White | 19 |
| Black | 24 |
| Red | 16 |
| Blue | 32 |
| Other | 9 |

**(a)** What is the experimental probability that the next vehicle to pass Ashwin's shop will be coloured black? **1**

**(b)** If Ashwin records the colour of the next 75 cars, how many cars will he expect to be coloured red? **2**

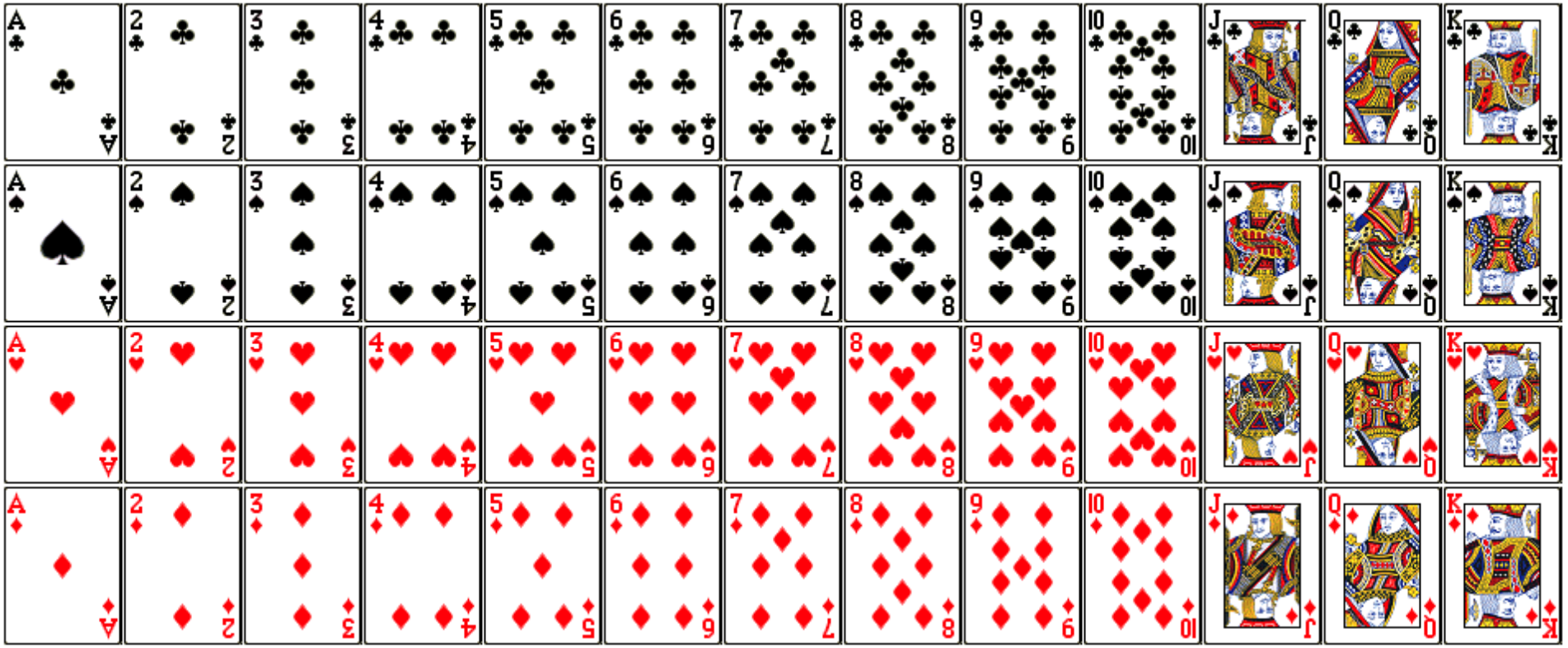
***Q 8)** A bag contains white, blue and red counters, with the following probabilities: $P(\text{white}) = \frac{1}{2}$ and $P(\text{blue}) = \frac{3}{8}$.

**(a)** What is the probability of selecting a red counter? **2**

**(b)** There are 12 white counters in the bag. How many more blue counters should be added to the bag so that there is an even chance of selecting a blue counter? **2**

**Notes**:

- There are 52 cards in a standard deck of cards.
- Black suits are: ♣ and ♠
- Red suits are: ♥ and ♦
- Aces are not picture cards.



End of Exam