



COSMOS COACHING CENTRE

6E VILLIERS ST PARRAMATTA

## 2020 FORMATIVE ASSESSMENT V

# MATHEMATICS STANDARD

### General Instructions

- Reading time: 10 mins
- Working time: 1 hour
- Write using a blue or black pen.
- Calculators may be used.
- All questions are compulsory.

Maximum marks: 40

Full name: \_\_\_\_\_

Year: \_\_\_\_\_ School: \_\_\_\_\_

Day: Sunday

Date: 15/June/2020

1. A sample of 30 students is taken from a primary school that has an enrolment of 420 students from kindergarten to Year 6. The sampling is designed so that the proportion of each year of the sample matches the population. There are 4 students from Year 1 in the sample. How many Year 1 students are there in the school population? [2]
2. A store has 400 employees of which 208 are female and 192 are male. The store intends to survey 25 of its employees. A stratified survey is to be conducted. [2]
  - a How many females should be surveyed?
  - b How many males should be surveyed?
3. A coffee shop is conducting a survey on the drinking habits of its customers. One of the questions was: 'How many cups of coffee do you drink each day?' [2]
  - a State whether the data is numerical or categorical.
  - b If the data is numerical, is this data discrete or continuous? If the data is categorical, is it nominal or ordinal?
4. Emma is planning to build a new restaurant. She conducted a survey of the community. One of the questions asked was 'How far in kilometers would you be prepared to travel to get to a good restaurant?' The options given were: 5km,10 km,20km,50 km. [2]

Describe the type of data that would result from this question.

5. An investigator recorded the life of 24 similar batteries in a toy. Her results (in hours) were: [4]

41    25    37    46    17    4    33    31    28    34    19    26  
 40    24    31    27    30    22    33    20    21    27    30    26

- a Make a stem-and-leaf plot of these times.
- b How many of the batteries lasted for more than 25 hours?
- c What is the median for this data set?

6. The ages of the people living in Matilda Rd was recorded. [4]
  - a Copy and complete the table opposite.
  - b How many people are younger than 20?
  - c Which class occurred the most number of times?
  - d How many people are living in this road?

Class	Class centre	Frequency
5–19		10
20–34		8
35–49		6
50–64		4
	Total	28

7. The numbers of brothers and sisters reported by each of 30 students is as follows.

[6]

3 2 2 6 4 5 2 1 3 2 6 3 7 2 1  
4 2 1 5 4 4 5 3 4 1 3 1 2 1 3

- Construct a frequency table for this data.
- Use the frequency table to construct a frequency histogram.
- Use the frequency table to construct a frequency polygon.

8. The table below shows the petrol used at different speeds to cover the same distance.

[6]

Speed	50 km/h	70 km/h	90 km/h	110 km/h
Litres	34	38	43	49

- How much petrol would you save by travelling at 50 km/h instead of 70 km/h?
- How much petrol would you save by travelling at 70 km/h instead of 110 km/h?
- What is the difference in cost of travelling at 50 km/h instead of 90 km/h? Assume the petrol costs are \$1.45 per litre.

9. The table shows the annual rainfall (mm) at Prospect for the past 10 years.

[4]

Year	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
January	76.9	69.5	83.0	109.9	45.1	83.2	22.4	34.0	68.5	140.6

- What was the wettest year in this 10-year period?
- What was the driest year in this 10-year period?
- Find the mean and median rainfall for January.
- What is the range in rainfall for January?

10. The number of kilometers Stephanie walked each day while on her trek are 22,26,34,28,36,30,29,31 and 28. [2]

- What is the population standard deviation, correct to two decimal places?
- The longest and the shortest distances were not included in this data. The longest distance was 44 km and the shortest distance was 17 km. What is the new sample standard deviation? (Answer correct to two decimal places.)

11. List any outliers for each data set by observation. [2]

28, 22, 133, 22, 31, 22

12. [4] The players in Noah's football team completed a survey on the number of text messages sent using their mobile phone within the last day. The results are summarised in the table opposite.

- a What is the mean number of messages sent?  
Answer correct to one decimal place.
- b Calculate the median number of messages sent.
- c What is the mode?
- d Calculate the mean, the median and the mode when the outlier is removed.

Number of messages	Frequency
0	10
1	8
2	5
3	4
6	1