

## Section A (52 marks)

## Answer all the questions in this section.

1

**(a)** 

Work out  $\frac{64.5}{0.0584 \times 18.2}$ .

Answer.....[1]

(b) y is directly proportional to the square of x. Given that y = 81 when x = 3, find y when x = 2.

*Answer y* = .....[2]

2 The frequency table below shows the number of goals scored by a soccer team Colo-Colo in 25 matches.

						-
Number of goals	0	1	2	3	4	5
Number of matches	4	5	6	5	3	2

(a) Find the mode.

Answer.....[1]

(b) Find the mean.

Answer......[2]

(c) One of the matches was selected at random. Find the probability that, on that day, the number of goals scored was 2

Answer.....[1]

Simplify  $\frac{q^4 \times q^5}{q^3}$ . (a)

(b) Simplify  $\left(\frac{4}{x^2}\right)^{\frac{3}{2}}$ 

3

Answer.....[2]

Answer.....[2]



ABC is an isosceles triangle. AB = AC and BADE is a straight line. Angle  $ACB = 69^{\circ}$  and angle  $CDE = 148^{\circ}$ .

Find angle x.

*Answer x* = .....[2]

(b) The interior angle of a regular polygon is 135°.
 Find the number of sides of the polygon.

Answer.....[2]

5 The diagram shows a sketch of a field.





(b) A pole, M, is placed in the field.
 It is on the perpendicular bisector of BC and also on the bisector of angle BAD.

Construct and label the position of the pole on your scale drawing. [2]

- 6 A mountain bike is marked with a price of \$550 at a sports shop. In a sale, the price is reduced to \$440.
  - (a) Calculate the reduction as a percentage of the marked price.

*Answer* .....%[3]

(b) \$440 is 30% more than the amount the owner of the shop paid for the mountain bike.
Colvulate the amount the owner of the shop paid for the mountain bike.

Calculate the amount the owner of the shop paid for the mountain bike.

Answer \$.....[2]

7 The diagram shows the speed-time graph of a particle over a period of time.





Answer ..... m/s<sup>2</sup> [2]

(c) The area under the graph represents the total distance travelled. Calculate the total distance travelled.

Answer ..... m [2]

8 (a) Expand and simplify (3x-2y)(x+4y).

(b) Factorise  $8y^2 - 18x^2$  completely.

Answer.....[2]

Answer.....[2]

(c) Rearrange this formula to make p the subject.

$$q = \frac{3u}{4}(p-r)$$

*Answer p* = .....[3]



[3]

(b) On the grid, plot the graph of  $y = 3^x$  for  $-2 \le x \le 1$ .

9



10

- (c) On the grid, plot the graph of y = -x+1.
- (d) Use the graphs to find the coordinates of the point where the two graphs intersect.

Answer (.....) [1]

[2]

10 Gabriel and ten of his friends are spending the weekend at a chalet. He has been given \$75 to spend on food. As they will be having their dinner at a nearby restaurant on both days, Gabriel will only need to plan for 3 meals – lunch for both days and breakfast for one day. The items the group need for breakfast and lunch are shown below.

	Items	Quantity (per person)
Breakfast	Bread	2 slices
	Egg	1 egg
	Milo	1 packet
Lunch	Cup noodles	1 cup
	Lemon tea	1 packet

Table 1

(a) Calculate the number of packets of lemon tea Gabriel needs to buy for both days.

Answer.....[1]

(b) Lemon tea is sold in three types of packaging as shown below.

Item ·	Description	Unit cost
Lemon Tea	Individual pack	\$0.80
	Pack of 6	\$4.80
	Pack of 20	\$15.00

## Table 2

Gabriel wants to minimise the amount of money spent on each item. Based on your answer in part (a), how many of each type of packaging should he choose and how much will it cost in all?

Answer.....

\$.....[2]

Item	Description	Unit cost
Milo	Individual pack	\$0.70
	Pack of 6	\$4.00
Cup Noodles	Individual pack	\$1.80
	Pack of 10	\$15
Eggs	Tray of 12	\$2.00
	Tray of 30	\$5.00
Bread	Loaf of 10 slices	\$1.80

(c) In addition to the 3 meals, Gabriel wants to buy some potato chips. He estimates that the chips will cost \$10.

## Table 3

Using information from Table 2 and 3, determine whether Gabriel will be able to buy chips after purchasing all the necessary items as shown in Table 1.

Show your calculations clearly.

Answer

[5]



A, B, C and D are points on a circle with centre O. Angle  $ABO = 32^{\circ}$  and angle  $BCD = 117^{\circ}$ .

Complete these statements by calculating the size of each angle. Give a reason for each statement.

Reason

.....

.....

Statement

Angle *DAC* = .....

Angle *ADB* = .....

[2]

. . . .



A ship sails from B to E on a bearing of 055°. There is a lighthouse at A, due north of B. AB = 48 km, AC = CD = 44 km

(i) Calculate the bearing of B from D.

(ii)	Show that angle $BCA = 63.3^{\circ}$ .
	Answer

Answer.....°[2]

(iii) Calculate the length of AD.

*Answer AD* = ......km[2]

(b)

12 The cumulative frequency graph shows the assessment marks scored by 400 students in Mercedes College.



- (a) Use the graph to estimate
  - (i) the median mark,

Answer.....[1]

(ii) interquartile range,

Answer.....[2]

(iii) the number of students who scored more than 50 marks,

Answer.....[1]

(iv) the 80<sup>th</sup> percentile.

Answer......[2]

(b) Two students are selected randomly. Calculate the probability that the first student scored 60 marks or less and the second student scored more than 74 marks.

Answer......[2]

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End of Paper