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Name:	Index Number:	Class:
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**YIO CHU KANG SECONDARY SCHOOL
END-OF-YEAR EXAMINATION 2018
SECONDARY TWO NORMAL (TECHNICAL)**



MATHEMATICS

Paper 1

1 hour 15 minutes

8 October 2018 (Monday)

READ THESE INSTRUCTIONS FIRST

Candidates answer on the Question Paper.

Write your index number and name on all the work you hand in.

Write in dark blue or black pen.

You may use a HB pencil for any diagrams or graphs.

Do not use staples, paper clips, glue or correction fluid.

Answer **all** the questions.

The number of marks is given in brackets [] at the end of each question or part question.

If working is needed for any question it must be shown with the answer.

Omission of essential working will result in loss of marks.

The total of the marks for this paper is 40.

The use of an approved scientific calculator is expected, where appropriate.

If the degree of accuracy is not specified in the question and if the answer is not exact, give the answer to three significant figures. Give answers in degrees to one decimal place.

For π , use either your calculator value or 3.142.

For Examiner's Use
 40

Setter: Madam Lee Ching Fong

1 Express

(a) 0.0653 correct to 2 decimal places,

Answer [1]

(b) 328.7 correct to 1 significant figure.

Answer [1]

2 The temperature outside a building is 33°C .
The temperature inside the building is 15°C lower.

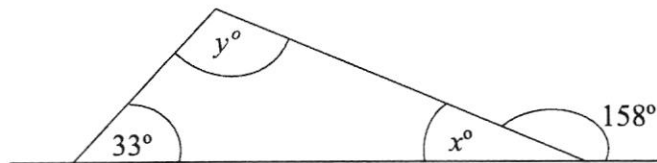
What is the temperature inside the building?

Answer $^{\circ}\text{C}$ [2]

3 Simplify $\frac{4y}{9} \div \frac{2}{9}$.

Answer [2]

4 Calculate the values of x and y .



Answer $x =$ [1]

$y =$ [2]

5 (a) Find

(i) 45 cm as a percentage of 2 metres,

Answer% [1]

(ii) 12% of \$840.

Answer \$ [1]

(b) A certain number of men take 8 days to paint a building.

How many days would it take to paint the building if the number of men is doubled?

Answer days [1]

6 Simplify the following expressions.

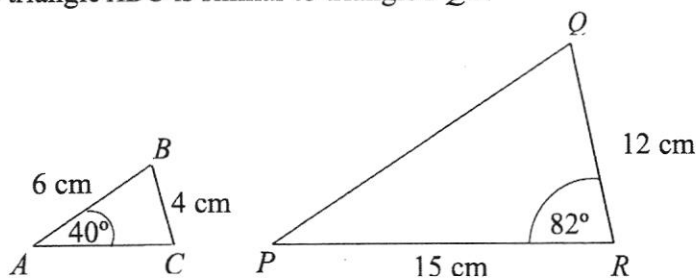
(a) $2p - 5 + 7p$

Answer [1]

(b) $4x - 3(2x - 5)$

Answer [2]

- 7 Given that triangle ABC is similar to triangle PQR .



Find the values of

- (a) PQ ,

Answer cm [1]

- (b) AC ,

Answer cm [1]

- (c) angle ABC .

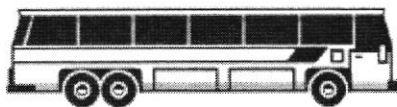
Answer $^\circ$ [2]

- 8 A bus and a car are both travelling on the same road to Kuala Lumpur.

The car takes $3\frac{3}{4}$ hours to reach Kuala Lumpur.



Speed = 110 km/h



Speed = 60 km/h

- (a) Calculate the distance, in kilometers, travelled by the car to Kuala Lumpur.

Answer km [2]

- (b) Hence, find the time, in hours, taken by the bus to reach Kuala Lumpur.

Answer hours [2]

- 9 Each week, Elson works partly at home and partly in the office.
He divides the time so that the ratio of office hours to home hours is 75 : 25.
- (a) Write the ratio 75 : 25 in its simplest form.

Answer : [1]

- (b) He worked a total of 44 hours weekly.
Calculate how many hours he worked in the office and how many he worked at home.

Answer Office hours
Home hours [3]

10 Triangle ABC is drawn below.

(a) Measure

(i) the length of BC ,

Answer $BC = \dots\dots\dots$ cm [1]

(ii) the angle BCA .

Answer angle $BCA = \dots\dots\dots^\circ$ [1]

(b) In triangle ABD , $AD = 5$ cm, $BD = 10$ cm and D is below AB .

Using ruler and compasses only,

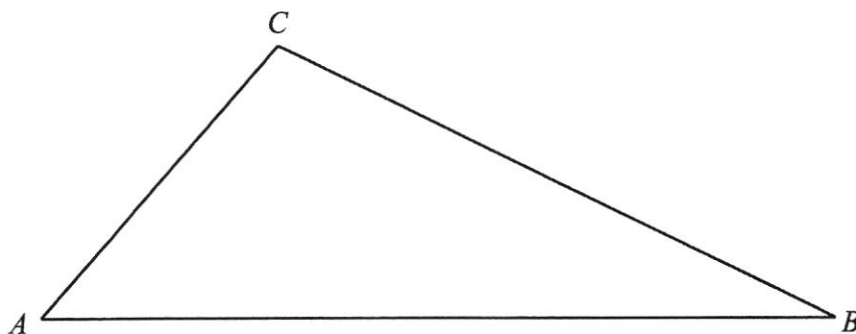
(i) construct the triangle ABD ,

[1]

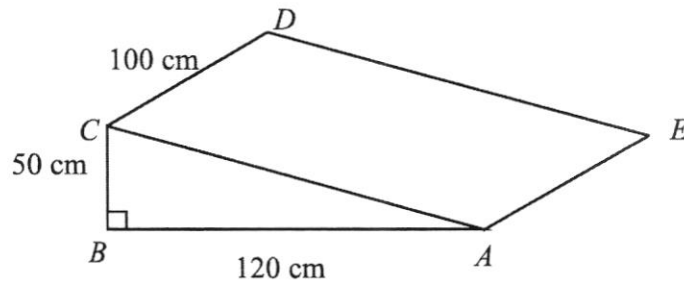
(ii) construct the angle bisector for angle BAC .

[2]

Answer (b)



- 11 The diagram represents the trolley ramp at a supermarket.



- (a) Calculate

- (i) the length, AC , of the ramp,

Answer cm [2]

- (ii) the area of the rectangle $ACDE$,

Answer cm^2 [2]

- (iii) the area of the triangle ABC .

Answer cm^2 [2]

- (b) The ramp is a prism made of concrete.

Calculate the volume of the concrete in m^3 .

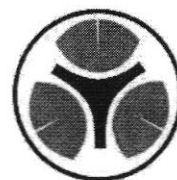
Answer m^3 [2]

Name:

Index Number:

Class:

**YIO CHU KANG SECONDARY SCHOOL
END-OF-YEAR EXAMINATION 2018
SECONDARY TWO NORMAL (TECHNICAL)**



MATHEMATICS

Paper 2

1 hour 15 minutes

11 October 2018 (Thursday)

READ THESE INSTRUCTIONS FIRST

Candidates answer on the Question Paper.

Write your index number and name on all the work you hand in.

Write in dark blue or black pen.

You may use a HB pencil for any diagrams or graphs.

Do not use staples, paper clips, glue or correction fluid.

Answer **all** the questions.

The number of marks is given in brackets [] at the end of each question or part question.

If working is needed for any question it must be shown with the answer.

Omission of essential working will result in loss of marks.

The total of the marks for this paper is 40.

The use of an approved scientific calculator is expected, where appropriate.

If the degree of accuracy is not specified in the question and if the answer is not exact, give the answer to three significant figures. Give answers in degrees to one decimal place.

For π , use either your calculator value or 3.142.

For Examiner's Use

40

- 1 By rounding each number to 1 significant figure, **estimate** the value of

$$\sqrt{\frac{9.19 \times 109}{3.97}}.$$

You must show your workings.

Answer [2]

- 2 Complete this table showing percentage, decimal and equivalents.

Fraction	Decimal	Percentage (%)
$\frac{24}{100}$	0.24	
$\frac{7}{20}$		35
	0.03	3

[3]

- 3 Linda is planning a trip to the United States. She wants to change Singapore dollars (SGD) to United States dollars (USD). The exchange rate is $1 \text{ USD} = 1.37 \text{ SGD}$.

Calculate the total amount of USD Linda will receive if she decides to change 2500 SGD.

Answer USD [2]

- 4 An unbiased dice is rolled.

Find the probability of getting

- (a) an odd number,

Answer [1]

- (b) a number that is a multiple of 4,

Answer [1]

- (c) a number that is greater than 6.

Answer [1]

- 5 The following are the number of hours spent on computer games by 9 students.

3 3 6 3 5 3 2 2 0

Find the

- (a) modal number of hours,

Answer hours [1]

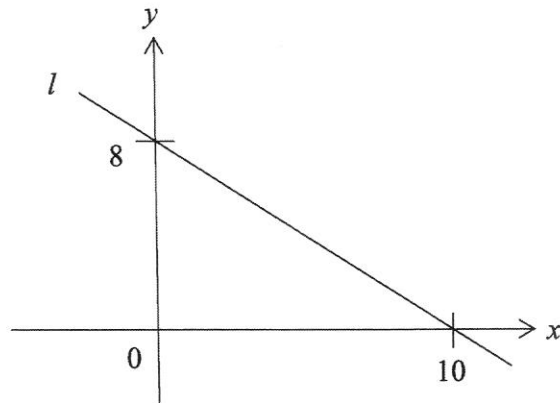
- (b) median number of hours,

Answer hours [1]

- (c) mean number of hours.

Answer hours [2]

- 6 A line l is drawn on the axes as shown below.



- (a) Find the gradient of the line l .

Answer [2]

- (b) State the y-intercept.

Answer [1]

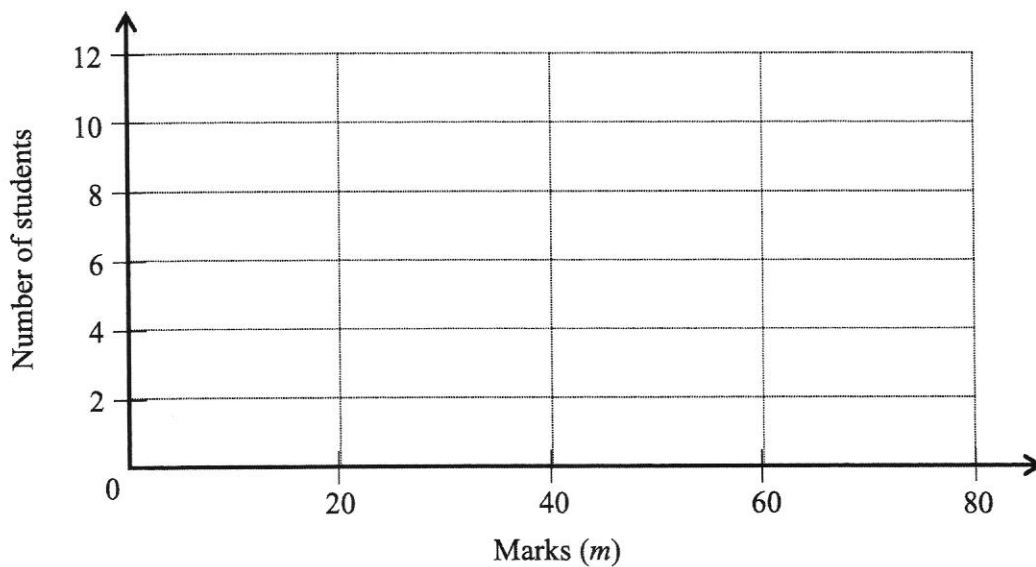
- (c) Hence find the equation of the line l .

Answer [1]

- 7 The table below shows the class test marks of 26 students.

Marks (m)	Number of students
$0 \leq m < 20$	2
$20 \leq m < 40$	8
$40 \leq m < 60$	11
$60 \leq m < 80$	5

- (a) Complete the histogram below to illustrate the distribution of the marks of the 26 students.



[2]

- (b) The passing mark of the class test is 40 marks.

Find the percentage of students who failed the class test.

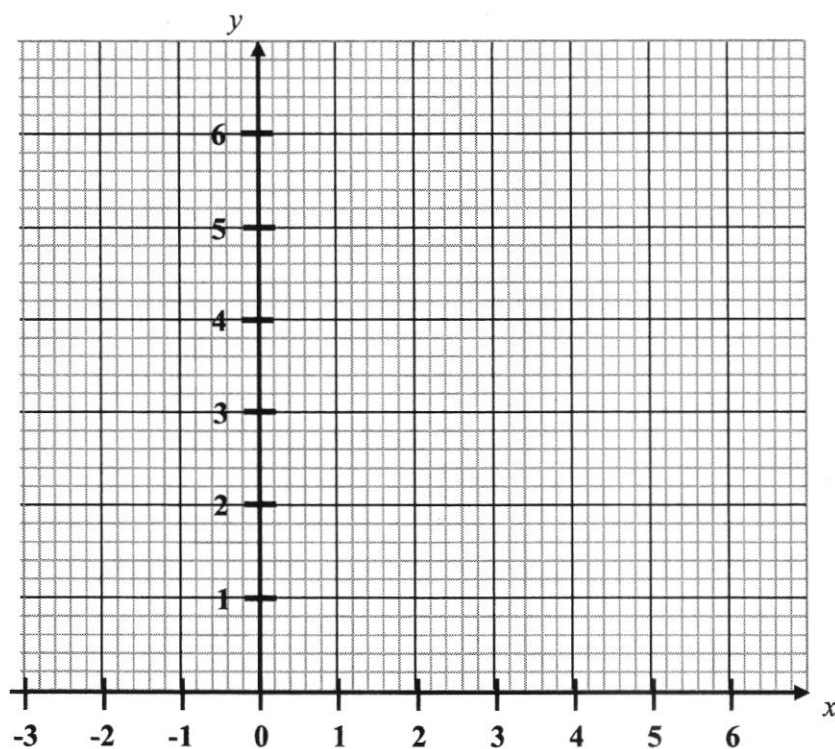
Answer % [2]

- 8 (a) Complete the table of values for $y = -\frac{1}{3}x + 5$.

x	-3	0	6
y		5	

[2]

- (b) Plot the graph of $y = -\frac{1}{3}x + 5$.



[2]

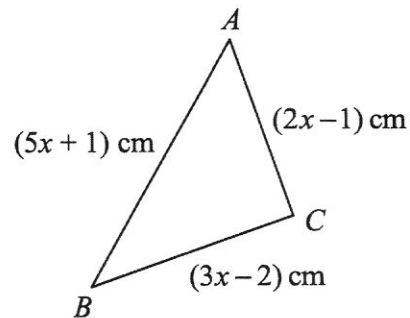
- (c) From the graph, find the value of x when $y = 4$.

Answer $x = \dots\dots\dots$ [1]

- 9 (a) Solve the equation $4(3x - 2) = 16$.

Answer $x = \dots\dots\dots$ [2]

- (b) The lengths of the sides of triangle ABC are given in the diagram below.



- (i) Write down an expression in terms of x for the perimeter of the triangle.

Answer $\dots\dots\dots \text{ cm}$ [2]

- (ii) If $x = 6$, find the perimeter of the triangle.

Answer $\dots\dots\dots \text{ cm}$ [2]

- 10 AMK Bank and YCK Bank offers the following investment plans.

AMK Bank 2.3% per year Compound Interest	YCK Bank 2.7% per year Simple Interest
---	---

Janice wants to invest \$10 000 for 4 years.

Compound Interest: Total amount = $P\left(1 + \frac{r}{100}\right)^n$

- (a) How much interest would she earn after 4 years if she invests with AMK Bank?

Answer \$ [3]

- (b) How much interest would she earn after 4 years if she invests with YCK Bank?

Answer \$ [2]

- (c) Which bank should Janice invest with?
Give a reason for your answer.

.....
 [2]

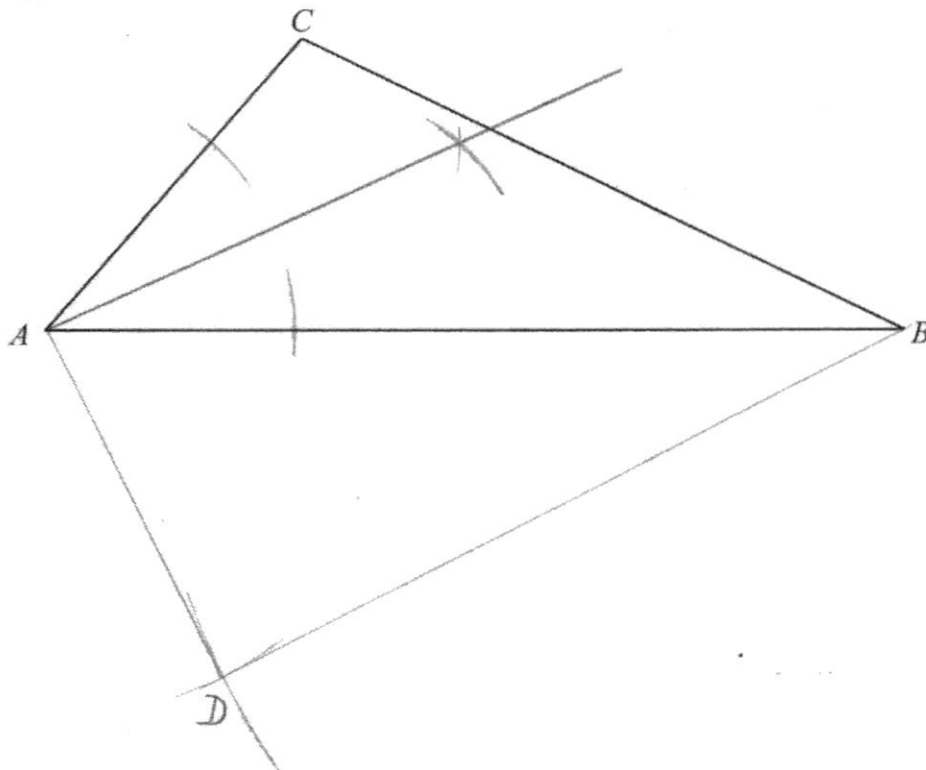
Yio Chu Kang Secondary School
2018 End-Of-Year Paper 1
Sec 2 Normal (Technical) Maths Syllabus T
Marking Scheme

1	(a) 0.07 (2dp)	[B1]
	(b) 300 (1sf)	[B1]
2	Temperature inside the building = $33^{\circ}\text{C} - 15^{\circ}\text{C}$ = 18°C	[M1] [A1]
3	$\frac{4y}{9} \div \frac{2}{9} = \frac{4y}{9} \times \frac{9}{2}$ = $2y$	[M1] [A1]
4	$x = 180 - 158$ (Adjacent angles on a straight line) = 22 $y = 158 - 33$ (Exterior angles = sum of opposite interior angles) = 125	[B1] [M1] [A1]
5	(a) (i) 45 cm as a percentage of 2 metres, $\frac{45}{200} \times 100\% = 22.5\%$	[B1]
	(ii) 12% of \$840 = $\frac{12}{100} \times \$840$ = \$100.80	[B1]
	(b) Number of days required = $\frac{8}{2}$ = 4 days	[B1]
6	(a) $2p - 5 + 7p = 9p - 5$	[B1]
	(b) $4x - 3(2x - 5) = 4x - 6x + 15$ = $-2x + 15$	M1 A1
7	(a) Scale factor = $\frac{12}{4}$ = 3 $PQ = 6 \text{ cm} \times 3 = 18 \text{ cm}$	A1
	(b) $AC = \frac{15}{3}$ = 5 cm	A1
	(c) angle $ABC = 180^{\circ} - 40^{\circ} - 82^{\circ}$ = 58°	M1 A1

8	(a) Distance travelled by car = speed x time $= 110 \text{ km/h} \times 3\frac{3}{4} \text{ h}$ $= 412.5 \text{ km}$	M1 A1
	(b) Time taken by the bus = $\frac{\text{Distance}}{\text{Speed}}$ $= \frac{412.5 \text{ km}}{60 \text{ km/h}}$ $= 6.875 \text{ hours}$	M1 A1
9	(a) $75 : 25 = 3 : 1$	B1
	(b) No of office hours = $\frac{3}{4} \times 44$ $= 33 \text{ hours}$ No of home hours = $44 - 33$ $= 11 \text{ hours}$	M1 A1 A1
10	See attached. (last page)	
11	(a)(i) Length $AC = \sqrt{50^2 + 120^2}$ $= 130 \text{ cm}$	[M1] [A1]
	(ii) Area of rectangle $ACDE = 130 \text{ cm} \times 100 \text{ cm}$ $= 13000 \text{ cm}^2$	[M1] [A1]
	(iii) Area of triangle $ABC = \frac{1}{2} \times 120 \times 50$ $= 3000 \text{ cm}^2$	M1 A1
	(c) Volume of concrete = Base area x height $= 3000 \text{ cm}^2 \times 100 \text{ cm}$ $= 0.3 \text{ m}^2 \times 1 \text{ m}$ $= 0.3 \text{ m}^3$	[M1] [A1]

10(a) (i) $BC = 8.7$ cm	[B1]
(ii) angle $BCA = 106^\circ$	[B1]
Q10 (b) (i) Correct construction of triangle ABD (ii) Correct construction lines Correct angle bisector for angle BAC	[B1] [M1] [B1]

Answer (b)



$$1 \quad \sqrt{\frac{9.19 \times 109}{3.97}} = \sqrt{\frac{9 \times 100}{4}} \quad [\text{M1}]$$

$$= 15 \quad [\text{A1}]$$

2	Fraction	Decimal	Percentage (%)	
	$\frac{24}{100}$	0.24	24	[B1]
	$\frac{7}{20}$	0.35	35	[B1]
	$\frac{3}{100}$	0.03	3	[B1]

$$3 \quad \text{Total amount of USD} = \frac{2500}{1.37} \quad [\text{M1}]$$

$$= 1824.817518$$

$$= 1824.82 \text{ USD (2 d.p.)} \quad [\text{A1}]$$

$$4 \quad (\text{a}) \quad \frac{3}{6} = \frac{1}{2} \quad [\text{A1}]$$

$$(\text{b}) \quad \frac{1}{6} \quad [\text{A1}]$$

$$(\text{c}) \quad \frac{0}{6} = 0 \quad [\text{A1}]$$

$$5 \quad (\text{a}) \quad 3 \quad [\text{A1}]$$

$$(\text{b}) \quad 3 \quad [\text{A1}]$$

$$(\text{c}) \quad \frac{3+3+6+3+5+3+2+2+0}{9} \quad [\text{M1}]$$

$$= 3 \quad [\text{A1}]$$

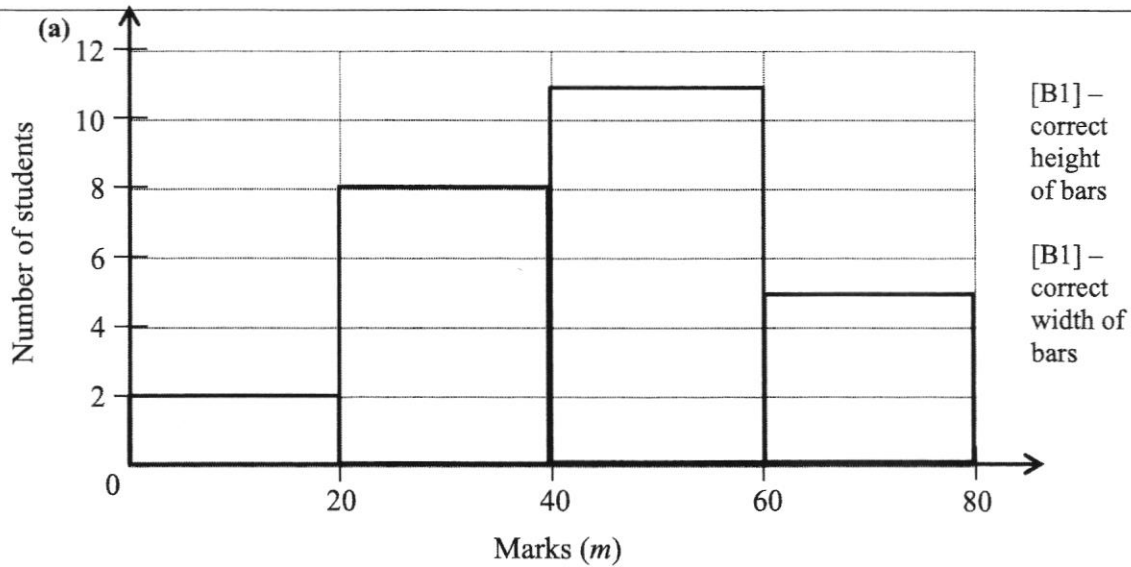
$$6 \quad (\text{a}) \quad \text{gradient} = -\frac{8}{10} \quad [\text{M1}]$$

$$= -\frac{4}{5} \quad [\text{A1}]$$

$$(\text{b}) \quad 8 \quad [\text{A1}]$$

$$(\text{c}) \quad y = -\frac{4}{5}x + 8 \quad [\text{A1}]$$

7 (a)



(b)
$$\text{percentage} = \frac{2+8}{26} \times 100\%$$

$$= 38\frac{6}{13}\%$$

[M1]

[A1]

8 (a) 6
3

[A1]

[A1]

(b)

[P1] – all points plotted correctly

[L1] – a straight line drawn to join all 3 points

(c) 3

[A1]

- 9 (a) $4(3x-2) = 16$ [M1]
 $12x - 8 = 16$
 $12x = 16 + 8$
 $12x = 24$
 $x = \frac{24}{12}$
 $= 2$ [A1]
- (b) (i) $(5x+1) + (3x-2) + (2x-1)$ [M1]
 $= (10x-2) \text{ cm}$ [A1]
- (ii) $10(6) - 2$ [M1]
 $= 58 \text{ cm}$ [A1]
-
- 10 (a) Total amount $= 10000 \left(1 + \frac{2.3}{100} \right)^4$ [M1]
 $= 10952.22948$
Interest $= 10952.22948 - 10000$ [M1]
 $= 952.22948$
 $= \$952.23 \text{ (2 d.p.)}$ [A1]
- (b) Interest $= \frac{10000 \times 2.7 \times 4}{100}$ [M1]
 $= \$1080$ [A1]
- (c) Janice should invest with YCK Bank. [B1]
Janice will earn more interest with YCK Bank than AMK Bank. [B1]
-