

EDEXCEL • GCSE MATHEMATICS 1MA1

Higher Tier — Paper 2

Calculator

November 2024 exam series

QUESTION PAPER

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Please check the examination details below before entering your candidate information

Candidate surname		Other names	
Centre Number		Candidate Number	

Pearson Edexcel Level 1/Level 2 GCSE (9–1)

Friday 8 November 2024

Morning (Time: 1 hour 30 minutes) **Paper reference** **1MA1/2H**

Mathematics
PAPER 2: (Calculator)
Higher Tier



You must have: Ruler graduated in centimetres and millimetres, protractor, pair of compasses, pen, HB or B pencil, eraser, calculator, Formulae Sheet (enclosed). Tracing paper may be used.

Total Marks

Instructions

- Use **black** ink or ball-point pen.
- If pencil is used for diagrams/sketches/graphs it must be dark (HB or B).
- **Fill in the boxes** at the top of this page with your name, centre number and candidate number.
- Answer **all** questions.
- Answer the questions in the spaces provided
– *there may be more space than you need.*
- You must **show all your working**
- Diagrams are **NOT** accurately drawn, unless otherwise indicated.
- **Calculators may be used.**
- If your calculator does not have a π button, take the value of π to be 3.142 unless the question instructs otherwise.

Information

- The total mark for this paper is 80
- The marks for **each** question are shown in brackets
– *use this as a guide as to how much time to spend on each question.*

Advice

- Read each question carefully before you start to answer it.
- Try to answer every question.
- Check your answers if you have time at the end.

Turn over ►

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Answer ALL questions.

Write your answers in the spaces provided.

You must write down all the stages in your working.

- 1** Use your calculator to work out the value of

$$\sqrt{\frac{208.3 - 15.7}{5.694 + 1.8^2}}$$

Write down all the digits on your calculator display.

(Total for Question 1 is 2 marks)

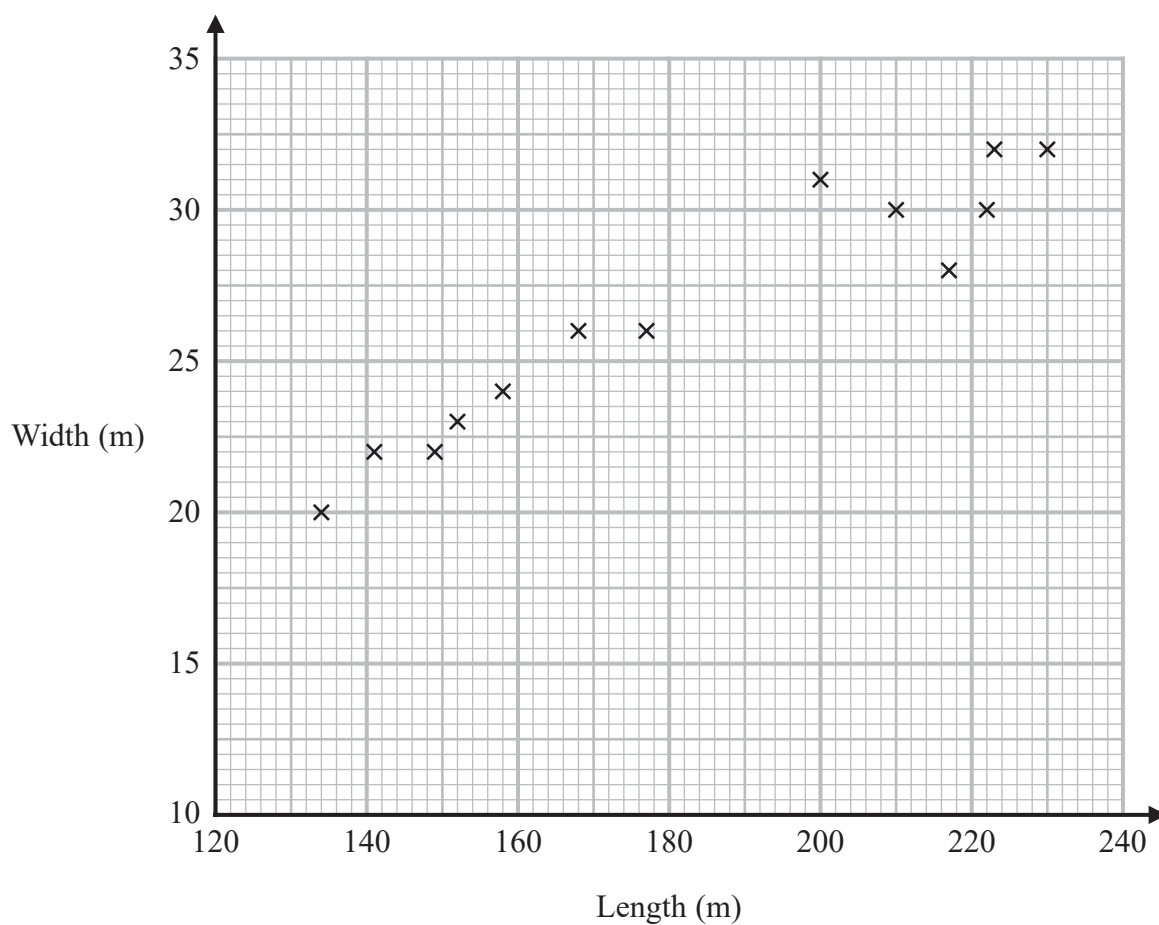
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- 2 The scatter graph shows information about some ships.
It shows the length and the width of each ship.



- (a) What type of correlation does this scatter graph show?

.....
(1)

- (b) Draw a line of best fit on the scatter graph.

(1)

A different ship has a length of 194 metres.

- (c) Use your line of best fit to find an estimate for the width of this ship.

..... metres
(1)

(Total for Question 2 is 3 marks)



3

Choci bar

200 g

£3.50

London**Choci bar**

360 g

7.20 Swiss francs

Zurich

In London, a 200 g Choci bar costs £3.50

In Zurich, a 360 g Choci bar costs 7.20 Swiss francs.

The exchange rate is £1 = 1.25 Swiss francs.

In which city is the Choci bar the better value for money, in London or in Zurich?

You must show how you get your answer.

(Total for Question 3 is 3 marks)

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4

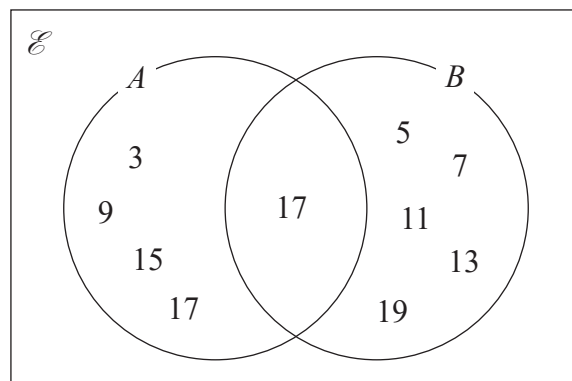


4 $\mathcal{E} = \{\text{odd numbers between 0 and 20}\}$

$A = \{3, 9, 15, 17\}$

$B = \{5, 7, 11, 13, 17, 19\}$

Tom was asked to draw a Venn diagram for this information.
Here is his answer.



Write down two things Tom should do to make his answer fully correct.

1

.....

2

.....

(Total for Question 4 is 2 marks)

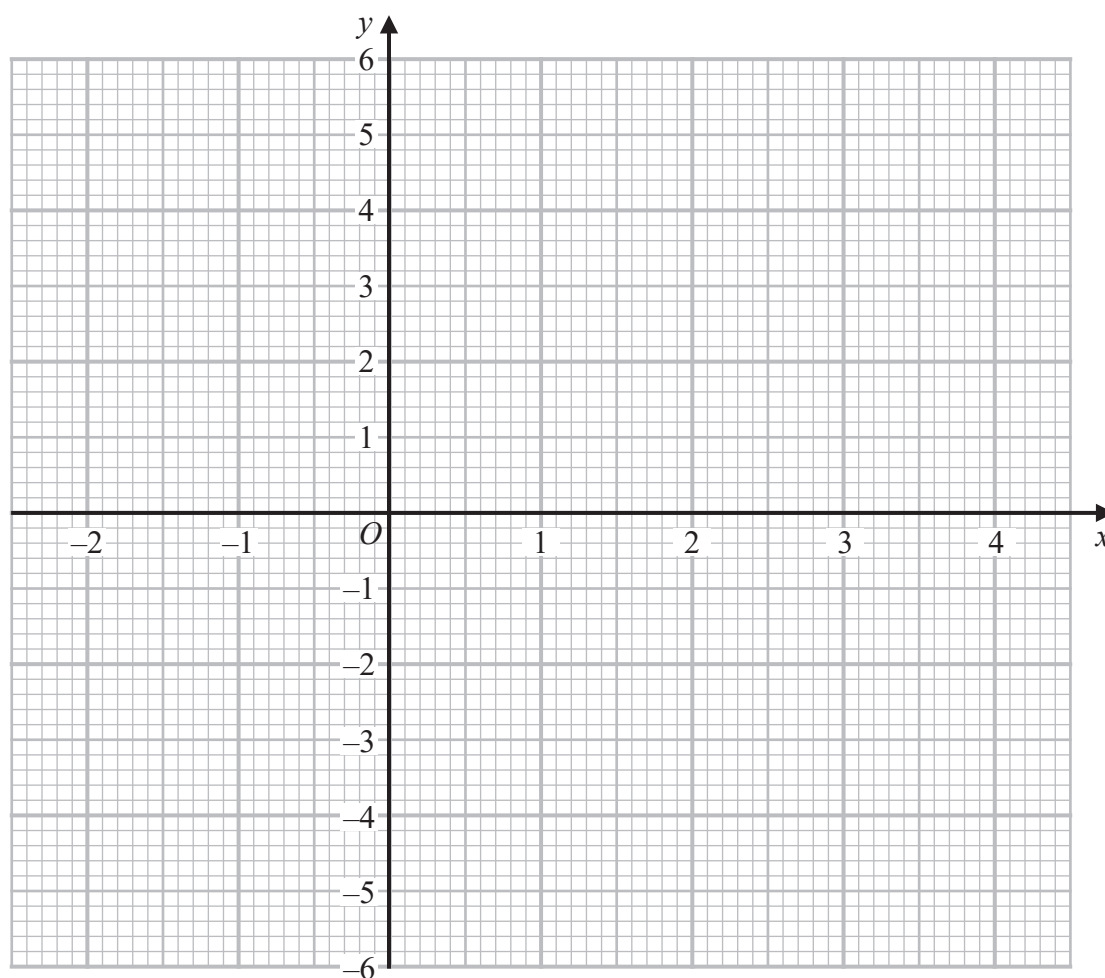


- 5 (a) Complete the table of values for $y = x^2 - 2x - 3$

x	-2	-1	0	1	2	3	4
y		0			-3		

(2)

- (b) On the grid, draw the graph of $y = x^2 - 2x - 3$ for values of x from -2 to 4



(2)

(Total for Question 5 is 4 marks)



- 6 The cost of a first class stamp increased from 76p to 85p.
The cost of a second class stamp increased from 65p to 66p.

Filip says,

“The percentage increase in the cost of a first class stamp is more than 7 times the percentage increase in the cost of a second class stamp.”

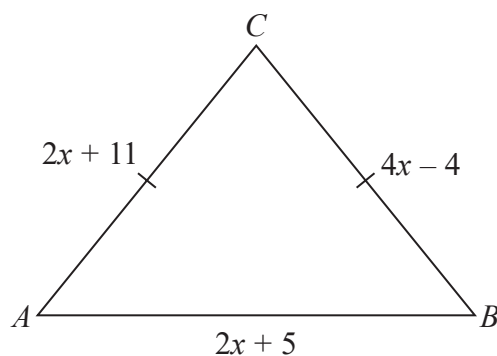
Is Filip correct?

You must show all your working.

(Total for Question 6 is 4 marks)



- 7 The diagram shows triangle ABC .



In the diagram, all measurements are in centimetres.

$$AC = BC$$

The perimeter of the triangle is 72 cm.

Work out the area of the triangle.

..... cm^2

(Total for Question 7 is 5 marks)



8 $1.25 \times 10^{-12} = k \times (4 \times 10^{-20})$

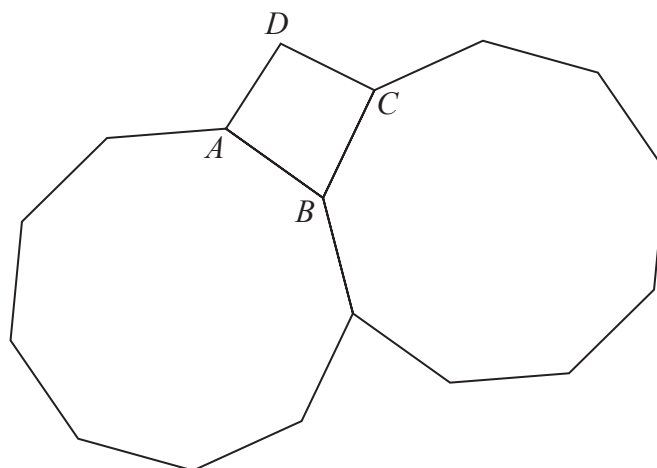
Work out the value of k .

Give your answer in standard form.

$$k = \dots\dots\dots$$

(Total for Question 8 is 2 marks)

- 9 The diagram shows two congruent regular 9-sided polygons.
 $ABCD$ is a quadrilateral.



Show that $ABCD$ is **not** a square.

(Total for Question 9 is 3 marks)



10 Use algebra to solve the simultaneous equations

$$4x - 5y = 20$$

$$6x + 7y = -57$$

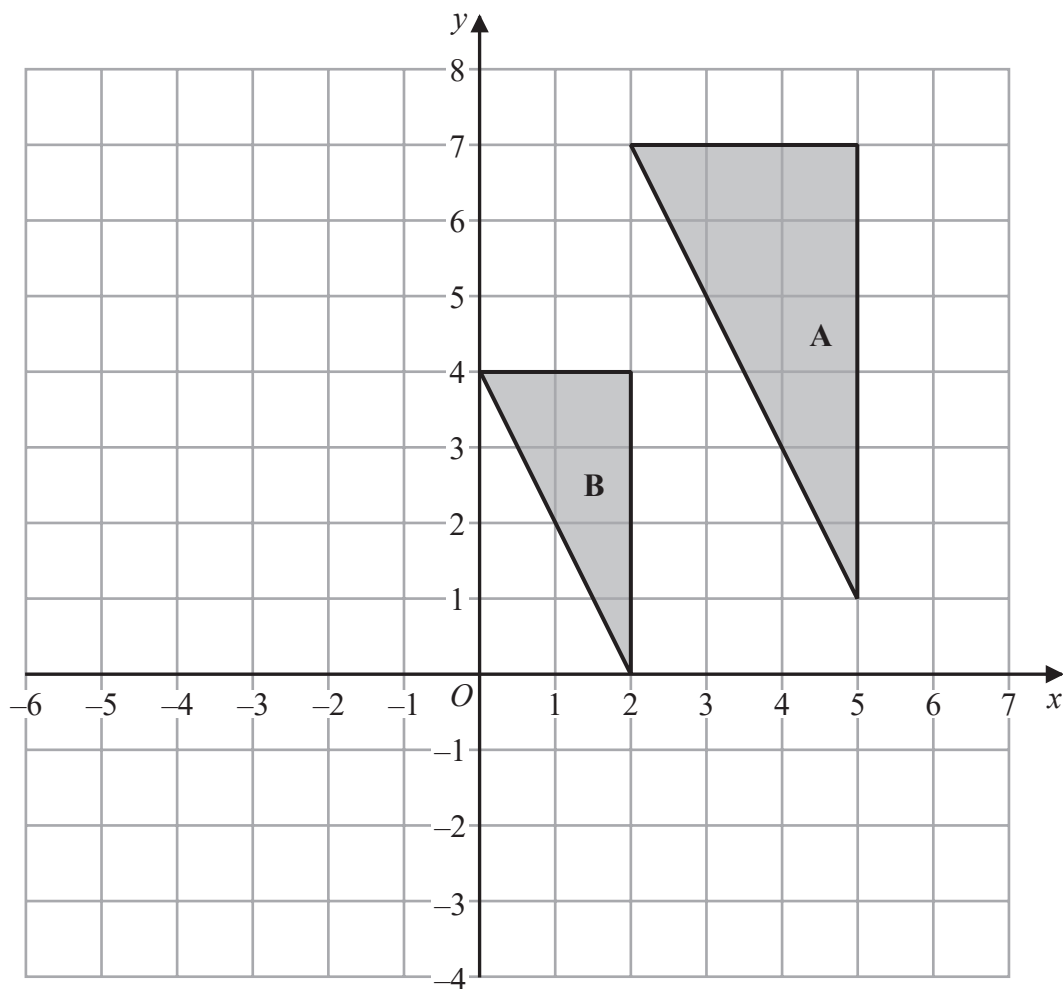
You must show all your working.

$$x = \dots\dots\dots$$

$$y = \dots\dots\dots$$

(Total for Question 10 is 4 marks)

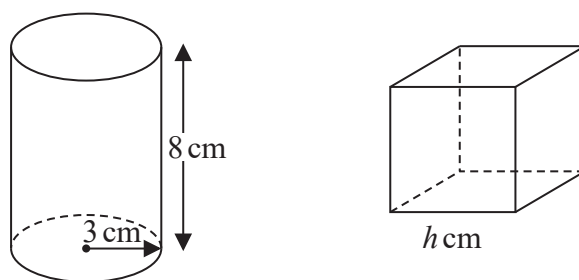




Describe fully the single transformation that maps triangle **A** onto triangle **B**.

(Total for Question 11 is 2 marks)

- 12 The diagram shows a solid cylinder with base radius 3 cm and height 8 cm.
It also shows a solid cube with side length h cm.



The cylinder is made from steel with a density of 7.86 g/cm^3
The cube is made from brass with a density of 8.5 g/cm^3

The mass of the cylinder is equal to the mass of the cube.

Work out the value of h .

Give your answer correct to 1 decimal place.

$h = \dots\dots\dots$

(Total for Question 12 is 5 marks)



13 Here is a table of values of x and y .

x	2	4	6	8
y	0	4	8	12

Nadia says that y is directly proportional to x because the value of y increases by 4 as the value of x increases by 2

(a) Is Nadia correct?

You must give a reason for your answer.

(1)

w is directly proportional to the square root of t .

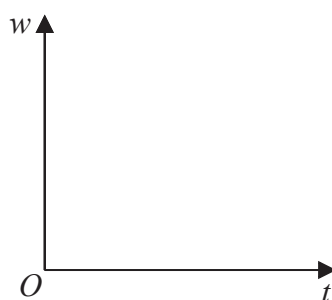
$w = 140$ when $t = 64$

(b) (i) Calculate the value of w when $t = 7.84$

$w = \dots\dots\dots$

(3)

(ii) On the axes below, sketch a graph to show the relationship between w and t .



(1)

(Total for Question 13 is 5 marks)



- 14 There are 10 football teams in a league.
Each team plays every other team 4 times.
Work out the total number of games played.

.....
(Total for Question 14 is 2 marks)



15 Here are the first five terms of a quadratic sequence.

3 20 47 84 131

- (a) Find an expression, in terms of n , for the n th term of this sequence.

.....
(3)

The terms of a different sequence are given by the rule $u_{n+1} = ku_n + k$ where k is a constant.

Given that $u_1 = 9$ and $u_2 = 4$

- (b) find the value of u_4

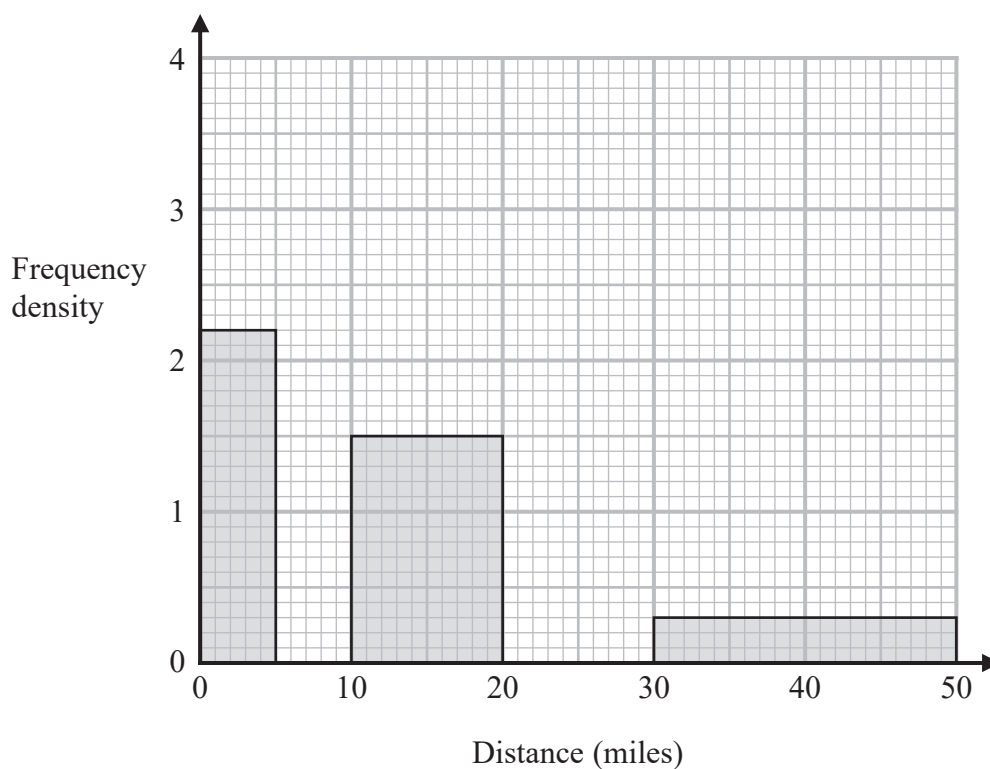
$u_4 =$
(3)

(Total for Question 15 is 6 marks)



- 16 The histogram gives information about the distances that 60 teachers travelled to school on Monday.

The histogram is incomplete.



11 of the teachers travelled between 0 miles and 5 miles.

None of the teachers travelled a distance greater than 50 miles.

The number of teachers who travelled between 5 miles and 10 miles is the same as the number of teachers who travelled between 20 miles and 30 miles.

Complete the histogram.

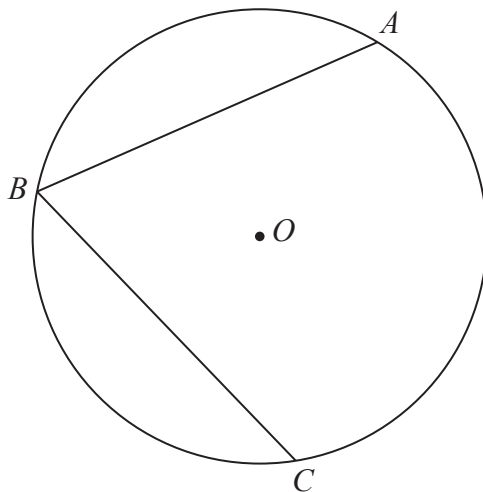
(Total for Question 16 is 4 marks)

17 Show that $\frac{6x-y}{10xy} + \frac{1}{2x} - \frac{2y-7x}{5xy}$ simplifies to $\frac{k}{y}$ where k is an integer.

(Total for Question 17 is 3 marks)



18 A , B and C are three points on a circle, centre O .



$$BA = BC$$

Prove that OB bisects angle ABC .

(Total for Question 18 is 3 marks)

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19 $T = \frac{w}{a - c}$

$w = 435$ correct to the nearest 5

$a = 9.8$ correct to 2 significant figures.

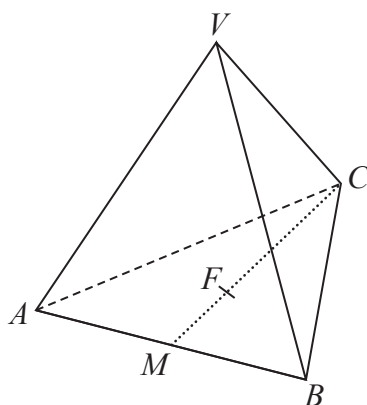
$c = 2.5$ correct to 2 significant figures.

By considering bounds, calculate the value of T to a suitable degree of accuracy.
You must show all your working and give a reason for your final answer.

(Total for Question 19 is 5 marks)



- 20 $VABC$ is a solid pyramid.
 ABC is an equilateral triangle.



M is the midpoint of AB .

F is the point on MC such that $MF:FC = 1:2$

The vertex V is vertically above F .

$$VA = VB = VC$$

$$VF = 8 \text{ cm} \quad \text{Angle } VCM = 52^\circ$$

Work out the side length of the equilateral triangle ABC .

Give your answer correct to 1 decimal place.

..... cm

(Total for Question 20 is 3 marks)



21 The point P has coordinates $(-4, 5)$

The point Q has coordinates $(6, -6)$

The point R has coordinates $(k, k + 3)$

Given that angle PRQ is a right angle,

find the possible values of k .

You must show all your working.

(Total for Question 21 is 5 marks)



22 There are only red counters and yellow counters in a box.

$\frac{3}{5}$ of the counters are red.

Sophie takes at random two counters from the box.

The probability that the two counters are the same colour is $\frac{41}{80}$

Work out the number of yellow counters in the box.

You must show all your working.

(Total for Question 22 is 5 marks)

TOTAL FOR PAPER IS 80 MARKS



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