

GCSE Mathematics (1MA1) – Aiming for Grade 5 2F

Student-friendly mark scheme

Please note that this mark scheme is not the one used by examiners for marking scripts. It is intended more as a guide to good practice, indicating where marks are given for correct answers. As such, it doesn't show follow-through marks (marks that are awarded despite errors being made) or special cases.

It should also be noted that for many questions, there may be alternative methods of finding correct solutions that are not shown here – they will be covered in the formal mark scheme.

Some questions require all working to be shown; in such questions, no marks will be given for an answer with no working (even if it is a correct answer).

The following table shows the marks scored on average at certain grades on similar questions from live exams.

For example: A student who achieved a Grade 5 on similar questions from either the Summer 2023 or November 2023 exam sittings achieved on average 23.3 marks from these questions.

Grade	5	4	3	2	1
Mark	23.3	12.4	7.0	4.0	2.4

Answer all questions.

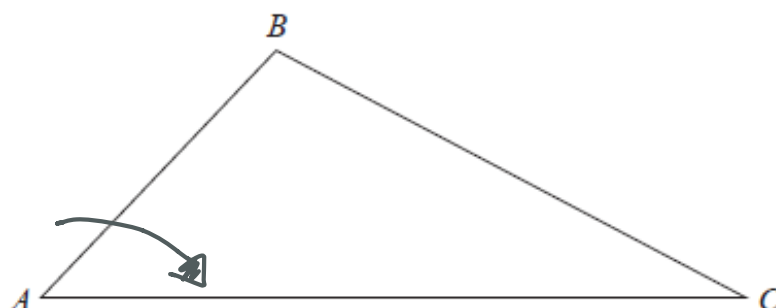
Write your answers in the spaces provided.

You must write down all the stages in your working.

1 Here is a triangle.

(a) Measure the length of AC .

this length (your answer may differ depending on your printer settings.)



9.3

1 mark

Range accepted 9.1 to 9.5 (1)

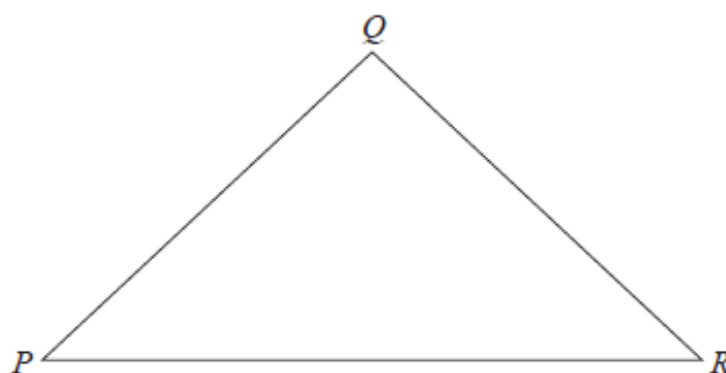
(b) Measure the size of angle B .

106

1 mark

Range accepted 104 to 108 (1)

Here is a different triangle.



$$QP = QR$$

(c) Write down the mathematical name of this triangle.

isosceles

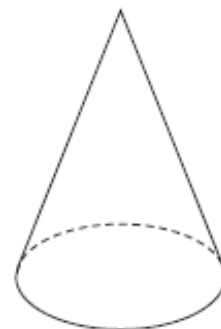
1 mark

(1)

(Total for Question 1 is 3 marks)

2 Here is a 3-D shape.

(a) Write down the name of this 3-D shape.

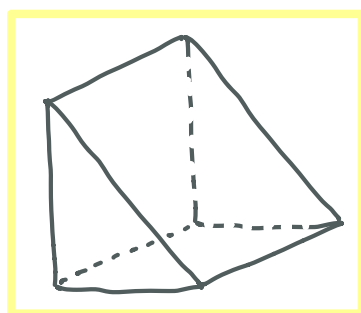


cone

1 mark

(1)

(b) In the space below, draw a sketch of a triangular prism.



1 mark

(1)

(Total for Question 2 is 2 marks)

*3 Make g the subject of the formula $f = 3g + 11$

$$f = 3g + 11$$

$$f - 11 = 3g$$

1 mark

$$\frac{f - 11}{3} = g$$

$$g = \frac{f - 11}{3}$$

Final mark

(Total for Question 3 is 2 marks)

*4 A number, d , is rounded to 1 decimal place.

The result is 12.7

Complete the error interval for d .

$$\begin{array}{ccccc} 12.6 & & 12.7 & & 12.8 \\ & \uparrow & & \uparrow & \\ & 12.65 & & 12.75 & \end{array}$$

1 mark

1 mark

$$12.65$$

$\leq d <$

$$12.75$$

(Total for Question 4 is 2 marks)

5 Solve the simultaneous equations

$$\begin{array}{l} \textcircled{1} \quad 3x + y = -4.5 \quad \times 3 \\ \textcircled{2} \quad 4x + 3y = -3.5 \end{array}$$

$$\begin{array}{r} 9x + 3y = -13.5 \\ 4x + 3y = -3.5 \\ \hline -5x = -10 \\ x = -\frac{10}{5} \\ x = -2 \end{array}$$

1 mark for correct method to eliminate x or y

Sub into $\textcircled{2}$

$$4x - 2 + 3y = -3.5$$

1 mark for substituting found value

$$3y = -3.5 + 8$$

$$3y = 4.5$$

$$y = 1.5$$

$$\begin{array}{l} x = -2 \\ y = 1.5 \end{array}$$

Final mark

(Total for Question 5 is 3 marks)

- 6 Ethan buys a box of 24 cans of lemonade for £7
There are 330 ml of lemonade in each can.
Work out the cost of 100 ml of lemonade.
Give your answer correct to the nearest penny.

1 mark

24 cans = £7

1 can = 29.16 p

330 ml = 29.16 p

÷ 330

× 100

100 ml = 8.83 p

700 ÷ 24

1 mark

Final mark

9 or £0.09

(Total for Question 6 is 3 marks)

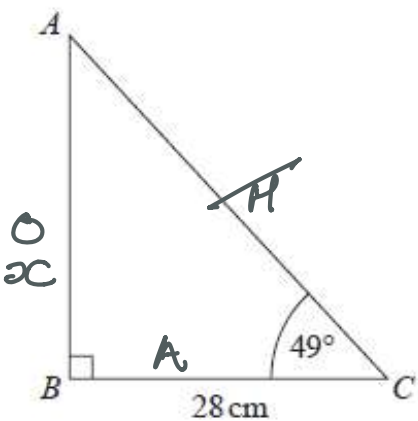
- 7 ABC is a right-angled triangle.
Calculate the length of AB.
Give your answer correct to 3 significant figures.

tan 49 = $\frac{x}{28}$

1 mark

$x = 28 \times \tan 49$

$= 32.210...$



Final mark

32.2

cm

(Total for Question 7 is 2 marks)

Range accepted 32.2 to 32.22

*8 Chris, Debbie and Errol share some money in the ratio 3 : 4 : 2
 Debbie gets £120

Chris then gives some of his share to Debbie and some of his share to Errol.
 The money that Chris, Debbie and Errol each have is now in the ratio 2 : 5 : 3
 How much money did Chris give to Errol?

C	D	E	Total
3	4	2	9
$\times 30$		$\times 30$	$\times 30$
£90	£120	£60	£270

1 mark

$$120 \div 4 = 30$$

C	D	E	Total
2	5	3	10
$\times 27$	$\times 27$	$\times 27$	
= £54	= £135	= £81	£270

$270 \div 10 = 27$

1 mark

given to
 Errol $\Rightarrow 81 - 60 = £21$

1 mark for 81 and 60

£ 21 Final mark
 (Total for Question 8 is 4 marks)

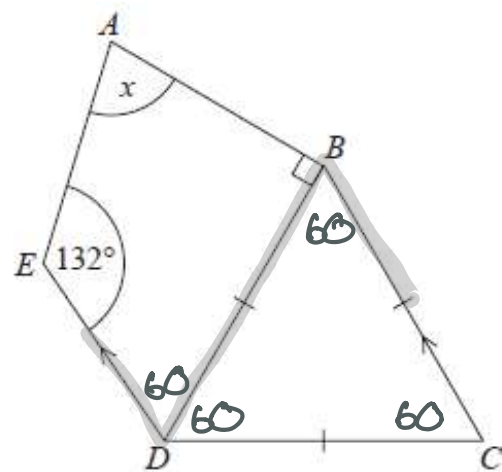
9 The diagram shows a quadrilateral $ABDE$ and an equilateral triangle BCD .

CB is parallel to DE .

Angle $AED = 132^\circ$

Work out the size of the angle marked x .

You must give a reason for each stage of your working.



$\triangle DBC$ $180 \div 3 = 60$ 1 mark

all angles are equal in an equilateral triangle

$\angle EDB = \angle DBC = 60$ 1 mark

alternate angles are equal

$x = 360 - (132 + 90 + 60)$
 $= 78$

angles in a quadrilateral = 360

78 1 mark

(Total for Question 9 is 4 marks)

*10 Solve $\frac{2}{5}g - 4 < 6$

$\frac{2}{5}g - 4 < 6$

$+4 \quad +4$

$\frac{2}{5}g < 10$

1 mark

$\times 5 \quad \times 5$
 $2g < 50$

1 mark

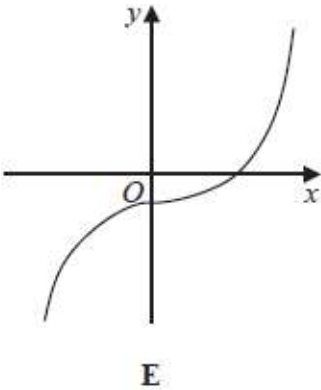
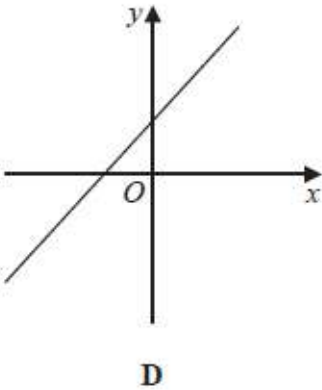
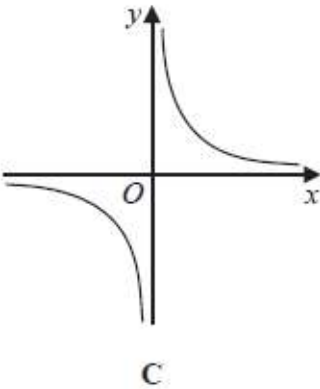
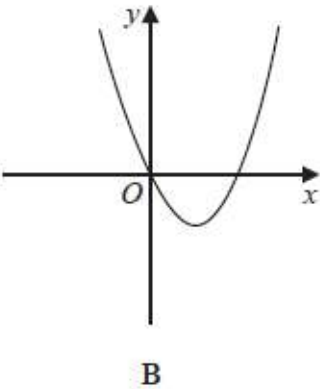
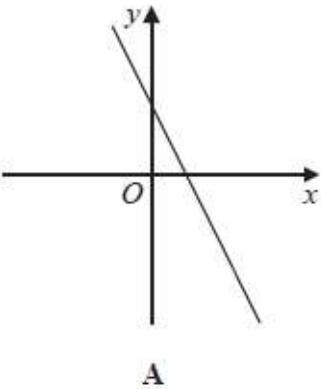
$g < 25$

$g < 25$

Final mark

(Total for Question 10 is 3 marks)

11 Here are five graphs.



Equation	Graph
$y = x^2 - 4x$	B
$y = x + 3$	D
$y = x^3 - 2$	E
$y = \frac{1}{x}$	C
$y = 5 - 2x$	A

3 marks for all correct

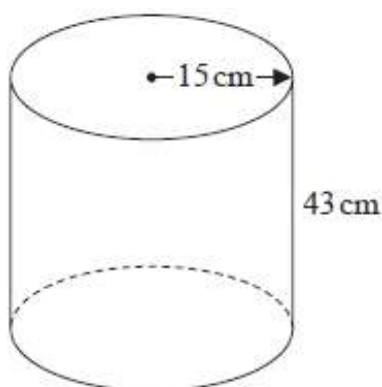
2 marks for three or four correct

1 mark for two correct

Match the letter of each graph with its equation.

(Total for Question 11 is 3 marks)

*12 The diagram shows an empty tank in the shape of a cylinder.



The cylinder has radius 15 cm and height 43 cm.

Water flows into the tank at a rate of 0.47 litres per minute.

Calculate the number of minutes it will take to completely fill the tank.

Give your answer correct to the nearest minute.

Volume of cylinder

$$= \pi \times 15^2 \times 43$$

1 mark

$$= 30394.908... \text{ cm}^3$$

convert to litres

1 mark

$$= 30394.908... \div 1000 = 30.39... \text{ litres}$$

Time

$$30.39... \div 0.47$$

1 mark

$$= 64.67... \text{ minutes}$$

80 65

65

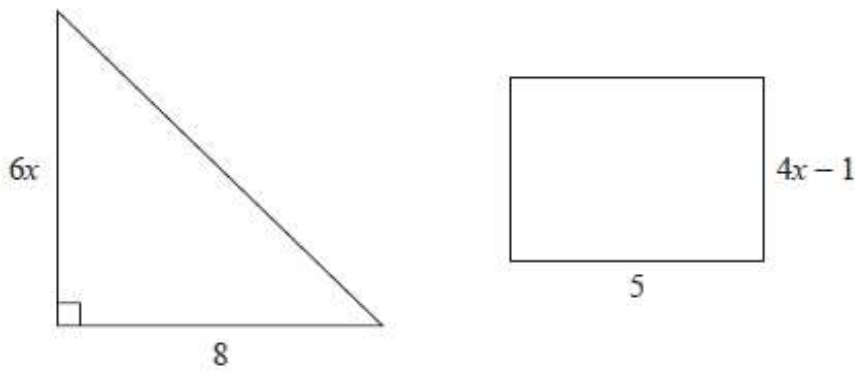
Final mark

minutes

(Total for Question 12 is 4 marks)

Range accepted 64.6 to 65

***13** Here is a triangle and a rectangle.



All measurements are in centimetres.

The area of the triangle is 10 cm^2 greater than the area of the rectangle.

Work out the value of x .

knaggle = rectangle + 10

$$\frac{1}{2} 8 \times 62x = 1 \text{ mark } 5(4x-1) + 10$$

$$24x = 20x - 5 + 10$$

$$24x = 20x + 5$$
 1 mark

$$4x = 5$$

$$x = \frac{5}{4}$$

$$= 1.25$$

$x =$ 1.25 Final mark

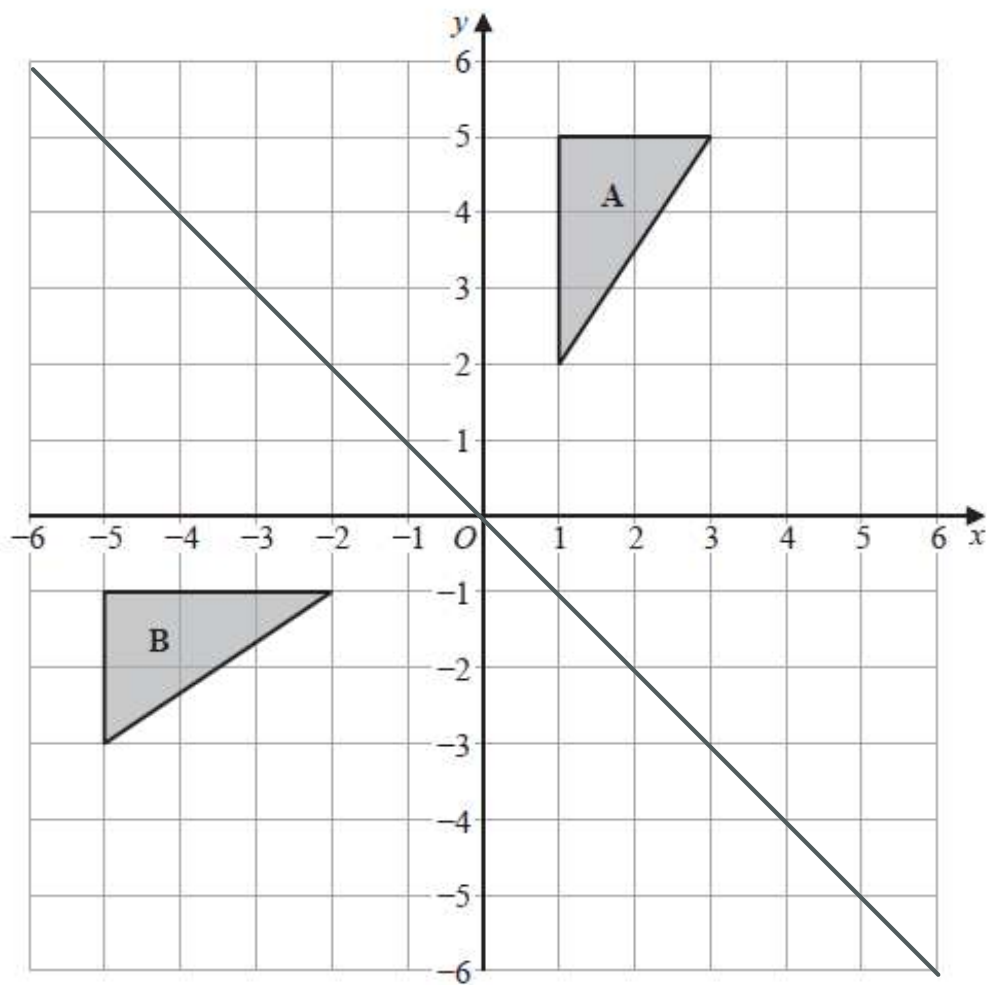
(Total for Question 13 is 4 marks)

***14** Work out the value of the reciprocal of 0.625

$$1 \div 0.625$$

1.6 1 mark

(Total for Question 14 is 1 mark)



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

its a reflection in the line $y = -x$

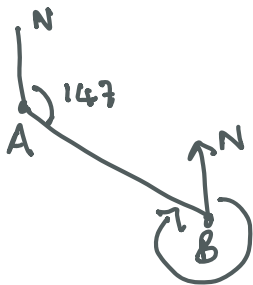
1 mark

1 mark

(Total for Question 15 is 2 marks)

*16 The bearing of port B from port A is 147°

Work out the bearing of port A from port B.



$147 + 180$ 1 mark

327 Final mark

(Total for Question 16 is 2 marks)

TOTAL FOR PAPER IS 44 MARKS