**GCSE Mathematics (1MA1) – Aiming for Grade 6 1H**

**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 6 on similar questions from either the Summer 2023 or November 2023 exam sittings achieved on average 23.8 marks from these questions**.**

| **Grade** | **9** | **8** | **7** | **6** | **5** | **4** | **3** |
|---|---|---|---|---|---|---|---|
| **Mark** | 31.2 | 29.6 | 27.2 | 23.8 | 18.5 | 11.8 | 5.7 |

**Answer all questions.**

**Write your answers in the spaces provided.**

**You must write down all the stages in your working.**

***1** Write down the value of $5^{-2}$

$\frac{1}{5^2}$

1 mark $\frac{1}{25}$ or 0.04

.....

**(Total for Question 1 is 1 mark)**

---

***2** The mean length of 5 sticks is 4.2 cm.
Nawal measured the length of one of the sticks as 7 cm.
(*a*) Work out the mean length of the other 4 sticks.

— — — — — = 4.2 mean

so total = $4.2 \times 5 = 21$ cm

1 mark

$21 - 7 = 14$ cm

$14 \div 4 = 3.5$

1 mark

3.5 Final mark ..... cm

**(3)**

Nawal made a mistake.
The stick was not 7 cm long.
It was 17 cm long.
(*b*) How does this affect your answer to part (*a*)? 1 mark

my answer would be smaller than 3.5; it would be 1cm

(21 - 17 = 4cm 4 ÷ 4 = 1)

.....

.....

**(1)**

**(Total for Question 2 is 4 marks)**

---

**3** Work out the value of $27^{\frac{2}{3}} + \left(\frac{1}{2}\right)^{-3}$

$27^{2/3} = (\sqrt[3]{27})^2$

$= 3^2 = 9$

1 mark for either of these

$\left(\frac{1}{2}\right)^{-3} = \left(\frac{2}{1}\right)^3$

$= 2^3 = 8$

so $9 + 8$ 1 mark

17 Final mark

**(Total for Question 3 is 3 marks)**

---

***4** Mano has three shelves of books.
There are $x$ books on shelf **A**.

There are $(3x + 1)$ books on shelf **B**.
There are $(2x - 5)$ books on shelf **C**.
There is a total of 44 books on the three shelves.

All the books have the same mass.
The books on shelf **B** have a total mass of 7500 g.

Work out the total mass of the books on shelf **A**.

A B C

$x + 3x + 1 + 2x - 5 = 44$ 1 mark

$6x - 4 = 44$

$6x = 48$ so $x =$

1 mark for either of these

A B C

8 $3 \times 8 + 1 = 25$ $2 \times 8 - 5 = 11$

$7500 \div 25$ 1 mark

$25 \overline{)7500}$ 300

so shelf A : $8 \times 300$

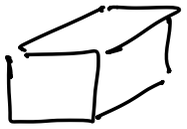
1 mark

2400 Final mark

..... g

**(Total for Question 4 is 5 marks)**

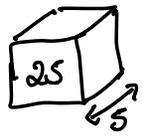
***5** A cube has a total surface area of 150 $cm^2$
Work out the volume of the cube.



6 faces = $150cm^2$
so 1 face = $25cm^2$

$150 \div 6 = 25$ 1 mark


so side length $= \sqrt{25} = 5$ 1 mark




Volume $= 5 \times 5 \times 5 = 125$

1 mark

Final mark 125

..... $cm^3$

**(Total for Question 5 is 4 marks)**

---

**6** $y$ is directly proportional to $x$.
$y = 24$ when $x = 1.5$
Work out the value of $y$ when $x = 5$

$y \propto x$ 1 mark

$y = kx$

$24 = k \times 1.5$

$k = \frac{24}{1.5} = 16$

so $y = 16x$

$y = 16 \times 5$

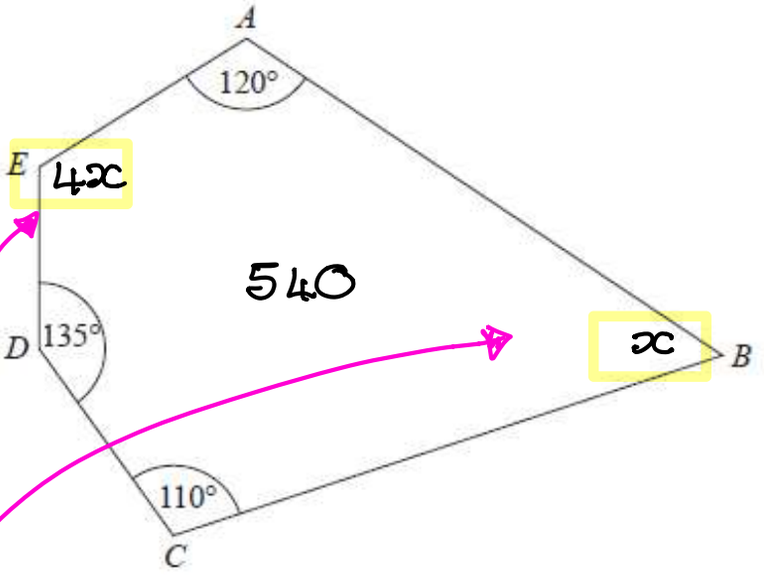
$= 80$ 1 mark

Final mark 80

$y =$ .....

**(Total for Question 6 is 3 marks)**

**7** Here is a pentagon.




120
+ 135
110
365

Angle $AED$ = 4 × angle $ABC$

Work out the size of angle $AED$.
You must show all your working.

3 sides = 180
4 sides = 360
5 sides = 540

1 mark

1 mark for using the ratio 1:4

$5x + 365 = 540$ 1 mark

$5x = 540 - 365$

$= 175$

$x = \frac{175}{5}$

$= 35$ 1 mark

$AED = 4x = 4 \times 35$

$= 140$

Final mark 140 °

**(Total for Question 7 is 4 marks)**

1 mark for one correct region

2 marks for two or three correct regions

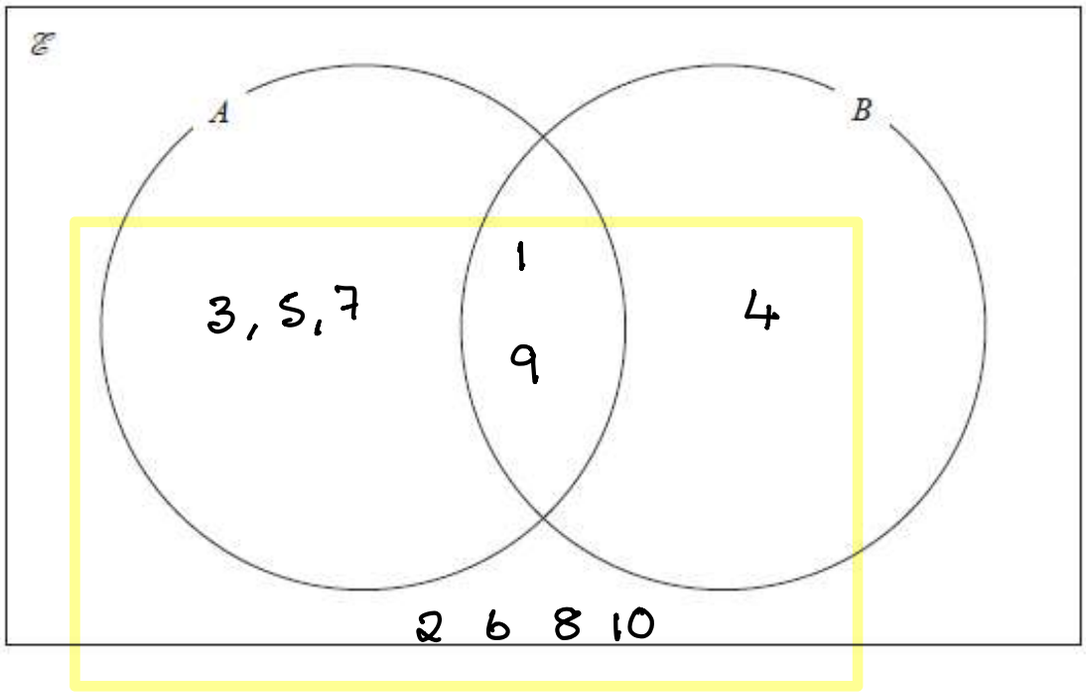
3 marks for all correct

***8** $\mathscr{E}$ = {1, 2, 3, 4, 5, 6, 7, 8, 9, 10}

$A$ = {odd numbers}

$B$ = {square numbers}

(*a*) Complete the Venn diagram for this information.




**(3)**

A number is chosen at random from the universal set $\mathscr{E}$

(*b*) Find the probability that this number is in the set $B'$ NOT $B'$

2 marks

$\frac{7}{10}$

.....

**(2)**

**(Total for Question 8 is 5 marks)**

1 mark can be given for

$\frac{a}{10}$ 'a' must be between 0 and 10 or

$\frac{7}{b}$ 'b' must be greater than 7

or

7:10

***9** The diagram shows a solid cylinder on a horizontal floor.


$$\text{pressure} = \frac{\text{force}}{\text{area}}$$

Volume = area × 40

so

1200 = area × 40

area = $\frac{1200}{40}$ = 30 cm$^2$

The cylinder has a

volume of 1200 cm$^3$ 1 mark

height of 40 cm.

The cylinder exerts a force of 90 newtons on the floor.

Work out the pressure on the floor due to the cylinder.

Pressure = ? = P

force = 90 N

Area = 30cm$^2$

$P = \frac{90}{30}$ 1 mark

$= \frac{9}{3} = 3$

3 Final mark

..... newtons/cm$^2$

**(Total for Question 9 is 3 marks)**

---

**TOTAL FOR PAPER IS 32 MARKS**