Mark scheme

GCSE AQA Foundation Tier Paper 2 & 3 Likely Topics - 2025

Question 1

2 hours + 25 minutes + 9 minutes= 2 hours and 34 minutes

Question 2

4:14

① Count forward in whole hours.



⁽²⁾ Count forward in minutes to the next whole hour.



③ Count forward the remaining minutes to the end time.



④ The show finishes at 4 14 pm.

Question 3

68 cm , 990 mm , 6900 m

Question 4

100ml

Question 5

9 50

① Write the decimal as a fraction with the denominator as a power of 10.

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1.6kg

Question 7

0.12

Question 8

1.45

Question 9

148% , 1.72 , $\frac{31}{20}$, $\frac{171}{100}$

① Convert all numbers to decimals.

$$148\% = 1.48$$
$$\frac{171}{100} = 1.71$$
$$\frac{1.72}{\frac{31}{20}} = 1.55$$

^② Put in order.

1.48 (148%) < 1.55 $\left(\frac{31}{20}\right)$ < 1.71 $\left(\frac{171}{100}\right)$ < 1.72

Question 10

7*y*

 \bigcirc Collect terms in y.

3y + 11y - 7y = 7y

Question 11

5x + 2y

Question 12

 $-x^4 + 12p$

x =9.5cm

① Label the sides.



O Decide the trigonometric ratio to use.

SOH CAH T**OA** Therefore we use tan

③ Write an equation and solve.

$$\tan(\theta) = \frac{\theta}{A}$$
$$\tan(40) = \frac{\theta}{x}$$
$$x = \frac{\theta}{\tan(40)}$$
$$= 9.5 \text{ cm}$$

Question 14

28.6cm

 θ =50.2 $^{\circ}$

① Label the sides.



② Decide the trigonometric ratio to use.

SOH CAH T**OA** Therefore we use tan

③ Write an equation and solve.

$$\tan(\theta) = \frac{\theta}{A}$$
$$\tan(\theta) = \frac{6}{5}$$
$$\theta = \tan^{-1}\left(\frac{6}{5}\right)$$
$$= 50.2^{\circ}$$

x =50.2 °

Use Pythagoras' Theorem to find the height of the triangle.



$$a^{2} + b^{2} = c^{2}$$

 $3^{2} + 4^{2} = h^{2}$
 $h = \sqrt{3^{2} + 4^{2}}$
 $h = 5 \text{ cm}$

② Label the sides.



③ Decide the trigonometric ratio to use.

SOH CAH T**OA** Therefore we use tan

④ Write an equation and solve.

$$\tan(\theta) = \frac{\theta}{A}$$
$$\tan(x) = \frac{6}{5}$$
$$x = \tan^{-1}\left(\frac{6}{5}\right)$$
$$= 50.2^{\circ}$$

Question 17

73km/h



14.9miles

Question 19

03

:

18

Question 20

Rat

Question 21

Total = $640 \div 8$ = 80 metres

Question 22

52.8%

① Write the proportion as a fraction, and convert it to a percentage.

 $\frac{56}{106} \times 100 = 52.8\%$

Question 23

 $20p^2 + 16p$

1 Multiply all terms in the bracket by 4p, and then simplify.

 $4p(5p+4) = 4p \times 5p + 4p \times 4$ $= 20p^2 + 16p$

Question 24

7a - 15

① Expand both brackets.

2(5a-3) - 3(a+3) = 10a - 6 - 3a - 9

② Collect like terms.

$$10a - 6 - 3a - 9$$

= 7a - 15

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① Calculate the first 4 terms by substituting the position numbers into the *n*th term formula.

1st term = $5 \times 1 + 3 = 8$ 2nd term = $5 \times 2 + 3 = 13$ 3rd term = $5 \times 3 + 3 = 18$ 4th term = $5 \times 4 + 3 = 23$

Question 26

7n - 3

① Find the common difference.



O The common difference is +7, so we consider the sequence with *n*th term of 7*n*.

7,14,21,28, ...

③ The first term of the sequence with this formula is n, but the first term of the original sequence is 4. So an adjustment of -3 is required.

Therefore, the *n*th term is 7n - 3.

102 is in the sequence

① Find the common difference.

$$10 \underbrace{14}_{+4} \underbrace{14}_{+4} \underbrace{18}_{+4} \underbrace{22}_{+4}$$

O The common difference is +4, so we consider the sequence with *n*th term of 4*n*.

4,8,12,16, ...

③ The first term of the sequence with this formula is 4, but the first term of the original sequence is 102. So an adjustment of +6 is required.

Therefore, the *n*th term is 4n + 6.

④ Equate the *n*th term formula with the value 102 and solve for *n*.

4n + 6 = 102 $-6 \downarrow \downarrow -6$ 4n = 96 $\div 4 \downarrow \downarrow \div 4$ n = 24

n is an integer, therefore 102 is in the sequence.

Question 28

```
7
9
```

Question 29

360female white rhino

1 Share 800 in the ratio 3:2

```
3:2 = 5 \text{ parts}
× 160↓ ↓ × 160
480: 320 = 800
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 \bigcirc Find $\frac{1}{4}$ of 480.

$$480 \times \frac{1}{4} = 120$$

 \bigcirc Subtract 120 from 480.

480 - 120 = 360

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MO, MW, CG, CO, CW

Question 31

120

Question 32

£566.25

0 Find the percentage multiplier.

$$\frac{3.75}{100} = 0.0375$$

② Apply the multiplier.

 $3775 \times 0.0375 \times 4 = 566.25$

Question 33

14, 28, 42

① Find the multiples.

 $14 \times 1 = 14$ $14 \times 2 = 28$ $14 \times 3 = 42$

Question 34

1, 2, 4, 7, 14, 28

0 Find all the numbers that go into 28 exactly.

<u>1</u>, <u>2</u>, 3, <u>4</u>, 5, 6, <u>7</u>, 8, 9, 10, 11, 12, 13, <u>14</u>, <u>28</u>

Question 35

7

13

0 Subtracting -8 is equivalent to adding 8

$$5 - (-8) = 5 + 8$$

= 13

Question 37

x = 5

① Add 5 to both sides get x by itself.

$$\begin{array}{rcl} x & -5 & = & 0 \\ & +5 \downarrow & \downarrow & +5 \\ & x & = & 5 \end{array}$$

Question 38

7*b* – 9

① Subtract 9 from both sides to isolate *a*.

$$a + 9 = 7b$$

$$-9 \downarrow \qquad \downarrow -9$$

$$a = 7b - 9$$

Question 39

 $\frac{2}{5y}$

① Multiply both sides by 5x

$$y = \frac{2}{5x}$$

$$\times 5x \downarrow \qquad \downarrow \qquad \times 5x$$

$$5yx = 2$$

O Divide both sides by 5y

$$5yx = 2$$

$$5y \downarrow \qquad \downarrow \quad \div 5y$$

$$x = \frac{2}{5y}$$



 $77.5 \le y < 78.5$

To find the lower bound you can subtract half the accuracy, $0.5,\,\mathrm{from}$ the rounded number.

To find the upper bound you add half the accuracy.

Lower bound = 78 - 0.5 = 77.5

Upper bound = 78 + 0.5 = 78.5

Therefore the error interval is: $77.5 \le y < 78.5$

Question 41



Question 42

5.7grams

Add all the values.

9 + 4 + 4 + 10 + 9 + 2 + 2 + 4 + 7 = 51

② Divide by the number of values.

$$51 \div 9 = 5.6667 \dots$$

= 5.7 (to 1 dp)



Question 44

$$\frac{1}{2} \times \text{base} \times \text{height}$$
$$= \frac{1}{2} \times 8 \times 7$$
$$Area = 28 \text{ cm}^2$$

Question 45

z = 2 cm

Question 46

5*x*

Question 47

56*px*

Question 48

\$51.66

0 Split the pentagon into a rectangle and two congruent right-angled triangles each with base.



^② Use Pythagoras' theorem to find the height of one of the right-angled triangles.



③ Find the area of one of these right-angled triangles.

$$Area = \frac{1}{2} \times b \times h$$
$$= \frac{1}{2} \times 5 \times 9.798 \dots$$
$$= 24.4949 \dots$$

④ Find the total area of the pentagon by combining a rectangle and two right-angled triangles.

Total area =
$$10 \times 9 + 2 \times 24.4949 \dots$$

= $90 + 48.9898 \dots$
= $138.9898 \dots m^2$

⑤ Divide the total area by the amount covered by one can of paint and round this answer **up** to the nearest whole number.

$$138.9898 \dots \div 18 = 7.7217 \dots$$

number of cans = 8

Question 50

a = 34, b = 30, c = 26, d = 10

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Question 51 4.1033

Question 52

12bags

Question 53

6⁵

0 When dividing powers, subtract the indices/exponents.

$$6^7 \div 6^2 = 6^{7-2} = 6^5$$

Question 54

 $15^0 = 1$

Question 55

z + 10

Question 56

44.6

Height (^z cm)	Frequency	fz
$35 < z \ \leq \ 40$	3	$37.5 \times 3 = 112.5$
$40 < z \le 45$	3	$42.5 \times 3 = 127.5$
$45 < z \le 50$	7	$47.5 \times 7 = 332.5$
$50 < z \le 55$	1	$52.5 \times 1 = 52.5$
Total	14	625

Therefore the mean is $\frac{625}{14} = 44.6$

134 to 142cm



An estimate for their weight is 138 kg.

Question 58

2.5cm

Question 59

y =311°

Question 60

(8,8)

Question 61

y = 4

0 Reverse the second operation (+ 2).

 $16 \div 2 = 8$

(Could not load Desmos image)

O Reverse the first operation (- 4).

$$8 - 4 = 4$$

Question 62

3458

343 [°]

① Sketch a diagram of the two points, extending the line between the two points. The bearing to find is labelled x.



② Since corresponding angles are equal, angle $a = 163^{\circ}$.

а

③ Find the bearing of Z from Y.

bearing = 180 + 163= 343°

(Note that it is possible simply to add or subtract 180° from the original bearing to find the bearing in the opposite direction.)

Question 64

66°

Question 65

45 minutes

From 16:05 to 16:50 is 45 minutes.

6people

The sector for walk is $\frac{36}{360}$ of the whole circle, which simplifies to $\frac{1}{10}$

Therefore $\frac{1}{10} \times 60 = 6$

Question 67

b = 9

0 Subtract 1 from both sides.

$$37 = 4b + 1$$

$$-1 \downarrow \qquad \downarrow -1$$

$$36 = 4b$$

O Divide both sides by 4.

③ Conclude that b = 9.

Question 68

$$b = -\frac{3}{2}$$

Expand the brackets.

$$4(3b-1) = 8b-10$$

 $\Rightarrow 12b-4 = 8b-10$

O Solve the equation.

$$12b - 4 = 8b - 10$$

$$-8b \downarrow \quad \downarrow \quad -8b$$

$$4b - 4 = -10$$

$$+4 \downarrow \quad \downarrow \quad +4$$

$$4b = -6$$

$$\div 4 \downarrow \quad \downarrow \quad \div 4$$

$$b = -\frac{3}{2}$$

x	-3	-2	-1	0
у	-6	-5	-2	3

① Substitute each value of x into the equation to find the corresponding values of y, as required.

x	Equation $y = x^2 + 6x + 3$	у
-3	$(-3)^2 + 6(-3) + 3$ = 9 - 18 + 3	-6
-2	y value given	-5
-1	$(-1)^2 + 6(-1) + 3$ = 1 - 6 + 3	-2
0	$(0)^2 + 6(0) + 3$ = 0 + 0 + 3	3

② The points can be plotted on a grid to sketch the curve $y = x^2 + 6x + 3$.





5

5mm 2

① As a cube has 6 identical faces, divide by 6 to find the area of each face.

Area = $150 \div 6$ = 25 mm^2

② Square root the area to find the length of the side.

Length = $\sqrt{25}$ = 5 mm

Question 72

32

Question 73

10vertices

Question 74

127

Question 75

 $48 \div (4 + 5 \times 4) = 2$

Question 76

 $x \leq 3$

 $5x - 7 \leq 8$ +7 \lambda +7 $5x \leq 15$ \display 5 \lambda +5 $x \leq 3$

Question 77

4.508 , 4.85 , 4.058 , 4.805 , 4.085

Question 78

y =105°

£12329.62

The multiplier is $\frac{100-2}{100} = 0.98$

 $13100 \times 0.98^3 = 12329.62$

Question 80

35%

① Calculate the total cost.

total cost = 12×80 = £960

② Calculate the total loss.

total loss = 960 - 624= £336

③ Calculate the percentage loss.

$$\% \text{ loss} = \frac{336}{960} \times 100\%$$

= 0.35 × 100%
= 35%

Question 81

6 6

1 Place the median as the central number when the list is in ascending order.

Median = 6

15<mark>6</mark>?7

O Set the remaining number as the required mode so that it is the most common value.

Mode = 6

15667

t = 10 pets

① Calculate the total number of known pets.

9 + 1 + 4 = 14

② Calculate the total pets.

 $\frac{\text{total}_{\text{pets}}}{\text{count}_{\text{families}}} = \text{mean}$ $\text{total}_{\text{pets}} = \text{mean} \times \text{count}_{\text{families}}$ $= 6 \times 4$ = 24

③ Find the difference to work out t.

$$t = 24 - 14$$

= 10 pets

Question 83

10f(4f + 3)

Question 84

(x + 8)(x - 3)

① Set up a sum and product problem to help factorise the expression.

 \odot Find two numbers which add to ~5~ and multiply to ~-24~ .

$$8 + (-3) = 5$$

 $8 \times (-3) = -24$

③ Use these values to rewrite the expression in the form of (x + a)(x + b).

$$x^2 + 5x - 24 = (x + 8)(x - 3)$$

 $25y^{6}$

0 Raise each factor in the bracket to the power of 2

$$(5y^3)^2 = 5^2(y^3)^2$$

= $5^2y^{(3\times 2)}$
= $25y^6$

Question 86



The mirror line is drawn below.





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It is an enlargement scale factor 2 centre (5, 0).

Question 88

9sides

① Find the exterior angles.

 $180 - 140 = 40^{\circ}$

② Use the formula $n = \frac{360}{x}$ where x is the exterior angle.

$$n = \frac{360}{40}$$
$$= 9 \text{ sides}$$

Question 89

£55

0 Find the decimal multiplier for an increase of 20%.

 $\frac{100+20}{100} = 1.2$

O Form and solve an equation to find the original amount, where x is the original quantity.

 $x \times 1.2 = 66$ $x = \frac{66}{1.2}$ = 55

Original price is £ 55

Question 90

113.1cm²

① Substitute into
$$A = \frac{1}{4} \times \pi r^2$$

$$A = \frac{1}{4} \times \pi r^2$$

= $\frac{1}{4} \times \pi \times 12^2$
= 113.1 cm²