For **AQA**

Mathematics

Paper 1 (Non-Calculator)

Foundation Tier

Churchill Paper 1E – Marking Guide

Method marks (M) are awarded for a correct method which could lead to a correct answer

Accuracy marks (A) are awarded for a correct answer, having used a correct method, although this can be implied

(B) marks are awarded independent of method

Written by Shaun Armstrong

Churchill Paper 1E Marking Guide – AQA Foundation Tier

1 4 (5) 8 16 — B1 — Total 1

2 –14.4 –7.2 –1.6 (1.6) — B1 — Total 1

3 $= \frac{12}{60} = \frac{2}{10} = \frac{1}{5}$

$\frac{3}{25}$ $\frac{1}{6}$ ($\frac{1}{5}$) $\frac{1}{4}$ — B1 — Total 1

4 10 + 12 + 12 + 18 + 18 = 70
70 ÷ 5 = 14

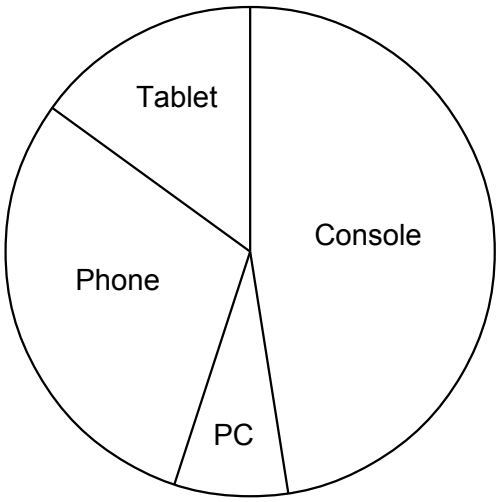
12 13 13.5 (14) — B1 — Total 1

5 **(a)** = 18 ÷ 3 = 6 — B1

(b) 10% of 60 = 60 ÷ 10 = 6
5% of 60 = 6 ÷ 2 = 3 — M1 A1

(c) $\frac{1}{5}$ of 7.5 = 7.5 ÷ 5 e.g. 5 ÷ 5 = 1
2.5 ÷ 5 = 0.5
7.5 ÷ 5 = 1.5 — M1
$\frac{3}{5}$ of 7.5 = 3 × 1.5 = 4.5 — A1 — Total 5

6 360 ÷ 40 = 9 — M1
So 9º represents 1 person
Frequencies: 19 3 12 6
Angles: 171º 27º 108º 54º — M1



M1 A1 — Total 4

7 **(a)** 11 B1

(b) 5 B1

(c) $100^3 = 100 \times 100 \times 100$
$= 1000000$ M1
$=$ one million A1

[Allow 1 million] Total 4

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8 $3 \times 1.2 = 3.6$
$1.6 \div 2 = 0.8$
$3.6 + 0.8 = 4.4$

4.4 4.2 3.8 2.6 B1 Total 1

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9 **(a)** $0.3 + 7x + 2x + 5x = 1$ M1
$14x = 0.7$
$x = 0.7 \div 14$ M1
$x = 0.05$ A1

(b) e.g. P(Yellow) $= 5 \times 0.05 = 0.25$ M1
A probability of 0.3 equates to 12 counters
A probability of 0.1 equates to $12 \div 3 = 4$ counters
A probability of 0.25 equates to $4 + 4 + 2 = 10$ counters M1 A1 Total 6

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10 e.g. Titan could have 3 home wins and 3 losses B1
$(3 \times 7) + (3 \times 0) = 21 + 0 = 21$
Need to find if Epsilon could have won less than 3 times
2 home wins $= 2 \times 7 = 14$ points
$24 - 14 = 10$ points which can't be made without a win M1
2 away wins $= 2 \times 8 = 16$ points
$24 - 16 = 8$ points which can't be made without a win
1 home win and 1 away win $= 7 + 8 = 15$ points
$24 - 15 = 9$ points which is 3 draws M1
Epsilon could have 1 home win, 1 away win, 3 draws and 1 loss
So Titan could have 3 wins and Epsilon 2 wins
Yes, Unaza could be correct A1 Total 4

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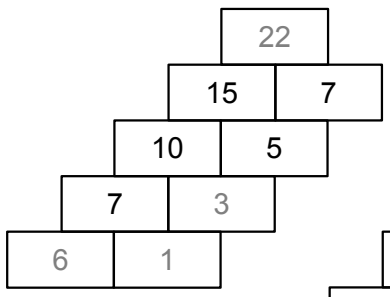
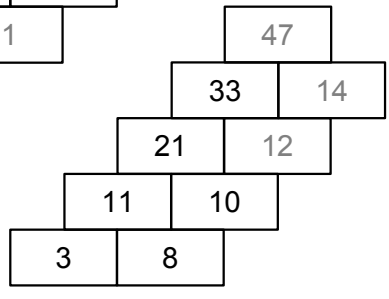
11 **(a)**



B1

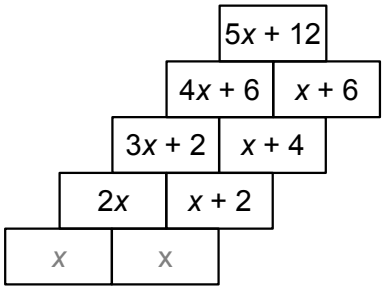
(b)



M1

A1

(c)



M1

M1

$5x + 12$ A1 Total 6

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12 e.g.

C	S	V		
5	:	4	5 : 4 = 15 : 12	
	3	: 2	3 : 2 = 12 : 8	M1

Giving

C	S	V		
15	: 12	: 8	Choc to Vanilla = 15 : 8	M1 A1 Total 3

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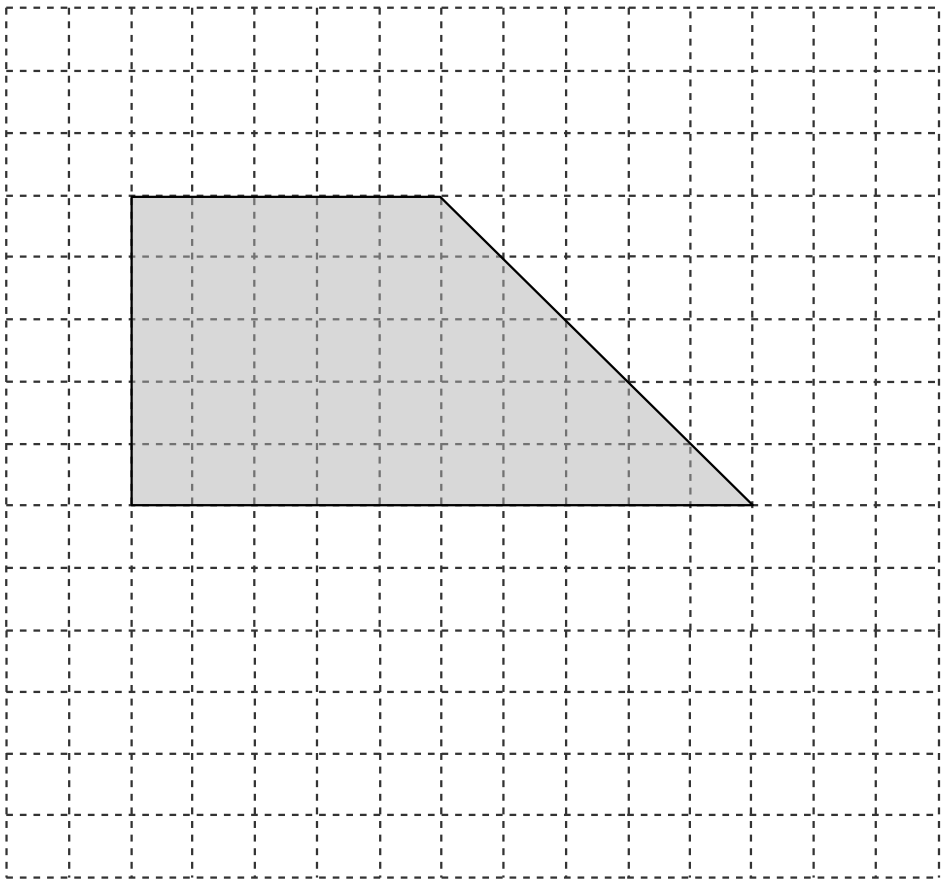
13 **(a)** Trapezium B1

(b) e.g. M1 A1



Total 3

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14 $\frac{3}{5} - \frac{2}{9} = \frac{27}{45} - \frac{10}{45} = \frac{17}{45}$

$-\frac{1}{4}$ $\quad$ $\frac{1}{45}$ $\quad$ $\frac{6}{45}$ $\quad$ $\frac{17}{45}$ $\quad$ B1 $\quad$ Total 1

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15 Fraction of beads in bag that are green = $\frac{5}{8} \times \frac{2}{5}$ $\quad$ M1

$= \frac{10}{40} = \frac{1}{4}$

Fraction of beads in bag that are yellow = $1 - (\frac{2}{5} + \frac{1}{4})$ $\quad$ M1

$= 1 - (\frac{8}{20} + \frac{5}{20})$

$= 1 - \frac{13}{20} = \frac{7}{20}$ $\quad$ M1

Yellow beads as fraction of red beads = $\frac{\left(\frac{7}{20}\right)}{\left(\frac{2}{5}\right)} = \frac{7}{20} \times \frac{5}{2} = \frac{35}{40}$ $\quad [= \frac{7}{8}]$ $\quad$ A1

[Can get full marks with assumed number of beads in bag] $\quad$ Total 4

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16 Volume of cube = $l^3 = 64$

Side of cube = $\sqrt[3]{64} = 4$ cm $\quad$ M1

Length of rod = $9 \times 4 = 36$ cm $\quad$ A1

Side of XS of rod = $4 \div 3 = 1\frac{1}{3}$ cm $\quad$ M1

Dimensions of rod are $1\frac{1}{3}$ by $1\frac{1}{3}$ by 36 cm $\quad$ [or 1.33 cm (3sf)] $\quad$ A1 $\quad$ Total 4

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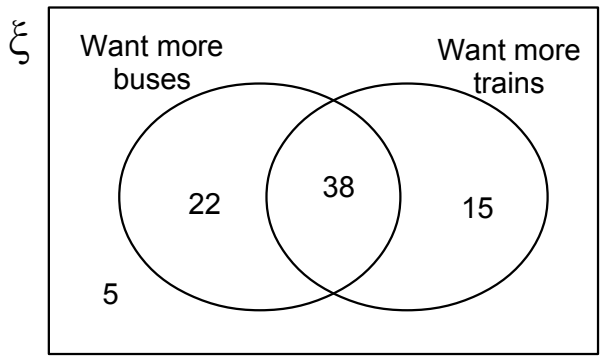
17 **(a)** 60 – 22 = 38 $\quad$ *[Shown on diagram]* $\quad$ M1

53 – 38 = 15

22 + 38 + 15 = 75

80 – 75 = 5 $\quad$ M1



A1

(b) $= \frac{15}{20}$ $\quad [= \frac{3}{4}]$ $\quad$ B1 $\quad$ Total 4

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18 **(a)** e.g. 8 is the last digit of one number being multiplied and 3 is the last digit of the other number. $\quad$ B1

As $8 \times 3 = 24$, 4 must be the last digit of the answer.

The last digit of the given answer is 1 so it must be wrong. $\quad$ B1

(b) $4 \times 6 = 24$, $\quad$ 13804 ends in a 4 so could be correct

$7 \times 8 = 56$, $\quad$ 18632 ends in a 2 so can't be correct $\quad$ M1

$9 \times 5 = 45$, $\quad$ 49375 ends in a 5 so could be correct

$47 \times 388 = 18632$ must be wrong $\quad$ A1 $\quad$ Total 4

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19 **(a)** In the 5th week he will have added 10 minutes on four times — M1
1 hour + 4 × 10 minutes = 1 hour 40 minutes — A1

(b) 2 hours has been added on to the original time
2 hours = 120 minutes = 12 × 10 minutes — M1
He spends 3 hours in the 13th week of the year — A1

(c) In 52nd week he'd spend 1 hour + 51 × 10 minutes — M1
51 × 10 minutes = 510 minutes
510 minutes = 510 ÷ 60 hours = 8.5 hours
In 52nd week he'd spend 1 + 8.5 = 9.5 hours on the treadmill
There are 24 × 7 = 168 hours in a week — M1
Naz is wrong, 9.5 hours is less than a tenth of the hours in a week — A1 — Total 7

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20 $1 - \frac{3}{8} = \frac{5}{8}$ of income not on rent
$1 - \frac{6}{11} = \frac{5}{11}$ of rest of income is saved — M1
Fraction saved = $\frac{5}{11} \times \frac{5}{8} = \frac{25}{88}$ — M1 A1 — Total 3

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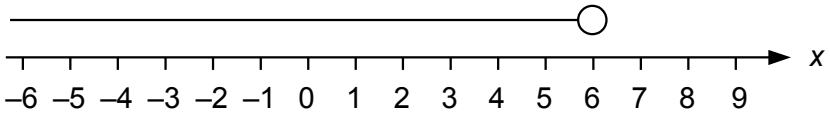
21 **(a)** $\frac{1}{2}x + 9 > 3x - 6$
$\frac{1}{2}x + 15 > 3x$
$x + 30 > 6x$ — M1
$30 > 5x$
$x < 6$ — A1

(b) 

B1 — Total 3

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22 **(a)** e.g. Base = 9 cm²
Sides of 1st layer = 12 cm²
Top of 1st layer = 8 cm² — M1
Sides of 2nd layer = 4 cm²
Top of 2nd layer = 1 cm²
Total = 9 + 12 + 8 + 4 + 1 = 34 cm² — A1

(b) e.g. Pressure = $\frac{\text{force}}{\text{area}}$
The weight of the shape is the same so the force is the same
The area of contact was 9 cm² but is now 1 cm² — M1
The force on 1 cm² is 9 times what is was before
The pressure will be 9 times as large
Pressure = 9 × 800 = 7200 N/m² — A1 — Total 4

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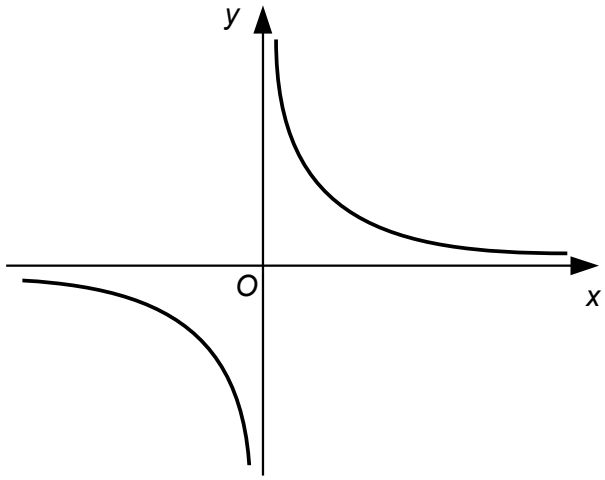
23 **(a)**



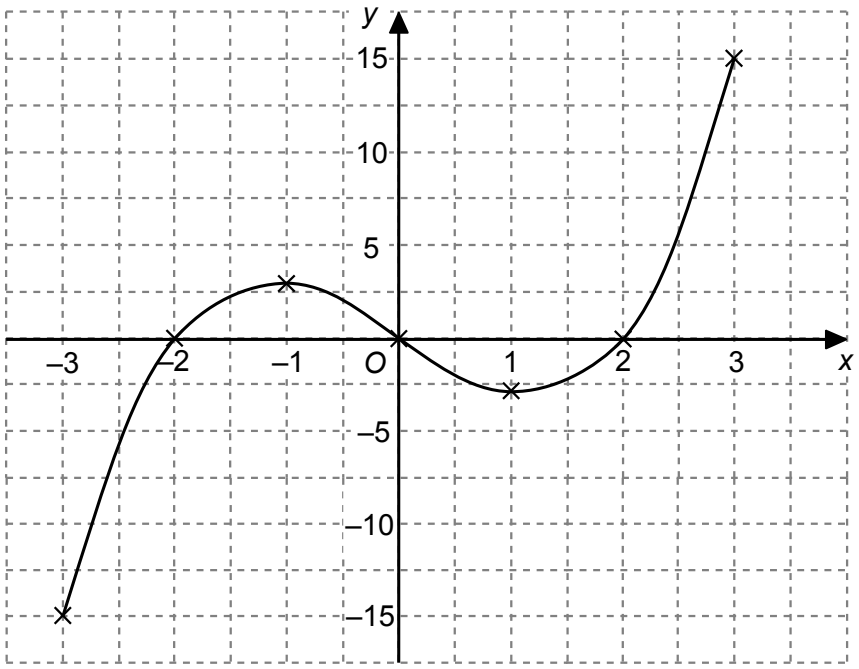
B1

(b)

x	–3	–2	–1	0	1	2	3
$x^3 - 4x$	–15	0	3	0	–3	0	15

B1

(c)



M1 A1

Total 4

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24 **(a)** 4 hours = 4 × 60 minutes = 6 × 40 minutes
Doubling 6 times = × 2^6 = × 64
64 × $\frac{3}{4}$ million = 48 million

12 million 24 million (48 million) 96 million B1

(b) Each year the previous year's value is multiplied by 0.63
So new value = 63% of previous value
Annual % decrease = 100 – 63 = 37%

0.63% (37%) 50.4% 63% B1 Total 2

TOTAL FOR PAPER: 80 MARKS