For **AQA**

Mathematics

Paper 2 (Calculator)

Foundation Tier

Churchill Paper 2E – 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

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Churchill Paper 2E Marking Guide – AQA Foundation Tier

1 0.03 0.030 (0.031) 0.04 B1 Total 1

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2 = 5 × 6 + 8 = 30 + 8 = 38

19 (38) 53 70 B1 Total 1

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3 $\frac{3}{4}$ m = 0.75 m = 75 cm = 750 mm

7.5 75 (750) 75 000 B1 Total 1

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4 = $p^2 + p^2 = 2p^2$

($2p^2$) $3p^2$ $2p^3$ p^4 B1 Total 1

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5 **(a)** 10% of 220 = 220 ÷ 10 = £22
70% of 220 = 7 × 22 = £154 B1

(b) $\frac{1}{3}$ of £4.20 = £4.20 ÷ 3 = £1.40 M1
£4.20 + £1.40 = £5.60 A1

(c) Decrease = 400 – 310 = £90
% decrease = $\frac{90}{400}$ × 100% M1
= $\frac{90}{4}$ % = $\frac{45}{2}$ % = 22.5% A1 Total 5

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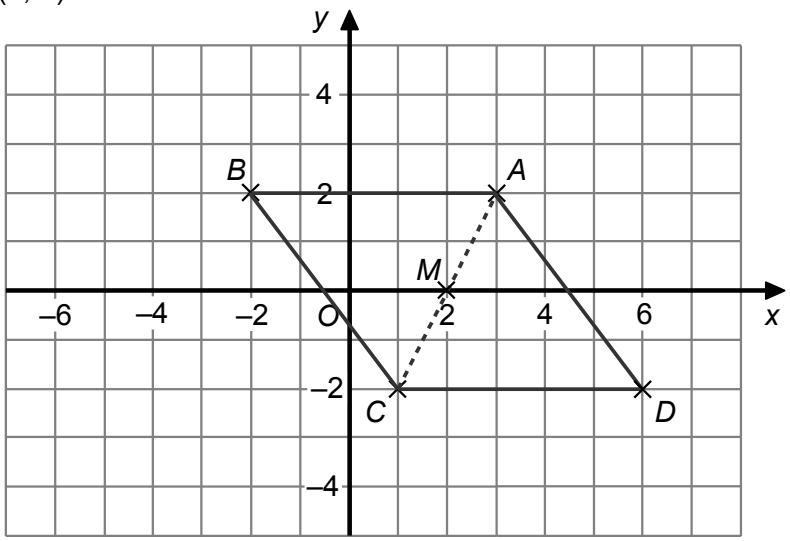
6 **(a)** (3, 2) B1

(b)



B1

(c) (6, –2) M1 A1

(d) (2, 0) B1 Total 5

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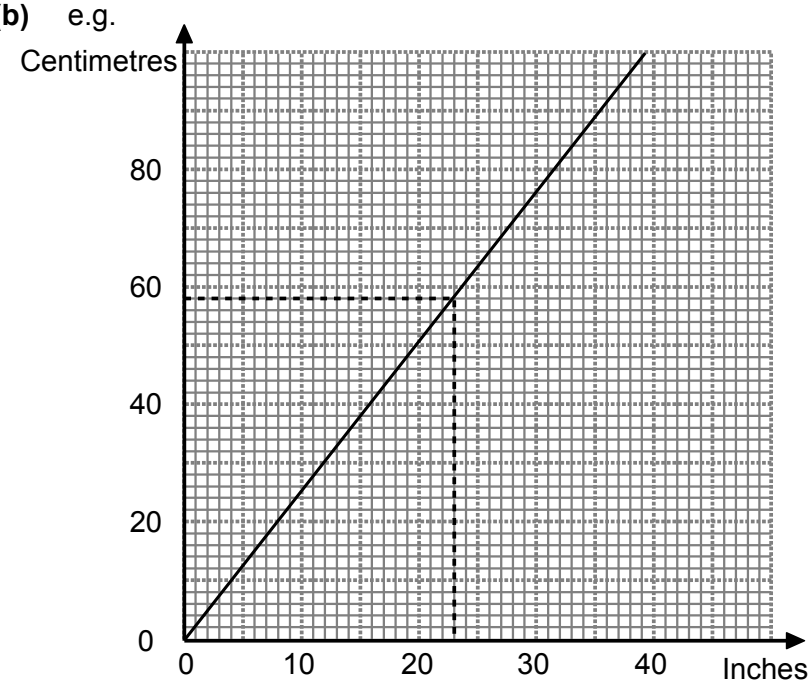
7 **(a)** = 30 × 2.54 = 76.2 cm B1

(b) e.g.



M2 A1

(c) ≈ 23 inches B1

[Calculation gives 22.8346... so e.g. 22.83 is B0] Total 5

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8 **(a)** $\frac{3}{12}$ [= $\frac{1}{4}$] B1

(b) $\frac{6}{12}$ [= $\frac{1}{2}$] B1

(c) $\frac{4}{12}$ [= $\frac{1}{3}$] B1

(d) $\frac{9}{12}$ [= $\frac{3}{4}$] B1 Total 4

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9 **(a)** 142 ÷ 2 = £71 M1
71 ÷ 5 = £14.20 M1 A1

(b) 1.25 litres = 1250 ml
1250 – 400 = 850 ml poured out M1
850 ÷ 3 = 283.33.... M1
283 ml (3sf) was poured into each glass A1 Total 6

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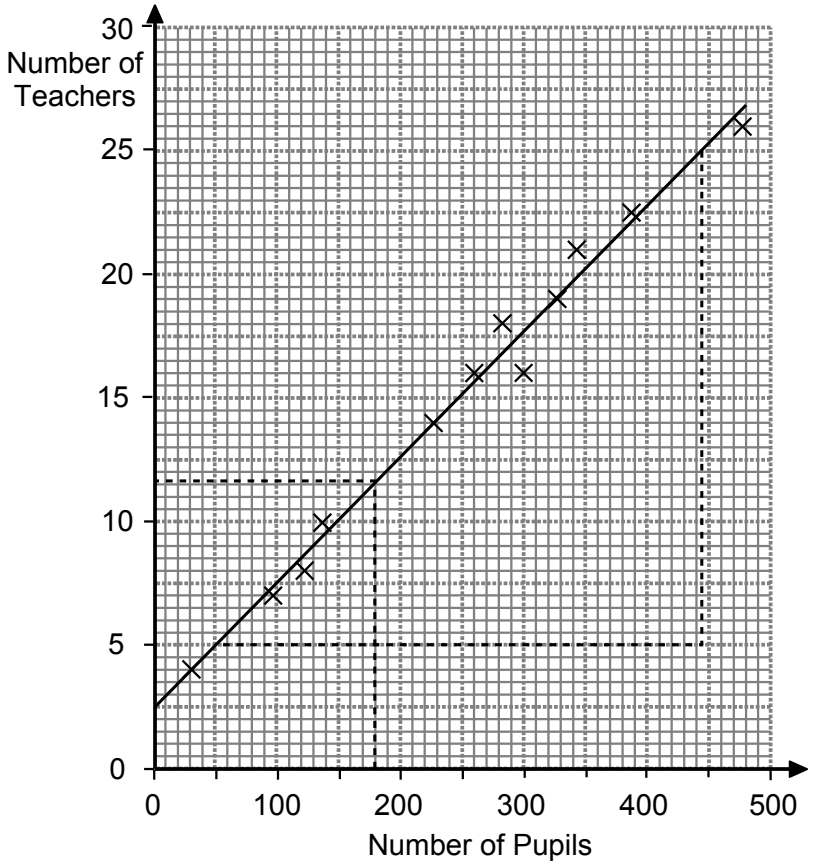
10 **(a)** ≈ 300 – 260 = 40 B1

(b)



M1

≈ 12 teachers (from line of best fit, nearest whole number) A1 Total 3

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11 **(a)** 180 – 2 × 31 = 180 – 62 = 118º
a = 360 – 118 = 242º

62º 118º 222º 242º B1

(b) External angle of regular octagon = 360 ÷ 8 = 45º
External angle of regular hexagon = 360 ÷ 6 = 60º
b = 45 + 60 = 105º

95º 105º 111º 115º B1 Total 2

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12 **(a)** Ratio = 4 : 8 = 1 : 2 B1

(b) 3 + 4 + 8 = 15
300 ÷ 15 = £20 M1
3 × £20 = £60 A1 Total 3

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13 11 am to 4.30 pm = 1 + 4.5 = 5.5 hours
5 × 5.5 = 27.5 hours M1
27.5 × £11.60 = £319 for Monday to Friday
379.90 – 319 = £60.90 for Saturday M1
1.5 × £11.60 = £17.40 per hour on Saturday M1
60.90 ÷ 17.40 = 3.5 hours on Saturday
10 am to 12 noon = 2 hours
Younis finished at 1.30 pm on Saturday A1 Total 4

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14 e.g. 20% off is $\frac{1}{5}$ off

Buy 2 get 1 half price means he would pay $2\frac{1}{2}$ times the usual price for 3 packets — M1

The fraction of full price he pays is $\frac{2\frac{1}{2}}{3} = \frac{5}{6}$

The discount is $\frac{1}{6}$ — M1

$\frac{1}{5}$ is larger than $\frac{1}{6}$ so 20% off is better value — A1

[Can get full marks with an assumed price and suitable words] — Total 3

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15 e.g. If the number is 18, × by 2 will increase it by 18 which is too much
Likewise any number bigger than 18 will increase by more than 18 when it is multiplied by 2

So, the number is 17 or less — B1

If the number is 15, ÷ by 3 gives 5 so it has decreased by 10 — M1
Any number less than 15 will decrease by less than 10

If the number is 16, ÷ by 3 gives $5\frac{1}{3}$ so it has decreased by $10\frac{2}{3}$

If the number is 17, ÷ by 3 gives $5\frac{2}{3}$ so it has decreased by $11\frac{1}{3}$ — M1

So the number is 17 or more

Putting them together, the number is 17 — A1

[Setting up inequalities is obviously fine!] — Total 4

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16 **(a)** The mean — B1

e.g. There is no prize of 50p so that cannot be the mode.
With 5 values, the median will be the 3rd value (in order) and as there is no prize of 50p the median cannot be 50p. — B1

(b) e.g. He has assumed the ball is equally likely to go through each of the gates. — B1

(c) e.g. To go through the outer gates the ball has to move quite a bit to the side. Hence the ball is less likely to go through the outer gates and his assumption is not reasonable. — B1

The outer gates win the bigger prizes so the true mean prize will be considerably less (and almost certainly less than the 40p it costs for a roll!) — B1 — Total 5

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17 **(a)** $= x^2 - x - 5x + 5$
$= x^2 - 6x + 5$

(circled) $x^2 - 6x + 5$ $x^2 - 6x - 5$ $x^2 - 4x + 5$ $x^2 - 5x + 6$ — B1

(b) $(x - 1)(x + 10)$ $(x + 2)(x - 5)$

$(x - 2)(x - 5)$ (circled) $(x - 2)(x + 5)$ — B1 — Total 2

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18 e.g.

2	×	3	=	6		B1
Prime number		Prime number		Even number		
20	÷	4	=	5		B1
Multiple of 4		Even number		Prime number		
5	+	11	=	16		B1
Prime number		Prime number		Square number		
23	–	9	=	14		B1
Odd number		Square number		Multiple of 7		

[There are lots of correct answers for each one] Total 4

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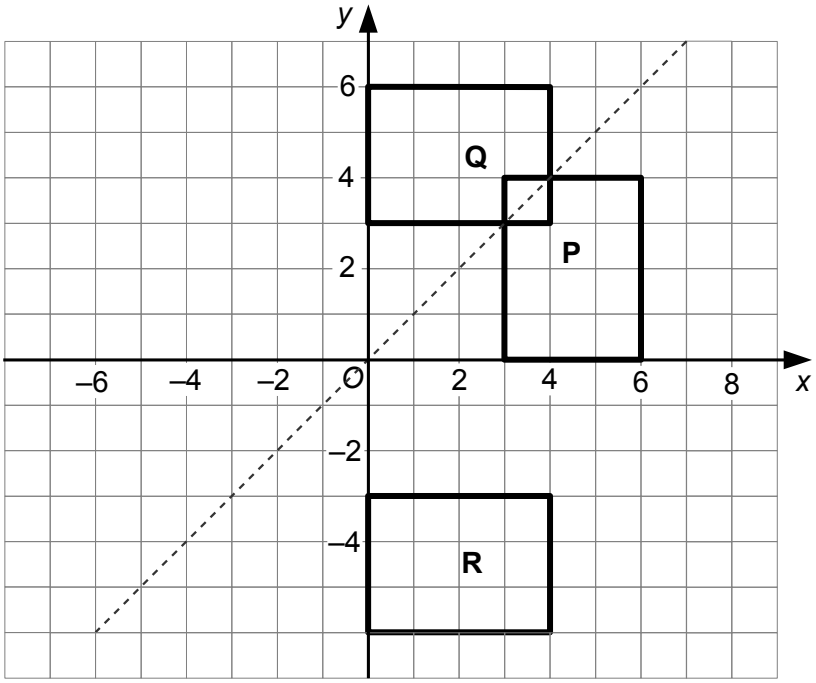
19 **(a)**



M1 A1

(b) Rotation by 90º clockwise about the point (0, 0) M2 A1 Total 5

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20 A kite has two pairs of equal sides

Here: $2p + 2 = 3p - 3$ M1

$2p + 5 = 3p$

$5 = p$ A1

So, $2p + 2 = 2 \times 5 + 2 = 12$

Each half of kite is a right-angled triangle

Base = $2p + 2 = 12$ cm and perpendicular height = $p = 5$ cm

Area of half of kite = $\frac{1}{2} \times 5 \times 12 = 30$ cm^2 M1

Area of kite = $2 \times 30 = 60$ cm^2 A1 Total 4

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21 **(a)** Pythagoras' with c = hypotenuse

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

$a^2 + 8.6^2 = 9.7^2$

$a^2 + 73.96 = 94.09$

$a^2 = 94.09 - 73.96 = 20.13$ M1

$a = \sqrt{20.13} = 4.4866...$

$= 4.49$ cm (3sf) A1

(b) $\sin\theta = \frac{\text{opp}}{\text{hyp}}$

$\sin b = \frac{6.7}{8.1} = 0.82716...$ M1

$b = \sin^{-1} 0.82716... = 55.808...$

$= 55.8°$ (3sf) A1 Total 4

22

	$x + y = 1.5$	(1)	
	$4x - 3y = 13$	(2)	
$3 \times$ (1)	$3x + 3y = 4.5$	(3)	M1
(2) + (3)	$7x = 17.5$		M1
	$x = 17.5 \div 7 = 2.5$		
Sub (1)	$2.5 + y = 1.5$		M1
	$y = 1.5 - 2.5 = -1$		A1
So $x = 2.5$, $y = -1$			Total 4

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23 **(a)** $y \propto \frac{1}{x}$

$y = \frac{k}{x}$

When $x = 240$, $y = 2$ so $2 = \frac{k}{240}$ M1

$k = 240 \times 2 = 480$

Hence, $y = \frac{480}{x}$ A1

(b) $y = \frac{480}{30}$ M1

$y = \frac{48}{3} = 16$ as required A1 Total 4

TOTAL FOR PAPER: 80 MARKS