

For **AQA**

Mathematics

Paper 2 (Calculator)

Foundation Tier

Churchill Paper 2D – 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 2D Marking Guide – AQA Foundation Tier

1 0.02 0.03 0.025 0.026 B1 Total 1

2 $13 \times 17 \times 31 = 6851$
 221 403 527 6851 B1 Total 1

3 $1\frac{1}{2} \times 100\% = 150\%$
 0.015% 50% 150% 1500% B1 Total 1

4 (a) 16, 32, 64, 128
 64 80 128 196 B1
 (b) $19 - 7 = 12$
 Common difference = $12 \div 3 = 4$
 6th term = $19 + 4 + 4 = 27$ M1
 A1 Total 3

5 (a)

5			
2	1	1	2
4			

 B1
 (b) e.g.

8			
3	4	5	11
6			

[Any two prime numbers except 2] B1
 (c)

2			
3	6	4	1
5			

[1 mark if two correct] B2
 Total 4

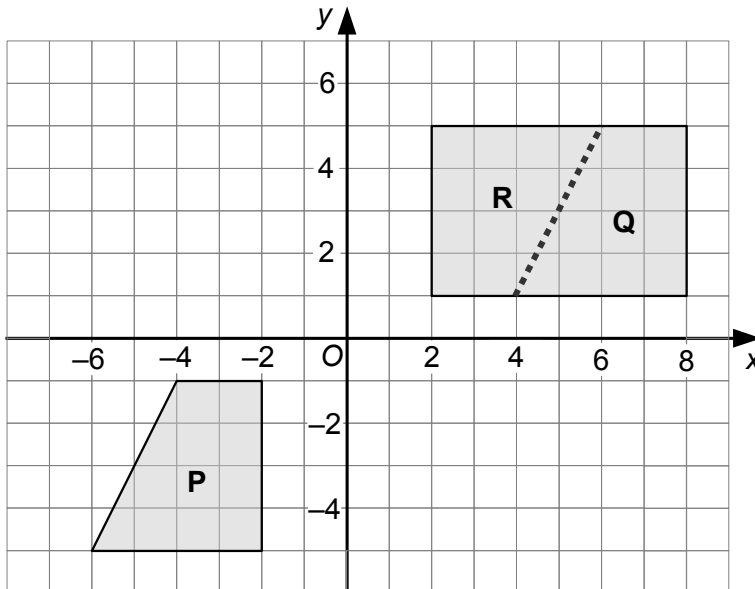
6 (a) $m = 20 \div 5 = 4$ B1
 (b) $q = 3 + 2 = 5$ B1
 (c) $3 \times 3.5 = 10.5$
 $2 \times (-2) = -4$
 $3x - 2y = 10.5 - (-4)$
 = $10.5 + 4$
 = 14.5 M1
 A1 Total 4

7	(a)	1 small square = $5000 \div 10 = 500$ Day 1 = 21,000; Day 2 = 15,500; Day 3 = 14,000 Total = $21,000 + 15,500 + 14,000 = 50,500$	M1 A1	
	(b)	The number of new views is decreasing over time	B1	
	(c)	No e.g. The number of views is likely to go on decreasing but to flatten out rather than become zero suddenly	B1	Total 4
8		Total spend = $400 + 120 + 320 = \text{£}840$	M1	
		To make $\text{£}200$ profit he must receive $840 + 200 = \text{£}1040$	M1	
		Number of tickets = $1040 \div 6 = 173.33\dots$	A1	
		He must sell at least 174 tickets		Total 3
9		10% of 300 = 30	M1	
		5% of 300 = $30 \div 2 = 15$		
		$\frac{1}{15}$ of 300 = $300 \div 15 = 20$		
		No. watching last event = $300 - 15 - 20 = 265$	M1 A1	Total 3
10	(a)	$= 2m + 6 - 3m$ $= 6 - m$	M1 A1	
	(b)	$6ab^2$	B1	
	(c)	y^6	B1	Total 4
11	(a)	e.g. 100 g costs $\text{£}2.30 \div 2 = \text{£}1.15$ 500 g costs $5 \times \text{£}1.15 = \text{£}5.75$	M1 A1	
	(b)	e.g. 10 g costs $\text{£}4 \div 24 = 16.666\dots p$ 420 g costs $42 \times 16.666\dots p = 700 p = \text{£}7$	M1 A1	Total 4
12	(a)	519 mm = 51.9 cm 0.08 m = 8 cm 48 cm = 48 cm 0.409 m = 40.9 cm	M1	
		Order: 0.08 m, 0.409 m, 48 cm, 519 mm	A1	
	(b)	$205 \leq W < 215$	B1	Total 3
13		$= y^2 - 4y + 3y - 12 = y^2 - y - 12$		
		$y^2 - y - 12$ $y^2 - 7y - 12$		
		$y^2 - 12y - 1$ $y^2 + y + 12$	B1	Total 1

- 14 (a) Total = $10 + 5 + 3 + 2 = 20$
 $P(\text{not blue}) = \frac{15}{20} \quad [= \frac{3}{4}]$ B1
- (b) With 3 green there would need to be 9 red
 There are already 10 red so at least 1 green is added M1
 With 4 green there would need to be 12 red
 Minimum is 1 green and 2 red so 3 discs A1 Total 3

- 15 (a) e.g. She has assumed that the cost is directly proportional to the number of hours the room is hired for B1
[Don't need to use words directly proportional]
- (b) 2 hours at £5 per hours cost £10
 Syed paid £25 so fixed amount = $25 - 10 = £15$ M1
 Tilly paid £50 so $50 - 15 = £35$ after the fixed cost
 No. of hours = $35 \div 5 = 7$ hours M1 A1 Total 4

16



- (a) $\begin{pmatrix} 10 \\ 6 \end{pmatrix}$ B2
- (b) 180° rotation about $(0, 0)$ M1 A1 Total 4

- 17 2 : 3 2 : 5 2 : 7 3 : 5 B1 Total 1

- 18 e.g. 16 ounces = 1 pound
 1 ounce = $\frac{1}{16}$ pound
 10 ounces = $\frac{10}{16}$ pound = 0.625 pound M1
 1 kg = 1000 g
 2.2 pounds = 1000 g
 1 pound = $1000 \div 2.2 = 454.54\dots$ g M1
 10 ounces = $0.625 \times 454.54\dots$ g
 = 284.09... g = 284 g (3sf) A1 Total 3
-

- 19 (a) e.g. The new wall is twice as long
 So: 3 people would take $5 \times 2 = 10$ hours
 1 person would take $3 \times 10 = 30$ hours
 5 people would take $30 \div 5 = 6$ hours
 4 hours 6 hours 8 hours 12 hours B1
 (b) e.g. That everyone works at the same rate B1
 That a higher wall isn't more difficult to build B1 Total 3
-

- 20 $\sqrt{x^4} = \sqrt{x^2 \times x^2} = x^2$
 $x^{-4} \quad x^{-2} \quad x^2 \quad x$ B1 Total 1
-

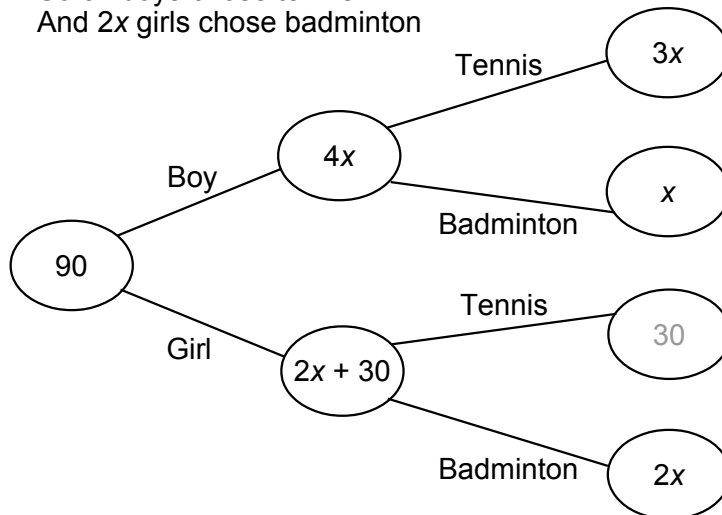
- 21 e.g. There are 2 portions of 5p coins and 1 portion of 20p coins
Net effect of "swap" is for 1 portion of 5p coins to become 20p
 For each 5p that becomes 20p the gain is 15p M1
 £6 $\rightarrow 600 \div 15 = 40$ lots of 15p M1
 So 1 portion is 40 coins and we have 3 portions
 Total no. of coins = 120 A1

[OR e.g. Let no. of 20p coins = x , so no. of 5p coins = $2x$
 Value in pence = $20x + 5 \times 2x = 30x$
 Value after "swap" = $5x + 20 \times 2x = 45x$
 Increase in value = $45x - 30x = 15x$
 So, $15x = 600$, $x = 40$; no. of coins = 120] Total 3

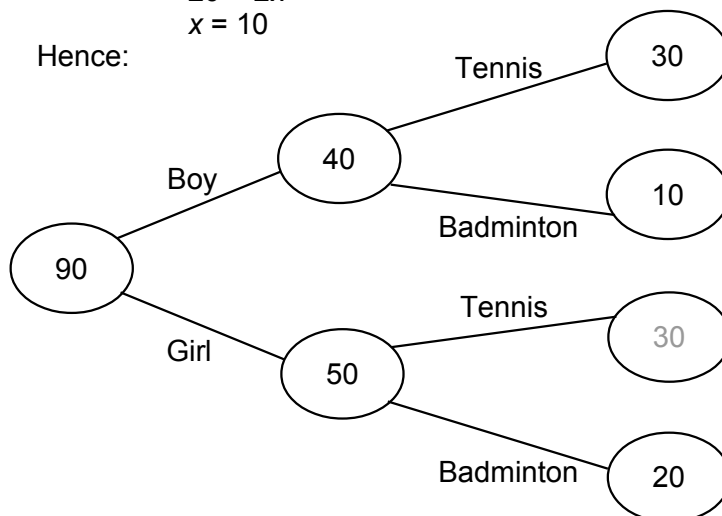
- 22 (a)** Midpoints = 10, 30, 50, 70, 90
 Total distance $\approx 25 \times 10 + 8 \times 30 + 6 \times 50 + 3 \times 70 + 2 \times 90$ M1
 $= 250 + 240 + 300 + 210 + 180$
 $= 1180$ km
 Total number of deliveries = $25 + 8 + 6 + 3 + 2 = 44$
 Mean $\approx 1180 \div 44 = 26.818\dots = 26.8$ km (3sf) M1 A1
- (b)** No e.g. The smallest and largest values could be, say, 2 and 96 making the range $96 - 2 = 94$ which is more than 90 B1 Total 4

- 23** $= \frac{1}{3} \times (6.9)^2 \times 8.2$ M2
 $= 130.134$
 $= 130 \text{ cm}^3$ (3sf) A1 Total 3

- 24** e.g. Let x boys choose badminton
 So $3x$ boys chose tennis M1
 And $2x$ girls chose badminton



- There are $4x$ boys and $2x + 30$ girls M1
 We know there are 10 more girls than boys so M1
 $2x + 30 = 4x + 10$
 $20 = 2x$
 $x = 10$



A1 Total 4

25	(a)	1% of 5000 = £50		
		3.5% of 5000 = $3.5 \times 50 = £175$		M1
		3 years interest = $3 \times 175 = £525$		
		Amount in the account = $5000 + 525 = £5525$		A1
	(b)	5000 + 175 = £5175 after 1 year		
		3.5% of 5175 = $3.5 \times 51.75 = £181.13$		M1
		5175 + 181.13 = £5356.13 after 2 years		
		3.5% of 5356.13 = $3.5 \times 53.56 = £187.46$		
		5356.13 + 187.46 = £5543.59 after 3 years		
		Extra = $5543.59 - 5525 = £18.59$		A1
		<i>[Or: $1.035^3 \times 5000 - 5525$]</i>		
				Total 4

26	Triangles <i>PQR</i> and <i>TSR</i> are similar			B1
		$RT = 10.9 - 7.3 = 3.6$ cm		
		$\frac{PR}{RT} = \frac{QR}{RS}$		
		$\frac{7.3}{3.6} = \frac{QR}{9.1}$		M1
		$QR = 9.1 \times \frac{7.3}{3.6}$		
		$= 18.452\dots = 18.5$ cm (3sf)		A1
				Total 3

27	First shop: total cost = $13 \times £7.25 = £94.25$			B1
		Second shop: 35% discount so cost is 65% of normal price		
		65% = £94.25		M1
		1% = $£94.25 \div 65 = £1.45$		M1
		100% = $100 \times £1.45 = £145$		A1
	The normal price in the second shop is £145			Total 4

TOTAL FOR PAPER: 80 MARKS