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

<table>
<thead>
<tr>
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<th>B1</th>
<th>Total</th>
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<tr>
<td>1</td>
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<td>0.025</td>
<td>0.026</td>
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<tr>
<td>2</td>
<td>$13 \times 17 \times 31 = 6851$</td>
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<td></td>
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<td>527</td>
<td>6851</td>
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<tr>
<td>3</td>
<td>$1 \frac{1}{2} \times 100% = 150%$</td>
<td>0.015%</td>
<td>50%</td>
<td>150%</td>
<td>1500%</td>
<td>B1</td>
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<tr>
<td>4</td>
<td>(a) 16, 32, 64, 128</td>
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<td>64</td>
<td>80</td>
<td>128</td>
<td>196</td>
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<td></td>
<td>(b) $19 - 7 = 12$</td>
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<td>M1</td>
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<tr>
<td></td>
<td>Common difference $= 12 \div 3 = 4$</td>
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<td></td>
<td>6th term $= 19 + 4 + 4 = 27$</td>
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<td>A1</td>
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<tr>
<td>5</td>
<td>(a)</td>
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<td>(b) e.g.</td>
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<td>8</td>
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<td>11</td>
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<td>6</td>
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<tr>
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<td>(c)</td>
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<td>5</td>
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<td>[Any two prime numbers except 2]</td>
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<td>[1 mark if two correct]</td>
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<tr>
<td>6</td>
<td>(a) $m = 20 \div 5 = 4$</td>
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<td>(b) $q = 3 + 2 = 5$</td>
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<td></td>
<td>(c) $3 \times 3.5 = 10.5$</td>
<td>$2 \times (-2) = -4$</td>
<td>$3x - 2y = 10.5 - (-4)$</td>
<td></td>
<td>M1</td>
<td>A1</td>
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7  (a)  1 small square = 5000 ÷ 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 = £840
     To make £200 profit he must receive 840 + 200 = £1040
     Number of tickets = 1040 ÷ 6 = 173.33...
     He must sell at least 174 tickets
     M1 A1  Total 3

9  10% of 300 = 30
    5% of 300 = 30 ÷ 2 = 15
    1/15 of 300 = 300 ÷ 15 = 20
     No. watching last event = 300 − 15 − 20 = 265
     M1 A1  Total 3

10 (a)  = 2m + 6 − 3m
        = 6 − m
        M1
        A1

(b)  6ab²
        B1

(c)  y⁶
        B1  Total 4

11 (a)  e.g.  100 g costs £2.30 ÷ 2 = £1.15
         500 g costs 5 × £1.15 = £5.75
         M1
         A1

(b)  e.g.  10 g costs £4 ÷ 24 = 16.666... p
         420 g costs 42 × 16.666... p = 700 p = £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
         Order:  0.08 m,  0.409 m,  48 cm,  519 mm
         M1
         A1

(b)  205 ≤ W < 215
        B1  Total 3

13  = y² − 4y + 3y − 12 = y² − y − 12
    y² − y − 12
    y² − 12y − 1
    y² + y + 12
    B1  Total 1
14 (a) \[ \text{Total} = 10 + 5 + 3 + 2 = 20 \]
\[ P(\text{not blue}) = \frac{15}{20} \quad [= \frac{3}{4}] \]
B1

(b) With 3 green there would need to be 9 red
There are already 10 red so at least 1 green is added
With 4 green there would need to be 12 red
Minimum is 1 green and 2 red so 3 discs
M1 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 ÷ 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 \[ \frac{2}{3} \quad \frac{2}{5} \quad \frac{2}{7} \quad \frac{3}{5} \]
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
1 kg = 1000 g
2.2 pounds = 1000 g
1 pound = \(\frac{1000}{2.2}\) = 454.54... g
10 ounces = 0.625 \times 454.54... 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

(b) e.g. That everyone works at the same rate
That a higher wall isn’t more difficult to build B1 Total 3

20 \(\sqrt{x^2} = \sqrt{x^2 \times x^2} = x^2\)
\(x^{-4}\) \(x^{-2}\) \(x^2\) \(x\) 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
\(\£6 \rightarrow 600 \div 15 = 40\) lots of 15p
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 = 2\(x\)
Value in pence = 20\(x\) + 5 \times 2\(x\) = 30\(x\)
Value after “swap” = 5\(x\) + 20 \times 2\(x\) = 45\(x\)
Increase in value = 45\(x\) – 30\(x\) = 15\(x\)
So, 15\(x\) = 600, \(x\) = 40; no. of coins = 120] Total 3
22 (a) Midpoints = 10, 30, 50, 70, 90
Total distance ≈ \(25 \times 10 + 8 \times 30 + 6 \times 50 + 3 \times 70 + 2 \times 90\) M1
= \(250 + 240 + 300 + 210 + 180\)
= 1180 km
Total number of deliveries = \(25 + 8 + 6 + 3 + 2\) = 44
Mean ≈ \(1180 \div 44 = 26.818\ldots\) = 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 cm³ (3sf) A1 Total 3

24 e.g. Let \(x\) boys choose badminton
So 3\(x\) boys chose tennis
And 2\(x\) girls chose badminton M1

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

Hence:

A1 Total 4
25 (a) 1% of 5000 = £50  
3.5% of 5000 = 3.5 \times 50 = £175  
3 years interest = 3 \times 175 = £525  
Amount in the account = 5000 + 525 = £5525  
M1 A1  

(b) 5000 + 175 = £5175 after 1 year  
3.5\% of 5175 = 3.5 \times 51.75 = £181.13  
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  
M1 A1  
[Or: 1.035^3 \times 5000 – 5525 ] Total 4  

26 Triangles PQR and TSR are similar  
RT = 10.9 – 7.3 = 3.6 cm  
\[
\frac{PR}{QR} = \frac{RT}{RS}  
\quad \frac{7.3}{QR} = \frac{3.6}{9.1}  
\]
M1  
QR = 9.1 \times \frac{7.3}{3.6}  
= 18.452... = 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  
1\% = £94.25 \div 65 = £1.45  
100\% = 100 \times £1.45 = £145  
M1 M1 A1  
The normal price in the second shop is £145  
Total 4  

TOTAL FOR PAPER: 80 MARKS