For **AQA**

Mathematics

Paper 3 (Calculator)

Foundation Tier

Churchill Paper 3A – 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 3A Marking Guide – AQA Foundation Tier

1 = 100 × 10 = 1000

10 100 500 **1000** B1 Total 1

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2 **rhombus** kite trapezium rectangle B1 Total 1

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3 35 ÷ 7 = 5
84 ÷ 7 = 12
104 ÷ 7 = 14.8...
126 ÷ 7 = 18

35 84 **104** 126 B1 Total 1

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4 **20 ≤ *h* < 30** 30 ≤ *h* < 40 40 ≤ *h* < 50 50 ≤ *h* < 60 B1 Total 1

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5 $\frac{1}{5}$ of 550 = 110
$\frac{2}{5}$ of 550 = 220 M1
$\frac{1}{11}$ of 220 = 20
$\frac{5}{11}$ of 220 = 100 M1
220 – 100 = 120 so 120 women came to the launch A1 Total 3

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6 **(a)** Jess B1

(b) Jo B1

(c) Total hours = 125
Hours overtime = 125 – 75 = 50
Fraction overtime = $\frac{50}{125} = \frac{2}{5}$ M1 A1 Total 4

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7 **(a)** e.g. 10p, 5p, 2p, 2p, 2p B1

[Or 3 × 5p and 3 × 2p or 1 × 5p and 8 × 2p]

(b) 10p, 2p, 2p
5p, 5p, 2p, 2p
2p, 2p, 2p, 2p, 2p, 2p, 2p M1 A1

(c) e.g. 1 no ways 2 2p
3 no ways 4 2p, 2p
5 5p 6 2p, 2p, 2p M1
7 5p, 2p 8 2p, 2p, 2p, 2p
9 5p, 2p, 2p 10 10p or 5p, 5p or 2p, 2p, 2p, 2p, 2p

10p is the smallest amount A1 Total 5

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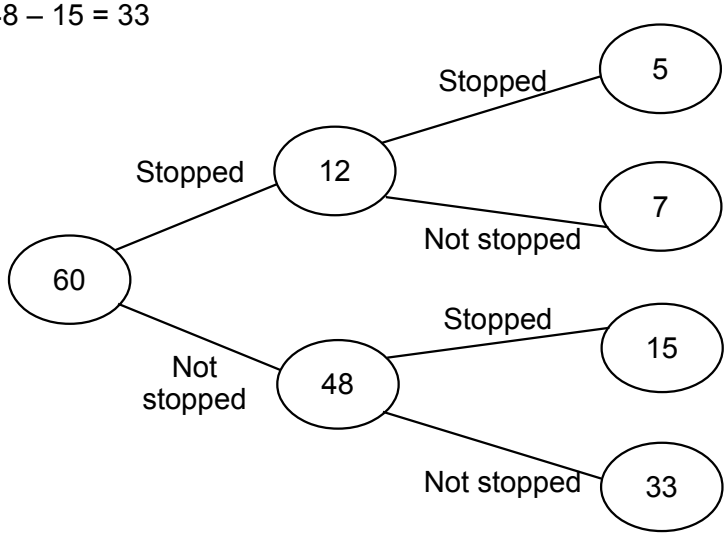
8 10% of 60 = 6
20% of 60 = 12
60 – 12 = 48 M1
12 – 5 = 7
$\frac{1}{3}$ of 60 = 20
20 – 5 = 15 M1
48 – 15 = 33



A1 Total 3

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9 **(a)** = 0.05 × 3.2 = 0.16 B1

(b) $\frac{1}{4}$ × 8.4 = 2.1 M1
8.4 + 2.1 = 10.5 A1

(c) = $\frac{5.76}{0.35}$ M1
= 16.45714286 A1 Total 5

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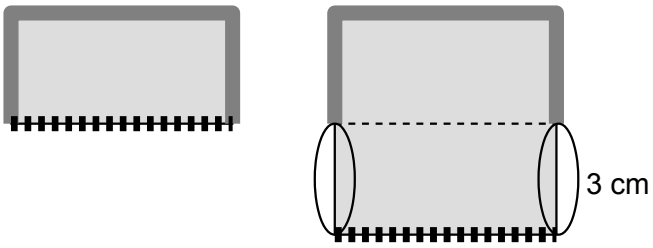
10 **(a)** 5 – 3 = 2
So 2 portions = 8 sweets
1 portion = 4 sweets M1
There are 3 portions of green sweets
Number of green sweets = 3 × 4 = 12 A1

(b) There are 5 portions of red sweets
Number of red sweets = 5 × 4 = 20
Number of yellow sweets = 12 – 2 = 10
Ratio red : yellow = 20 : 10 M1
= 2 : 1 A1 Total 4

11



There are 2 equal extra bits
Each must be 6 ÷ 2 = 3 cm long — M1
Side length of square = 2 × 3 = 6 cm — M1
Area of square = 6^2 = 36 cm^2 — A1 — Total 3

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12 **(a)** $m = 9 - 7 = 2$ — B1

(b) $4y = 12$ — M1
$y = 12 \div 4 = 3$ — A1

(c) $\frac{a}{3} = 6 - 1 = 5$ — M1
$a = 3 \times 5 = 15$ — A1 — Total 5

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13 60 km/h means 60 km in 60 minutes
So 1 km in 1 minute
45 km in 45 minutes

30 minutes (45 minutes) 75 minutes 80 minutes — B1 — Total 1

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14 Area of circle = πr^2
Radius = 8 ÷ 2 = 4
Area of circle = $\pi \times 4^2 = 16\pi$
Area of semicircle = $\frac{1}{2} \times 16\pi = 8\pi$

4π (8π) 16π 32π — B1 — Total 1

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15 33 ÷ 8 = 4 r 1 — M1
So 5 male teachers needed — M1
30 ÷ 8 = 3 r 6
So 4 female teachers needed
5 + 4 = 9 teachers needed — A1 — Total 3

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16 **(a)** = 2 × £7.80 + 3 × £6.00 — M1
= 15.60 + 18.00
= £33.60 — A1

(b) Instead of spending £33.60 each week he spends £25.50
Saving per week = 33.60 – 25.50 = £8.10 — M1
Saving per year = 46 × £8.10 = £372.60 — M1
Yes, Martin is correct — A1 — Total 5

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17 **(a)** e.g. 14 + 17 + 20 = 51
3 × 17 = 51 M1
Sian's claim is correct for these three terms A1

[Can use any 3 consecutive terms of given sequence]

(b) e.g. In arithmetic sequences, the gap between any 2 terms is the same. So, the 3rd term is the same amount above the middle term as the 1st term is below it. Adding the 3 terms together these cancel out so the total is 3 times the middle term. B2

[Allow explanation specific to given sequence]

(c) $4^{th} + 5^{th} + 6^{th} = 3 \times 31 = 93$ M1
5^{th} term = 31
So, $4^{th} + 6^{th} = 93 - 31 = 62$ A1 Total 6

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18 **(a)** B and D B1

(b) $p = 4$, $q = -5$ B2

(c) 2 B1

(d) $x = 1$ B1 Total 5

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19 **(a)** 21 ÷ 5 = 4.2 M1
4.2 – 3 = 1.2 A1

(b) Let input = x
$5(x + 3) = 3x$ M1
$5x + 15 = 3x$
$2x = -15$
$x = -7.5$ The input was –7.5 A1 Total 4

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20 = 30000 + 3000
= 33000
$= 3.3 \times 10^4$

3.3×10^4 3×10^7 6×10^7 3×10^{12} B1 Total 1

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21 **(a)** 4% = 0.04
0.04 × 3000 = £120 M1
3000 + 120 = £3120 in the account A1

(b) 0.04 × 3120 = £124.80
120 + 124.80 = £244.80 M1
To the nearest pound, total interest = £245 A1 Total 4

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22 We have: 2 workers check 120 phones in 6 hours
So, 1 worker checks 60 phones in 6 hours
1 worker checks 10 phones in 1 hour M1

Hence, 5 workers check 50 phones in 1 hour

400 ÷ 50 = 8

So, 5 workers check 400 phones in 8 hours A1

It takes them 8 hours Total 2

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23 B3

P	*Q*
15	6
30	12
60	24
75	30
7.5	**3**

6 × 4 = 24 so 15 × 4 = 60
6 × 5 = 30 so 15 × 5 = 75
15 ÷ 2 = 7.5 so 6 ÷ 2 = 3 Total 3

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24 $5.05 \le w < 5.15$ $5.1 \le w < 5.2$

$5.10 \le w < 5.15$ $5.0 \le w < 5.2$ B1 Total 1

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25 **(a)** Fraction at primary with no siblings = $\frac{90}{240} = \frac{3}{8}$

Estimate for secondary = $\frac{3}{8} \times 960 = 360$ M1 A1

(b) e.g. It is likely to be an overestimate.
Primary school pupils are young and those that don't have any siblings now may do by the time they are at secondary school. So the fraction without siblings is likely to be lower at the secondary school. B2 Total 4

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26 Let short edge of rectangle be x cm long
The long edge fits with 2 short edges so is $2x$ cm long M1
The area (of one side) of a piece is $2x \times x = 2x^2$ cm^2
There are 2 × 8 = 16 pieces so area (of one side) is 288 ÷ 16 = 18 cm^2
So, $2x^2 = 18$ M1
$x^2 = 9$
$x = 3$ [can't be –3 as it's a length]

Dimensions of cuboid = 9 cm by 6 cm by 6 cm M1
Volume of cuboid = 9 × 6 × 6 = 324 cm^3 A1 Total 4

TOTAL FOR PAPER: 80 MARKS