For **AQA**

Mathematics

Paper 2 (Calculator)

Foundation Tier

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

1	8	9	800	900		B1	Total 1
2	5	200	500	5000		B1	Total 1
3	17, 34, 51, 68, 85, (102) so 5						
	1	2	5	6		B1	Total 1
4	–7	2	7	–63		B1	Total 1
5	**(a)**	17				B1	
	(b)	= 18 – 13 = 5				B1	
	(c)	17 + 13 + 17 + 16 + 14 + 15 + 15 + 18 + 17 + 17 = 159 mean = 159 ÷ 10 = 15.9				M1 A1	Total 4
6	**(a)**	0.7				B1	
	(b)	0.1 + 0.3 = 0.4 1 – 0.4 = 0.6				M1 A1	
	(c)	e.g. The probability of a red bead being picked is 0.1 which is $\frac{1}{10}$. There must be at least 1 red bead so there must be at least 10 beads for $\frac{1}{10}$ of the beads to be red.				B1	Total 4
7	**(a)**	e.g. The mean cost for each person's food and drink				B1	
	(b)	Actual total = 2 × £4.85 + 5 × £5.99 + 3 × £2.95 + 4 × £3.50 = £9.70 + £29.95 + £8.85 + £14 = £62.50 Millie's estimate = £63 She overestimated by 50p				M1 A1 M1 A1	Total 5
8	**(a)**	Triangular prism				B1	
	(b)	Angle *ABC* = 90º				B1	
		Angle *BHC* = 45º				B1	
		Angle *CHF* = 90º				B1	Total 4

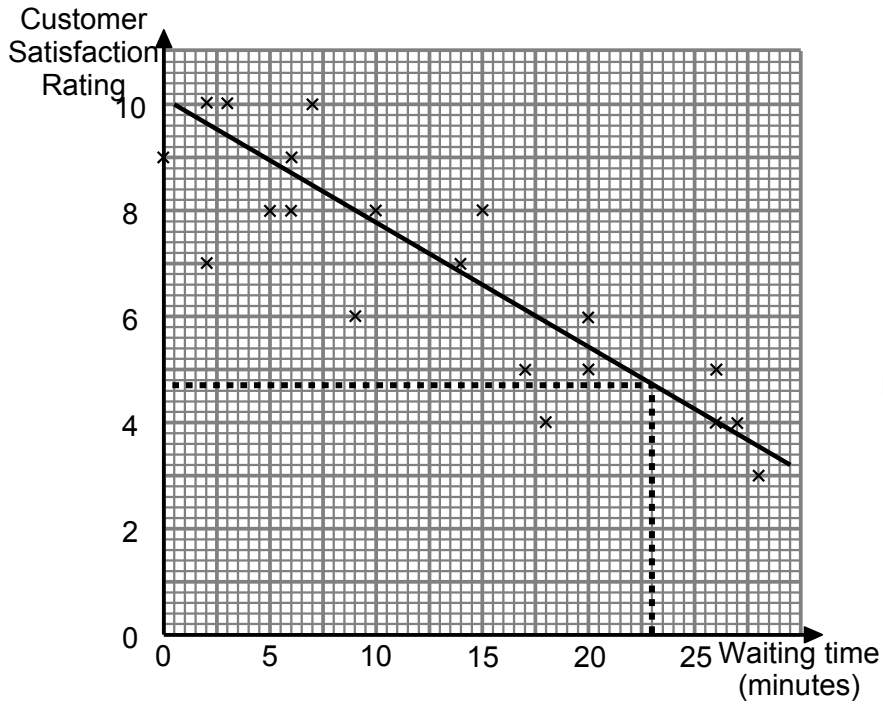
9	Must be 4-digit and start with 4 or 7 Must end with 2 or 4 So:	4372 4732 7342 7432 7234 7324	(any 2) (all, no extras)	B1 B1	Total 2
10	3 + 4 = 7 84 ÷ 7 = 12 3 × 12 = 36 4 × 12 = 48 36 and 48			M1 A1	Total 2
11	**(a)** e.g.	1 + 20 = 21, not square 4 + 20 = 24, not square 9 + 20 = 29, not square 16 + 20 = 36, square The two numbers are 16 and 36 The sum = 16 + 36 = 52		M1 A1	
	(b) e.g.	1 Factors 1 2 Factors 1, 2 3 Factors 1, 3 4 Factors 1, 2, 4 5 Factors 1, 5 6 Factors 1, 2, 3, 6 7 Factors 1, 7 8 Factors 1, 2, 4, 8 1 + 2 + 4 + 8 = 15	The number is 8	M1 A1	Total 4

12 **(a)** 9 callers gave a rating of 8 or more

Percentage = $\frac{9}{20}$ × 100% = 45%

25% (45%) 55% 60% B1

(b)



M1

5 (from their line, accept nearest whole number or raw value) A1 Total 3

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13 **(a)** e.g. 2.3 km costs £4.20
1 km costs £4.20 ÷ 2.3 = £1.826...
6.1 km costs 6.1 × £1.826... = £11.139... M1
As it is Sunday, cost = 1.5 × £11.139... = £16.708... M1
I estimate the taxi will cost £16.71 A1

(b) e.g. I have assumed that the cost increases smoothly with distance rather than charging for each half km etc. B1 Total 4

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14 **(a)** There must be a whole number of each so there must be at least 8 girls
There will then be 5 boys
Smallest number of children = 8 + 5 = 13 B1

(b) e.g. 60% = $\frac{3}{5}$
There must be a whole number of each so there must be at least 5 vans M1
Smallest number of lorries = 5 + 3 = 8 A1 Total 3

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15 Let Gill have £x so Kat has £$4x$
After spending £3 Kat has £$(4x - 3)$ M1
Kat now has twice as much as Gill so:

$4x - 3 = 2x$
$2x - 3 = 0$
$2x = 3$
$x = 1.5$ M1

Gill has £1.50
So Kat now has 2 × £1.50 = £3 A1

[Quick method: £3 must be equal to 2 lots of what Gill has.] Total 3

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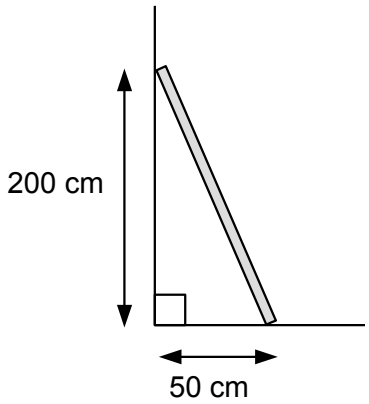
16 **(a)** $= \frac{3}{2} \times 4 = 6$ eggs B1

(b) $75 \div 30 = 2.5$ M1
$2.5 \times 250 = 625$ ml of milk A1

(c) $20 \div 4 = 5$ lots of 4 eggs
$2000 \div 250 = 8$ lots of 250 ml milk M1
$500 \div 30 = 16$ and a bit lots of 30 g butter
Smallest of these is 5 lots of 4 eggs
She can make 5 × 2 = 10 portions A1 Total 5

17



Using Pythagoras' $a^2 + b^2 = c^2$
$50^2 + 200^2 = c^2$ M1
$2500 + 40000 = c^2$
$42500 = c^2$
$c = \sqrt{42500}$ M1
$c = 206.15...$
The ladder is 206 cm long (3sf) A1 Total 3

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18 40% = 0.4 so men : women = 1 : 1.4
= 10 : 14
= 5 : 7

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

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19 **(a)** Mortle to Numby on map ≈ 3.8 cm
Numby to Otton on map ≈ 8.5 cm
Total distance on map = 3.8 + 8.5 = 12.3 cm M1
Actual distance = 5 × 12.3 = 61.5 km M1
Time taken = 30 + 50 = 80 minutes
80 minutes = 80 ÷ 60 = $1\frac{1}{3}$ hours
Average speed = 61.5 ÷ $1\frac{1}{3}$ M1
= 46.125
Lisa's average speed was 46 km/h (2sf) A1

[Accept 45 to 47.5]

(b) e.g. It is likely to be an underestimate as it assumes the roads go in straight lines between the towns. The actual route will be quite a bit longer giving a higher average speed. B2 Total 6

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20 **C** lies on a straight line with an angle that is corresponding to 119º
So **C** = 180 – 119 = 61º
A, **B** and **D** are not connected to the 119º by parallel lines so are unknown

A **B** **C** **D** B1 Total 1

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21 £500 = €1.38 × 500 = €690 M1
€690 – €465 = €225
€225 = £225 ÷ 1.31 = £171.76 M1 A1 Total 3

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22 **(a)** Number of grey triangles = 2 × pattern number
2 × 22 = 44 grey triangles B1

(b) In each pattern there are 2 more white triangles than grey ones
40 × 2 = 80
80 + 2 = 82 white triangles M1 A1

(c) Combining the rules for grey and white we have

Total number of triangles = 4 × Pattern number + 2 M1 A1 Total 5

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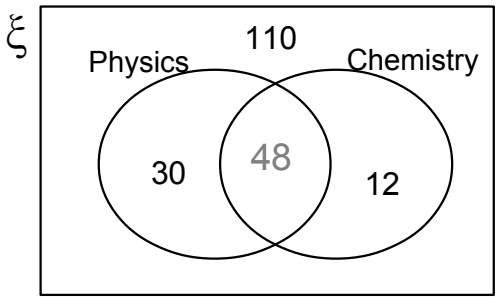
23 **(a)** 78 – 48 = 30, 60 – 48 = 12
30 + 48 + 12 = 90 M1
200 – 90 = 110



A1

(b) $= \frac{110}{200}$ $[= \frac{11}{20}]$ B1 Total 3

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24 Common difference = 7 so *n*th term = 7*n* + ?
0th term = 4 – 7 = –3
*n*th term = 7*n* – 3

4*n* + 7 4 + 7*n* 7*n* + 11 (7*n* – 3) B1 Total 1

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25 e.g. Perimeter = 10 × side length of square = 35 cm M1
So, side length of square = 35 ÷ 10 = 3.5 cm A1
Sides of rectangle measure 2 × 3.5 = 7 cm
and 3 × 3.5 = 10.5 cm
Area of rectangle = 7 × 10.5 = 73.5 cm^2 M1 A1 Total 4

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26 *y*-intercept = –1 B1

Gradient [using (–4, 1) to (4, –3)] = $\frac{-3-1}{4-(-4)} = \frac{-4}{8} = -\frac{1}{2}$ M1

Equation is $y = -\frac{1}{2}x - 1$ A1 Total 3

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27 **(a)** This approximation will have lowered her estimate as the actual value of π is larger than 3, i.e. 3.14... B1

(b) She has assumed the lichen covers a circular area. B1
The shape of the lichen will not be a perfect circle. It will have indents and bits sticking out which means that the actual area could be bigger or smaller. B1 Total 3

TOTAL FOR PAPER: 80 MARKS