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MATHEMATICS

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Paper 1 (Core)

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MARK SCHEME

Maximum Mark: 60

Published

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Mark schemes should be read in conjunction with the question paper and the Principal Examiner Report for Teachers.

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MARK SCHEME NOTES

The following notes are intended to aid interpretation of mark schemes in general, but individual mark schemes may include marks awarded for specific reasons outside the scope of these notes.

Types of mark

- M Method marks, awarded for a valid method applied to the problem.
- A Accuracy mark, awarded for a correct answer or intermediate step correctly obtained. For accuracy marks to be given, the associated Method mark must be earned or implied.
- B Mark for a correct result or statement independent of Method marks.

When a part of a question has two or more ‘method’ steps, the M marks are in principle independent unless the scheme specifically says otherwise; and similarly where there are several B marks allocated. The notation ‘**dep**’ is used to indicate that a particular M or B mark is dependent on an earlier mark in the scheme.

Abbreviations

awrt	answers which round to
cao	correct answer only
dep	dependent
FT	follow through after error
isw	ignore subsequent working
nfww	not from wrong working
oe	or equivalent
rot	rounded or truncated
SC	Special Case
soi	seen or implied

Question	Answer	Marks	Part Marks
1	462	1	
2	16	1	
3	16.99	1	
4	17, 19	1	both correct and no extras
5	8.1%, 0.3^2 , $\frac{1}{8}$, 0.18	2	B1 for any 3 values correct relative to each other or for all four correct in same format
6	0.229 cao	2	B1 for 0.22 to 0.23 or SC1 for <i>their</i> answer seen rounded to 3 dp
7(a)	64	1	
7(b)	175	1	
8	fully correct drawing	2	B1 for either an angle of 60° or a horizontal line of 3 cm
9(a)	142 [Angles on a] straight line [add up to 180]	2	B1 for either correct angle or correct reason
9(b)	Alternate [angles are equal]	1	
10	573 – 384 and 5300 – 3200 seen	M1	
	$\frac{189}{2100} \times 100 = 9\%$ oe	A1	
11	567.37 or 567.38 final answer	2	M1 for $800 \div 1.41$ soi
12(a)	$49h$ final answer	2	M1 for $37h + 1.5 \times 8h$ oe soi
12(b)	$30(h + 3) + 2(2h + 6)$ oe and correct completion to $34h + 102$	2	B1 for $30(h + 3)$ or $2(2h + 6)$ oe seen
13	[£]0.46 oe	3	M1 for 0.75×1.12 or 84p oe seen M1 for $1.76 - \textit{their}$ 0.84 oe M1 for <i>their</i> $0.92 \div 2$ oe Award a maximum of 2 if not fully correct
14	15.75	3	M2 for $8x = 126$ oe or M1 for $3x + x - 2 + 3x + x - 2 = 122$ oe or M1 for <i>their</i> $ax = 122 + \textit{their}$ b

Question	Answer	Marks	Part Marks
15(a)	1066.4[0]	3	B2 for 206.4 or M2 for $860 + \frac{860 \times 8 \times 3}{100}$ oe or M1 for $\frac{860 \times 8[\times 3]}{100}$
15(b)	1910.12	2	M1 for $1700 \times 1.06 \times 1.06$ oe
16(a)	correct line	1	must be a single, straight, ruled line
16(b)	150 to 154	1	FT <i>their</i> reasonable line of best fit with positive gradient
16(c)(i)	Valid statement	1	e.g. Doubled the height of a 12 year old or extended the line of best fit oe
16(c)(ii)	Valid explanation	1	e.g. Girls and women do not grow at the same rate oe
17(a)	0.15 oe	2	M1 for $0.35 + 0.4 + k + 0.1 = 1$ or better or B1 for 0.85 seen
17(b)	48	1	
18(a)	m^3	1	
18(b)	y^{-8}	1	
18(c)	$\frac{x^5 y^4}{7}$	2	M1 for 2 correct parts and both x and y present i.e. $\frac{x^k y^4}{7}$ or $\frac{x^5 y^k}{7}$ or $kx^5 y^4$ ($k \neq 0$)
19(a)	13.15, 13.25	2	B1 for each or SC1 for both answers correct but reversed.
19(b)	$2\pi \times 2.1$	M1	
	13.19...	A1	
	<i>their</i> $13.19 > 13.15$ oe	B1	For showing <i>their</i> circumference > 13.15
20	1936 and 81 or 44^2 and 9^2	2	M1 for 2 correct trials evaluated of form: $a^2 + b^2$ where $a < 10$ and $b > 10$ and a and b are integers or for $2017 - a^2 = b^2$, where a is a positive integer, with b^2 being tested to see if it is square If 0 scored, SC1 for 44 and 9 seen as a pair

Question	Answer	Marks	Part Marks
21	$x^2 - 2x - 35$ final answer	2	M1 for 3 out of 4 terms correct in $x^2 - 7x + 5x - 35$ or for $x^2 - 2x + k$
22(a)	95.4 or 95.39 to 95.40	3	M2 for $[LN =] \frac{85}{\cos 27}$ oe or M1 for $\cos 27 = \frac{85}{LN}$ oe
22(b)	38.6 or 38.58 to 38.59	3	M2 for $85 \times \sin 27$ oe or M1 for $\sin 27 = \frac{x}{85}$ oe or M1 for correct line indicated on a diagram