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Practice

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This document has **10** pages. Any blank pages are indicated.

v2

Generic Marking Principles

These general marking principles must be applied by all examiners when marking candidate answers. They should be applied alongside the specific content of the mark scheme or generic level descriptions for a question. Each question paper and mark scheme will also comply with these marking principles.

GENERIC MARKING PRINCIPLE 1:
Marks must be awarded in line with: • the specific content of the mark scheme or the generic level descriptions for the question   • the specific skills defined in the mark scheme or in the generic level descriptions for the question   • the standard of response required by a candidate as exemplified by the standardisation scripts.
GENERIC MARKING PRINCIPLE 2:
Marks awarded are always **whole marks** (not half marks, or other fractions).
GENERIC MARKING PRINCIPLE 3:
Marks must be awarded **positively**:   • marks are awarded for correct/valid answers, as defined in the mark scheme. However, credit is given for valid answers which go beyond the scope of the syllabus and mark scheme, referring to your Team Leader as appropriate   • marks are awarded when candidates clearly demonstrate what they know and can do   • marks are not deducted for errors   • marks are not deducted for omissions   • answers should only be judged on the quality of spelling, punctuation and grammar when these features are specifically assessed by the question as indicated by the mark scheme. The meaning, however, should be unambiguous.
GENERIC MARKING PRINCIPLE 4:
Rules must be applied consistently e.g. in situations where candidates have not followed instructions or in the application of generic level descriptions.
GENERIC MARKING PRINCIPLE 5:
Marks should be awarded using the full range of marks defined in the mark scheme for the question (however; the use of the full mark range may be limited according to the quality of the candidate responses seen).

GENERIC MARKING PRINCIPLE 6:

Marks awarded are based solely on the requirements as defined in the mark scheme. Marks should not be awarded with grade thresholds or grade descriptions in mind.

Mathematics-Specific Marking Principles

1   Unless a particular method has been specified in the question, full marks may be awarded for any correct method. However, if a calculation is required then no marks will be awarded for a scale drawing.

2   Unless specified in the question, non-integer answers may be given as fractions, decimals or in standard form. Ignore superfluous zeros, provided that the degree of accuracy is not affected.

3   Allow alternative conventions for notation if used consistently throughout the paper, e.g. commas being used as decimal points.

4   Unless otherwise indicated, marks once gained cannot subsequently be lost, e.g. wrong working following a correct form of answer is ignored (isw).

5   Where a candidate has misread a number or sign in the question and used that value consistently throughout, provided that number does not alter the difficulty or the method required, award all marks earned and deduct just 1 A or B mark for the misread.

6   Recovery within working is allowed, e.g. a notation error in the working where the following line of working makes the candidate's intent clear.

MARK SCHEME NOTES

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

Anything in the mark scheme which is in square brackets […] is not required for the mark to be earned, but if present it must be correct.
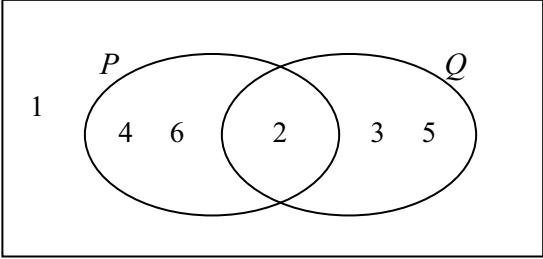
When a part of a question has two or more 'method' steps, the M marks are in principle independent unless the scheme specifically says otherwise; and similarly where there are several B marks allocated. The notation 'dep' is used to indicate that a particular M or B mark is dependent on an earlier mark in the scheme.

Types of mark

M   Method mark, awarded for a valid method applied to the problem.

A   Accuracy mark, given 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.
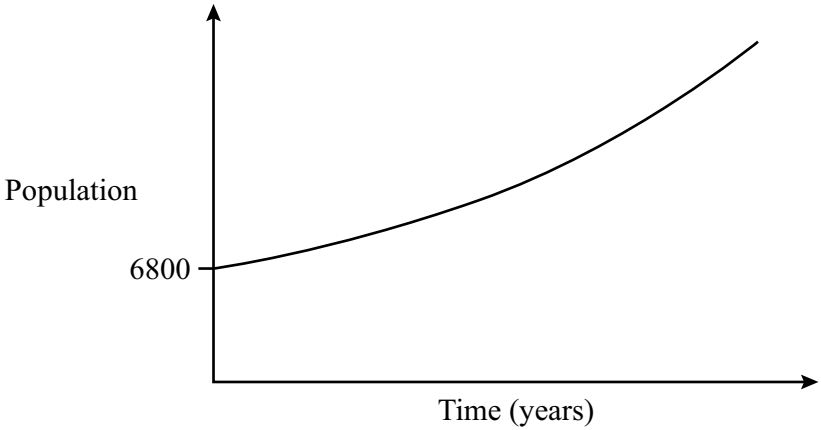
Abbreviations
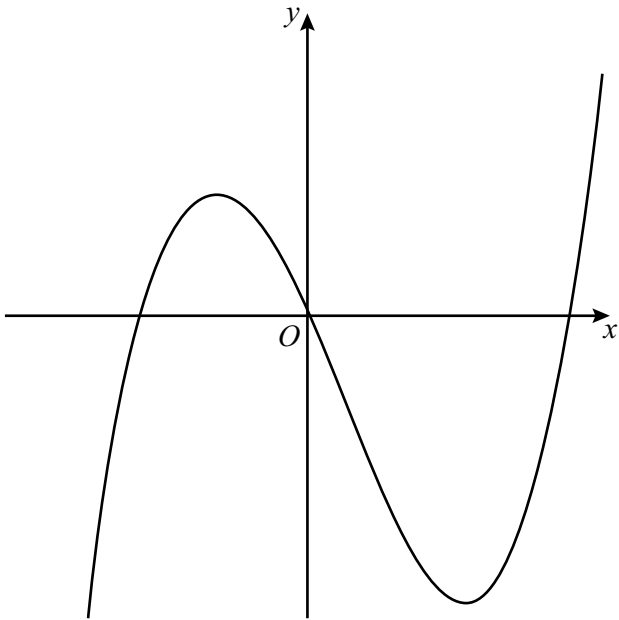
awrt	answers which round to
cao	correct answer only
dep	dependent on the previous mark(s)
FT	follow through after error
isw	ignore subsequent working (after correct answer obtained)
nfww	not from wrong working
oe	or equivalent
SC	special case
soi	seen or implied

Question	Answer	Marks	Partial Marks
1	–2	2	**M1** for $-3 \times -2 + -8$
2	8	1	
3	14 10	2	**M1** for $\dfrac{24}{7+5}$ oe
4	$\dfrac{3}{350}$ cao	2	**B1** for correct fraction not in its lowest terms, e.g. $\dfrac{2460}{287\,000}$
5(a)	105.6 to 110.4	2	**B1** for 8.8 to 9.2 [cm] seen or **M1** for *their* distance in cm $\times$ 12
5(b)	C positioned correctly with intersecting arcs seen $AC = 6\,\text{cm}$, $BC = 8\,\text{cm}$	3	allow $\pm 2\,\text{mm}$ tolerance **B2** for C positioned correctly with no/incorrect arcs or **B1** for $AC = 6\,\text{cm}$ or $BC = 8\,\text{cm}$ soi
6(a)	6 points plotted correctly	2	**B1** for 3 points plotted correctly
6(b)	Positive	1	
6(c)	Ruled line of best fit	1	
6(d)	Reading from *their* ruled line of best fit at 30 km	1	Dependent on positive gradient
7	85	2	**M1** for $\dfrac{500 \times 1.7 \times 10}{100}$ oe
8(a)	Intersection shaded	1	
8(b)		2	**B1** for four numbers in the correct place
9	$x = -2$	2	**M1** for $8x - 4x = -5 - 3$ oe
10	0.0625 cao	1	

Question	Answer	Marks	Partial Marks
11	18 32	4	**M1** for $8352 \div 783$ **A1** for 10 h 40 min **M1** for the correct adjustment of the 2 hours e.g. *their* 10 h 40 min – 2 h or *their* arrival time – 2 h
12	$3x(4x + 3)$ final answer	2	**B1** for answer $3(4x^2 + 3x)$ or $x(12x + 9)$ or for $3x(4x + 3)$ seen
13(a)	10.2[0]	2	**M1** for $12 \times \left(1 - \dfrac{15}{100}\right)$ oe or **B1** for 1.8
13(b)	45	2	**M1** for $x \times \left(1 - \dfrac{15}{100}\right) = 38.25$ oe or better
14	$x + x + 8 + 2x - 3 = 117$ or better	**M2**	or **B1** for $x + 8$ or $2x - 3$
	$4x + 5 = 117$ oe or better	**M1**	
	28	**A1**	If 0 scored, **SC1** for the correct answer with no algebra
15(a)	$\dfrac{2p^2}{t}$ final answer	2	**B1** for $\dfrac{4p^2q}{2qt}$ or better
15(b)	$256x^{12}$ final answer	2	**B1** for answer $256x^k$ or kx^{12}
16(a)	3	2	**M1** for $\dfrac{3k}{1k}$
16(b)	$[y =] 3x - 2$	1	**FT** *their* **(a)**
17(a)	Tangent drawn at $x = 0.5$	**B1**	
	–5.5 to –2.8	**B1**	**Dep** on close attempt at tangent
17(b)	–0.45 to –0.35	1	

Question	Answer	Marks	Partial Marks
17(c)	Line $y = 7 - x$ ruled	M2	**M1** for $\frac{1}{2x^2} + 3x = 7 - x$ or for line $y = k - x$ or $y = 7 + mx$ drawn, $m \neq 0$
	–0.2 to –0.3 0.2 to 0.4 1.6 to 1.8	A2	**A1 dep** for one correct, **dep** on at least **M1** After A0 scored **SC1** for all 3 correct with no or wrong working
18(a)	[0]38 or [0]37.9 or [0]37.87...	3	**B2** for [0]52 or [0]52.1 or [0]52.12 to [0]52.13 or **M2** for $\tan[BDC] = \frac{350}{450}$ oe or **M1** for angle BDC identified or for $\tan[CBD] = \frac{450}{350}$ oe
18(b)	624 or 623.8 to 623.9	6	**M2** for $450 - 400\sin 50$ or **M1** for $\sin 50 = \frac{\cdots}{400}$ **M2** for $350 + 400\cos 50$ or **M1** for $\cos 50 = \frac{\cdots}{400}$ **M1** for $(their\ (450 - 400\sin 50))^2 + (their\ (350 + 400\cos 50))^2$
19(a)	41.4	4	**B1** for correct midpoints 10, 30, 42.5, 47.5, 55, 70 soi **M1** for use of Σfx where x is in the correct interval including boundaries **M1** (**dep** on 1st **M1**) for $\Sigma fx \div 200$
19(b)(i)	112, 170	1	
19(b)(ii)	Correct diagram	3	**B1** for 6 points plotted at correct values for v **B1FT** for 6 points plotted at *their* cumulative frequencies **B1 FT dep** on at least **B1** earned for reasonable increasing curve or polygon through *their* 6 points If 0 scored **SC1FT** for 5 out of 6 points plotted correctly
19(b)(iii)	158 to 162	2	**M1** for 38 to 42 seen

Question	Answer	Marks	Partial Marks
20	25.6 or 25.59 to 25.60…	4	**M3** for $\dfrac{6.4}{2\times\pi\times8}\times\pi\times8^2$ oe or **M2** for $\dfrac{x}{360}=\dfrac{6.4}{2\times\pi\times8}$ oe or **M1** for $\dfrac{x}{360}\times2\times\pi\times8=6.4$ oe
21(a)	4.2[0]	3	**M2** for $\sqrt[5]{\dfrac{8353}{6800}}$ or **M1** for $6800\times k^5=8353$
21(b)	Correct sketch 	1	
22(a)	125 or 124.7 to 124.8	4	**B1** for [angle $S=$] 80 **M2** for $\dfrac{150\sin55}{\sin \textit{their }80}$ or **M1** for $\dfrac{\sin \textit{their }80}{150}=\dfrac{\sin55}{RS}$
22(b)	10 400 or 10 410 to 10 440 nfww	3	**M1** for $\dfrac{1}{2}\times120\times150\sin25$ oe **M1** for $\dfrac{1}{2}\times150\times \textit{their }\textbf{(a)}\sin45$ oe

Question	Answer	Marks	Partial Marks
23(a)	$x(2x + 5)(x – 4)$ final answer	3	**B2** for $(2x^2 + 5x)(x – 4)$ or $(2x + 5)(x^2 – 4x)$ or for $x(2x + a)(x + b)$ where $ab = –20$ or $a + b = –3$ or **B1** for $x(2x^2 – 3x – 20)$
23(b)	Correct sketch passing through origin 	B2	**B1** for positive cubic shape
	Points of intersection labelled as –2.5 (oe), 0 and 4	B1	
24	$3x^3 – 7x^2 – 43x + 15$	3	**B2** for correct unsimplified expression or simplified expression with 3 terms correct in a 4-term expression of required form or **B1** for correct expansion of two brackets with 3 terms correct
25	52.5 or 52.46 to 52.47	4	**M1** for $[BG^2] = 6^2 + 7^2$ oe or $[BH^2] = 6^2 + 7^2 + 12^2$ oe **M2** for $\tan[HBG] = \dfrac{12}{their\ BG}$ oe or $\sin[HBG] = \dfrac{12}{their\ BH}$ oe or **M1** for angle HBG identified

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