<div style="border:1px solid">

Specimen

</div>

This document has **6** pages. Blank pages are indicated.

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 descriptors 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 descriptors for the question   • the specific skills defined in the mark scheme or in the generic level descriptors 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 descriptors.
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 descriptors in mind.

<div style="border:1px solid black">

Maths-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, 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 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 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.

</div>

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 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.

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

cao   correct answer only
dep   dependent
FT   follow through after error
isw   ignore subsequent working
nfww   not from wrong working
oe   or equivalent
SC   special case
soi   seen or implied

Question	Answer	Marks	Partial Marks
1(a)	any non-square √ or π or e	1	$\sqrt{5}$ but not $\sqrt{9}$, $\sin 20$ etc. but not $\sin 30$ No fractions, decimals, or negatives
1(b)	61 or 67	1	Allow 61 **and** 67 but no other pairs
2	20	2	**M1** for $2.5 \div 0.125$ oe
3(a)	35 500	1	
3(b)	6.9×10^{-3}	1	
3(c)	1.6×10^{15}	2	**B1** for 16×10^{14} or 1 600 000 000 000 000 oe
4(a)(i)	1	1	
4(a)(ii)	6 (or –6)	1	
4(b)	7	1	
5(a)	$\frac{12}{18}$ oe	1	Accept equivalent fractions, decimals, % but not ratio. isw cancelling/conversion
5(b)	$\frac{3}{12}$	2	**B1** for any fraction over 12
6(a)	570	1	
6(b)	Neptune	1	
7(a)	$4x^2 - 7x - 7x + 49$ or better	2	**B1** for any 3 of these terms seen in working
7(b)	$3y(x + 2y)(x - 2y)$	2	**B1** for $3y(x^2 - 4y^2)$ or $(x - 2y)(3xy + 6y^2)$ or $(x + 2y)(3xy - 6y^2)$ or better seen
8(a)	36	2	**M1** for $2 \times 2 \times 3 \times 3$ oe
8(b)	126	2	**M1** for $2 \times 3 \times 3 \times 7$ oe
9(a)	$x < 3.5$ oe	2	**M1** for 3.5 oe seen or $4x < 14$ seen
9(b)	**FT** *their* **inequality** from **(a)**	1	**FT**
10(a)	Plots (65, 20), (80, 15) and (60, 25) correctly	2	**B1** for 2 plots correct
10(b)	Negative	1	
10(c)	**FT** *their* reading at 50 hot drinks from a ruled line of best fit	2	**FT** **B1** for attempt to read at 50 without line of best fit
11(a)	Rotation (only) 90∘ counterclockwise oe about the origin (0, 0) oe	3	**B1** for each

Question	Answer	Marks	Partial Marks
11(b)		2	**B1** for stretch y-axis invariant line scale factor $k > 0$ ($k \neq 1$), or for stretch x-axis invariant line scale factor 2, or for any horizontal translation of the correct solution
12	$a = 4$, $b = 2$	2	**B1** for each
13(a)	$\begin{pmatrix} 12 \\ 1 \end{pmatrix}$	2	**B1** for each
13(b)	$\sqrt{20}$ oe	2	**M1** for $(\pm 4)^2 + 2^2$ or better seen
14(a)	$y = -2x + 4$ oe	2	**B1** for $y = mx + 4$ ($m \neq 0$) or for $y = -2x + c$
14(b)	$y = \frac{1}{2}x + \frac{3}{2}$ or any correct equivalent	4	**B1** for slope of perp $= \frac{1}{2}$ **B1** for midpoint $= (1, 2)$ **M1** for $2 = \frac{1}{2} \times 1 + c$ For substituting correctly into the equation of a line formula. **M1** can imply **B1 B1** if correct
15(a)(i)	Correct sketch of $x + y = 5$	1	Line with negative slope with intercepts in positive x and y
15(a)(ii)	Correct sketch of $y = 1$	1	Horizontal line with $y = 1$ indicated
15(a)(iii)	Correct sketch of $y = 2x$	1	Positive slope passing through 0
15(b)	R in correct region	1	
16(a)	$\sqrt{3}$	1	not $\frac{\sqrt{3}}{1}$
16(b)	$14\sqrt{3}$	2	**B1** for $10\sqrt{3}$ or $4\sqrt{3}$ seen
16(c)	$8 + 2\sqrt{15}$ **or** $2(4 + \sqrt{15})$	2	**M1** for $5 + \sqrt{15} + \sqrt{15} + 3$ or $\sqrt{25} + \sqrt{15} + \sqrt{15} + \sqrt{9}$
17(a)	$c = 19$, $d = 3$	3	**B1** for $d = 3$ or **M1** for $(x + 3)^2 - 9 + c = (x + d)^2 + 10$
17(b)	10	1	

Question	Answer	Marks	Partial Marks
18(a)	$wf = 300\,000$ oe	**2**	**M1** for $wf = k$
18(b)	500	**1**	
19(a)	24π nfww	**B2**	Condone $24 \times \pi$ **M1** for $\dfrac{\pi \times 9 \times 8}{3}$ or $\dfrac{\pi \times 3^2 \times 8}{3}$
	cm^3	**B1**	Independent units mark
19(b)	436	**2**	**M1** for 4 or 2^2 seen as scale factor