This document consists of **7** printed pages.

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.

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.

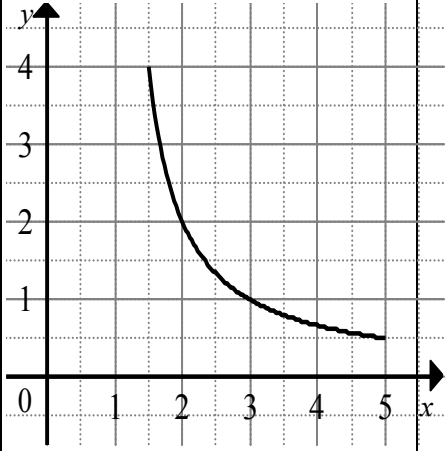| 2	Unless specified in the question, answers may be given as fractions, decimals or in standard form. Ignore superfluous zeros, provided that the degree of accuracy is not affected.
3	Allow alternative conventions for notation if used consistently throughout the paper, e.g. commas being used as decimal 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.

Abbreviations

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

Question	Answer	Marks	Partial Marks
1(a)	Equilateral	1	
1(b)(i)	4.1 to 4.5	1	
1(b)(ii)	10.25 to 11.25	2	**FT** *their* **(b)(i)** **M1** for $0.5 \times 5 \times$ *their* **(b)(i)**
1(b)(iii)	61.5 to 67.5	2	**FT** *their* **(b)(ii)** **M1** for *their* **(b)(ii)** $\times 6$
2(a)(i)	$112.5 \div 100 \times 152$ oe	1	
2(a)(ii)	$3 \div 8 \times 152 + 152 + 171$	2	**B1** for $3 \div 8 \times 152$
2(b)	8 : 9 : 3	2	**B1** for 152 : 171 : 57
2(c)	8	2	**M1** for correct attempt e.g. 12 + 14 + 16 ....
2(d)(i)	$6 \div 4 \times 7$	1	
2(d)(ii)	13.5[0]	1	
2(d)(iii)	3228	3	**FT** *their* **(d)(ii)** **M2** for $120 \times$ *their* **(d)(ii)** $+ 136 \times 10.5 + 30 \times 6$ or **B1** for *their* 1620 or 1428 or 180
2(d)(iv)	71.7 or 71.7[3......]	1	**FT** *their* **(d)(iii)**
3(a)	Kite	1	
3(b)(i)	Translation $\begin{pmatrix} 4 \\ 9 \end{pmatrix}$	2	**B1** for each
3(b)(ii)	Reflection $x = 0.5$ oe	2	**B1** for each
3(b)(iii)	Rotation 90° clockwise oe [centre] (0, 0) oe	3	**B1** for each
3(c)(i)	$(-5, -6)$	1	

Question	Answer	Marks	Partial Marks
3(c)(ii)	Image at $(-5, 0), (-2, 3), (7, 0), (-2, -3)$	2	**B1** for correct size, wrong position or correct shape and orientation with incorrect scale factor
4(a)	4 7 4	2	**B1** for one correct
4(b)	Correct curve	4	**B3FT** for 6 or 7 points correct or **B2FT** for 4 or 5 points correct or **B1FT** for 2 or 3 points correct
4(c)	$x = 1$ oe	1	
4(d)	-1.9 to -1.7 and 3.7 to 3.9	2	**B1** for each
5(a)(i)	68	1	
5(a)(ii)	61, 67, 71, 73	2	**B1** for 3 correct and none incorrect or 4 correct and one incorrect
5(b)(i)	67	1	
5(b)(ii)	64	1	
5(b)(iii)	65	1	
5(b)(iv)	72	1	
5(c)	0.038 cao	1	
5(d)	56	2	**B1** for $56k$ or lists of multiples of 8 and 14 (at least 3 of each)
5(e)	4.79×10^8	1	
5(f)	11 000 or 10 998 or 10 998.35 to 10 998.36	2	**M1** for $8000\left(1 + \dfrac{3.6}{100}\right)^9$
6(a)	Tangent	1	
6(b)(i)	69.1 or 69.11 to 69.12...	2	**M1** for $2 \times 11 \times \pi$
6(b)(ii)	40	2	**B1** for angle $OBC = 40°$ or angle $BOG = 140°$
6(b)(iii)	7.68 or 7.679 to 7.680....	2	**FT** *their* **(b)(ii)** and **(b)(i)** **M1** for $\dfrac{their\mathbf{(b)(ii)}}{360} \times their\mathbf{(b)(i)}$
6(c)(i)	Angle [between] tangent [and] radius oe	1	

Question	Answer	Marks	Partial Marks
6(c)(ii)	180 – 140 or 90 – *their***(b)(ii)**	**B1**	
	$\tan(180 - 140) = \dfrac{11}{BC}$ oe	**M1**	
	[$BC =$] 13.109[........] [= 13.11 correct to 2 dp]	**A1**	
6(c)(iii)	6.11 or 6.112 to 6.114	**3**	**M1** for [$OB^2 =$] $13.11^2 + 11^2$ **A1** for 17.1 or 17.11 or 17.112 to 17.114 OR **M1** for $\dfrac{11}{\sin 40}$ or $\dfrac{11}{\cos 50}$ or $\dfrac{13.11}{\sin 50}$ or $\dfrac{13.11}{\cos 40}$ oe **A1** for 17.1 or 17.11.... or 17.112 to 17.113
7(a)(i)	38	**1**	
7(a)(ii)	Correct explanation e.g. there is more than one mode	**1**	
7(a)(iii)	$\dfrac{7}{20}$	**1**	
7(a)(iv)	9 6 2	**1**	
7(a)(v)	Correct bar chart	**2**	**FT** *their* **(a)(iv)** **B1 FT** for two heights correct
7(b)(i)	144 126	**2**	**B1** for each If 0 scored, **M1** for 90 ÷ 5 or 360 ÷ 20 or 18
7(b)(ii)	Correct pie chart	**2**	**FT** *their* **(b)(i)** angles if they total 270 **B1** for one correct sector
7(c)	2 correct comments	**2**	**B1** for one statistical comparison **B1** for another comparison
8(a)	$2c - 3d$	**2**	**B1** for $2c$ or $-3d$
8(b)	[$x =$] 2.5	**2**	**M1** for $12x = 23 + 7$ or $x - \dfrac{7}{12} = \dfrac{23}{12}$
8(c)	$27 - 9x$	**1**	

Question	Answer	Marks	Partial Marks
8(d)	[h =] 8.4	3	**B2** for $38.64 = 4.6h$ or $77.28 = 9.2h$ or $\dfrac{2 \times 38.64}{5.5 + 3.7}$ oe or **B1** for $38.64 = \dfrac{(5.5 + 3.7)h}{2}$ oe or **M1** for $[h=] \dfrac{2A}{a + b}$
8(e)(i)	$3x = 5y$ oe $2y = x + 4$ oe	2	**B1** for each
8(e)(ii)	[x =] 20 [y =] 12	3	**M1** for correctly eliminating one variable **B1** for one correct
9(a)(i)	−1 1	2	**B1** for each
9(a)(ii)	−1, 0, 0.5, 1	1	**FT** *their***(a)(i)**
9(b)	2 18	2	**B1** for each If zero scored, **SC1** for 18 2
9(c)	Correct graph 	2	**B1** for a horizontal translation through $\begin{pmatrix} k \\ 0 \end{pmatrix}$, $k \neq 1$
10(a)	Correct position of town *B*	2	**B1** for correct bearing **B1** for correct distance
10(b)(i)	Correct triangle drawn	3	**B2** for correct triangle with no or wrong arcs or correct position of *C* with arcs (no triangle) or *C* indicated as the point with bearing greater than 140° from *A* (with triangle) or **B1** for one line correct length drawn or 7 and 5 seen or *C* indicated as the point with bearing greater than 140° from *A* (no triangle)
10(b)(ii)	94 to 98	1	**FT** *their* measured angle at *C*