



BOARD OF STUDIES
NEW SOUTH WALES

2011 HSC General Mathematics Marking Guidelines

Section I

Multiple-choice Answer Key

Question	Answer
1	D
2	A
3	B
4	C
5	B
6	D
7	B
8	D
9	C
10	C
11	B
12	A
13	A
14	B
15	B
16	D
17	C
18	A
19	D
20	C
21	A
22	A

Section II

Question 23 (a)

Criteria	Marks
• Correct calculation of the Medicare levy	3
• Correct calculation of taxable income OR significant progress towards an answer	2
• Correct calculation of total deductions OR progress towards an answer	1

Question 23 (b) (i)

Criteria	Marks
• Correct shape	1

Question 23 (b) (ii)

Criteria	Marks
• Correct answer or correct numerical expression	1

Question 23 (b) (iii)

Criteria	Marks
• Correct answer including explanation and calculations • Correct working and conclusion based on working in (b) (ii)	2
• Evidence of linking N and F correctly, eg $N = 3F + 2$, or in words OR • Correct conclusion from their working	1

Question 23 (c)

Criteria	Marks
• Correct solution using value from table	2
• Correct value from table OR • Correct n , incorrect r , and multiplied by 5000 OR • Correct r , incorrect n , and multiplied by 5000 • Correct n and r	1

Question 23 (d) (i)

Criteria	Marks
• Correct solution or correct numerical expression	1

Question 23 (d) (ii)

Criteria	Marks
• Correct solution	3
• Correct area or correct numerical expression or significant progress towards solution	2
• Progress towards solution	1

Question 24 (a) (i)

Criteria	Marks
• Correct answer, ignore units	1

Question 24 (a) (ii)

Criteria	Marks
• Correct answer, ignore units	1

Question 24 (a) (iii)

Criteria	Marks
• Correct answer or correct numerical expression, ignore units	1

Question 24 (a) (iv)

Criteria	Marks
• Correct answer, ignore units	1

Question 24 (b) (i)

Criteria	Marks
• Correct answer	1

Question 24 (b) (ii)

Criteria	Marks
• Correct answer	1

Question 24 (b) (iii)

Criteria	Marks
• Correct answer	1

Question 24 (c) (i)

Criteria	Marks
• Correct answer	1

Question 24 (c) (ii)

Criteria	Marks
• Correct answer (ignoring rounding)	2
• Correct substitution into correct formula	1

Question 24 (c) (iii)

Criteria	Marks
• Correct bearing	3
• Significant progress towards solution	2
• Correct substitution into Sine Rule OR progress towards solution	1

Question 25 (a) (i)

Criteria	Marks
• Correct answer	1

Question 25 (a) (ii)

Criteria	Marks
• Correct answer must be relevant to phone usage and require a quantitative response	1

Question 25 (a) (iii)

Criteria	Marks
• One suitable method to obtain a stratified sample	1

Question 25 (a) (iv)

Criteria	Marks
• Correct answer	1

Question 25 (b) (i)

Criteria	Marks
• Correct answer	1

Question 25 (b) (ii)

Criteria	Marks
• Correct conclusion supported with calculations	2
• Attempt to consider proportions	1

Question 25 (b) (iii)

Criteria	Marks
• Identifies a correct trend	1

Question 25 (c) (i)

Criteria	Marks
• Correct answer	1

Question 25 (c) (ii)

Criteria	Marks
• Correct answer	1

Question 25 (c) (iii)

Criteria	Marks
• Correct answer or correct numerical expression	1

Question 25 (d) (i)

Criteria	Marks
• Correct answer	1

Question 25 (d) (ii)

Criteria	Marks
• Correct answer	1

Question 26 (a) (i)

Criteria	Marks
• Correct answer or correct numerical expression	1

Question 26 (a) (ii)

Criteria	Marks
• Correct answer or correct from (i)	1

Question 26 (a) (iii)

Criteria	Marks
• Correct answer or correct from (i)	1

Question 26 (a) (iv)

Criteria	Marks
• Correct calculation of loss or correct numerical expression	3
• Correct calculation of financial expectation or significant progress towards solution	2
• Progress towards correct solution	1

Question 26 (b) (i)

Criteria	Marks
• Correct calculation with correct conclusion	1

Question 26 (b) (ii)

Criteria	Marks
• Correct number of years using guess-and-check method	2
• Correct calculation using a value $6 < t < 9$	1

Question 26 (c)

Criteria	Marks
<ul style="list-style-type: none"> Correct answer or correct numerical expression 	4
<ul style="list-style-type: none"> Correct working excluding calculation and subtraction of deposit OR <ul style="list-style-type: none"> Dividing correct interest by correct number of repayments OR <ul style="list-style-type: none"> Correct calculation of amount to be repaid 	3
<ul style="list-style-type: none"> Correct calculation of interest using correct balance OR <ul style="list-style-type: none"> Correct calculation of interest using incorrect balance divided by correct number of repayments 	2
<ul style="list-style-type: none"> Correct calculation of deposit OR <ul style="list-style-type: none"> Correct calculation of interest using wrong balance OR <ul style="list-style-type: none"> Division by correct number of repayments 	1

Question 27 (a)

Criteria	Marks
<ul style="list-style-type: none"> Correct line on diagram 	2
<ul style="list-style-type: none"> Two correct points plotted on diagram 	1

Question 27 (b) (i)

Criteria	Marks
<ul style="list-style-type: none"> Correct solution in km OR <ul style="list-style-type: none"> Correct numerical expression 	2
<ul style="list-style-type: none"> Correct longer distance OR <ul style="list-style-type: none"> Correct angular distance OR correct calculation of distance using 51° or 129° 	1

Question 27 (b) (ii)

Criteria	Marks
<ul style="list-style-type: none"> Correct latitude and correct longitude 	2
<ul style="list-style-type: none"> Correct latitude or longitude 	1

Question 27 (c) (i)

Criteria	Marks
• Correct answer	1

Question 27 (c) (ii)

Criteria	Marks
• Correct conclusion with suitable justification	2
• Progress towards solution, eg correct working with no conclusion or consistent conclusion with one error in calculation	1

Question 27 (d)

Criteria	Marks
• Correct working with correct conclusion	4
• Significant progress towards solution Eg correct substitution into both formulas AND either correct conclusion or correct gains for both	3
• Progress towards solution Eg correct substitution into both formulas	2
• Some progress towards solution Eg correct substitution into one formula	1

Question 28 (a) (i)

Criteria	Marks
• Correct equation	1

Question 28 (a) (ii)

Criteria	Marks
• Correct answer	2
• Correct value of a OR • Correct calculation of P from incorrect a	1

Question 28 (a) (iii)

Criteria	Marks
• Correct shape and asymptotic to both axes	2
• Correct shape but touches axes OR • Significant progress towards correct shape based on error in (i)/(ii)	1

Question 28 (b) (i)

Criteria	Marks
• Correct gradient	1

Question 28 (b) (ii)

Criteria	Marks
• Correct response which includes a reference to value over time period or rate of depreciation	1

Question 28 (b) (iii)

Criteria	Marks
• Correct answer	1

Question 28 (b) (iv)

Criteria	Marks
• Correct values and reasons	2
• One value and one reason OR both values without suitable reasons	1

Question 28 (b) (v)

Criteria	Marks
• Correct answer	2
• Correct numerical expression or attempt to use correct formula with correct calculation	1

Question 28 (b) (vi)

Criteria	Marks
• Correct response	1

General Mathematics

2011 HSC Examination Mapping Grid

Section I

Question	Marks	Content	Syllabus outcomes
1	1	M2: Applications of area and volume	P2
2	1	PB2: Relative frequency and probability	P2
3	1	M7: Spherical geometry	H2, H6, H7
4	1	M4: Right-angled triangles	P2, P6
5	1	PB3: Multi-stage events	H3, H4
6	1	AM4: Modelling linear and non-linear relationships	H3, H5
7	1	DA3: Displaying single data sets DA5: Interpreting sets of data	P4, H4
8	1	DA7: Correlation	H4, H5
9	1	M4: Right-angled triangles	P2, P6
10	1	FM4: Credit and borrowing	H5, H8
11	1	DA5: Interpreting sets of data	H4
12	1	AM3: Algebraic skills and techniques	H2
13	1	M5: Further applications of area and volume	H2, H7
14	1	DA4: Summary statistics	P2
15	1	PB2: Relative frequency and probability	P2
16	1	FM5: Annuities and loan repayments	H5, H8
17	1	DA4: Summary statistics	P2
18	1	AM3: Algebraic skills and techniques	H7
19	1	FM1: Earning money	P2, P8
20	1	AM4: Modelling linear and non-linear relationships	H5
21	1	M1: Units of measurement	P2
22	1	FM4: Credit and borrowing	H5, H8

Section II

Question	Marks	Content	Syllabus outcomes
23 (a)	3	FM1: Earning money FM3: Taxation	P2, P8
23 (b) (i)	1	AM1: Basic algebra skills	P3
23 (b) (ii)	1	AM1: Basic algebra skills	P2, P3
23 (b) (iii)	2	AM1: Basic algebra skills	P2, P3
23 (c)	2	FM2: Investing money	P2, P8
23 (d) (i)	1	M1: Units of measurement M2: Applications of area and volume	P2, P6
23 (d) (ii)	3	M2: Applications of area and volume M5: Further applications of area and volume	P2, P6, P7, H2, H6
24 (a) (i)	1	M3: Similarity of two-dimensional figures	P2
24 (a) (ii)	1	M3: Similarity of two-dimensional figures	P6
24 (a) (iii)	1	M3: Similarity of two-dimensional figures	P6
24 (a) (iv)	1	M3: Similarity of two-dimensional figures	P6

Question	Marks	Content	Syllabus outcomes
24 (b) (i)	1	PB2: Relative frequency and probability DA3: Displaying single data sets	P4
24 (b) (ii)	1	PB2: Relative frequency and probability	P10
24 (b) (iii)	1	PB4: Applications of probability	H4
24 (c) (i)	1	M6: Applications of trigonometry	H2, H6
24 (c) (ii)	2	M6: Applications of trigonometry	H6
24 (c) (iii)	3	M6: Applications of trigonometry	H6, H7
25 (a) (i)	1	DA2: Data collection and sampling	P9
25 (a) (ii)	1	DA1: Statistics and society DA2: Data collection and sampling	P9
25 (a) (iii)	1	DA2: Data collection and sampling	P9
25 (a) (iv)	1	DA2: Data collection and sampling	P9, P11
25 (b) (i)	1	DA5: Interpreting sets of data	H4, H11
25 (b) (ii)	2	DA5: Interpreting sets of data PB2: Relative frequency and probability	H11, P10, P11
25 (b) (iii)	1	DA5: Interpreting sets of data	H4, H11
25 (c) (i)	1	DA5: Interpreting sets of data	H9
25 (c) (ii)	1	DA5: Interpreting sets of data PB4: Applications of probability	H4, H10
25 (c) (iii)	1	DA5: Interpreting sets of data	H4
25 (d) (i)	1	DA5: Interpreting sets of data	H4
25 (d) (ii)	1	DA5: Interpreting sets of data	H9
26 (a) (i)	1	PB3: Multi-stage events	H10
26 (a) (ii)	1	PB3: Multi-stage events	H10
26 (a) (iii)	1	PB3: Multi-stage events	H4, H10
26 (a) (iv)	3	PB4: Applications of probability	H4, H10
26 (b) (i)	1	AM3: Algebraic skills and techniques	H7
26 (b) (ii)	2	AM3: Algebraic skills and techniques	H7
26 (c)	4	FM4: Credit and borrowing	H2, H8
27 (a)	2	DA5: Interpreting sets of data	H4
27 (b) (i)	2	M7: Spherical geometry	H6
27 (b) (ii)	2	M7: Spherical geometry	H6
27 (c) (i)	1	DA6: The normal distribution	H9
27 (c) (ii)	2	DA6: The normal distribution	H4, H9, H11
27 (d)	4	FM2: Investing money FM5: Annuities and loan repayments	P2, P8, H8
28 (a) (i)	1	AM4: Modelling linear and non-linear relationships	H2, H3
28 (a) (ii)	2	AM4: Modelling linear and non-linear relationships	H2, H3, H5
28 (a) (iii)	2	AM4: Modelling linear and non-linear relationships	H3, H5
28 (b) (i)	1	AM2: Modelling linear relationships	P5
28 (b) (ii)	1	AM2: Modelling linear relationships FM6: Depreciation	P5, H11
28 (b) (iii)	1	AM2: Modelling linear relationships AM4: Modelling linear and non-linear relationships	P5, H3

Question	Marks	Content	Syllabus outcomes
28 (b) (iv)	2	AM4: Modelling linear and non-linear relationships FM6: Depreciation	H5, H11
28 (b) (v)	2	FM6: Depreciation	H2, H5
28 (b) (vi)	1	AM4: Modelling linear and non-linear relationships FM6: Depreciation	H2, H5, H8