Ma

KEY STAGE 3

ALL TIERS

2008

Mathematics tests

Mark scheme

for Paper 2

Tiers 3–5, 4–6, 5–7 and 6–8

National curriculum assessments

Introduction

The test papers will be marked by external markers. The markers will follow the mark scheme in this booklet, which is provided here to inform teachers.

This booklet contains the mark scheme for paper 2 at all tiers. The paper 1 mark scheme is printed in a separate booklet. Questions have been given names so that each one has a unique identifier irrespective of tier.

The structure of the mark schemes

The marking information for questions is set out in the form of tables, which start on page 11 of this booklet. The columns on the left-hand side of each table provide a quick reference to the tier, question number, question part and the total number of marks available for that question part.

The **Correct response** column usually includes two types of information:

- a statement of the requirements for the award of each mark, with an indication of whether credit can be given for correct working, and whether the marks are independent or cumulative
- examples of some different types of correct response, including the most common.

The **Additional guidance** column indicates alternative acceptable responses, and provides details of specific types of response that are unacceptable. Other guidance, such as when 'follow-through' is allowed, is provided as necessary.

Questions with a *UAM* element are identified in the mark scheme by an encircled *U* with a number that indicates the significance of using and applying mathematics in answering the question. The *U* number can be any whole number from 1 to the number of marks in the question.

For graphical and diagrammatic responses, including those in which judgements on accuracy are required, marking overlays have been provided as the centre pages of this booklet.

The 2008 key stage 3 mathematics tests and mark schemes were developed by the Test Development Team at Edexcel.

General guidance

Using the mark schemes

Answers that are numerically equivalent or algebraically equivalent are acceptable unless the mark scheme states otherwise.

In order to ensure consistency of marking, the most frequent procedural queries are listed on the following two pages with the prescribed correct action. This is followed by further guidance relating specifically to the marking of questions that involve money, negative numbers, algebra, time, coordinates or probability. Unless otherwise specified in the mark scheme, markers should apply the following guidelines in all cases.

What if …

The pupil's response does not match closely any of the examples given.	Markers should use their judgement in deciding whether the response corresponds with the statement of requirements given in the **Correct response** column. Refer also to the **Additional guidance**.
The pupil has responded in a non-standard way.	Calculations, formulae and written responses do not have to be set out in any particular format. Pupils may provide evidence in any form as long as its meaning can be understood. Diagrams, symbols or words are acceptable for explanations or for indicating a response. Any correct method of setting out working, however idiosyncratic, is acceptable. Provided there is no ambiguity, condone the continental practice of using a comma for a decimal point.
The pupil has made a conceptual error.	In some questions, a method mark is available provided the pupil has made a computational, rather than conceptual, error. A computational error is a 'slip' such as writing $4 \times 6 = 18$ in an otherwise correct long multiplication. A conceptual error is a more serious misunderstanding of the relevant mathematics; when such an error is seen, no method marks may be awarded. Examples of conceptual errors are: misunderstanding of place value, such as multiplying by 2 rather than 20 when calculating 35×27; subtracting the smaller value from the larger in calculations such as $45 - 26$ to give the answer 21; incorrect signs when working with negative numbers.
The pupil's accuracy is marginal according to the overlay provided.	Overlays can never be 100% accurate. However, provided the answer is within, or touches, the boundaries given, the mark(s) should be awarded.
The pupil's answer correctly follows through from earlier incorrect work.	Follow-through marks may be awarded only when specifically stated in the mark scheme, but should not be allowed if the difficulty level of the question has been lowered. Either the correct response or an acceptable follow-through response should be marked as correct.
There appears to be a misreading affecting the working.	This is when the pupil misreads the information given in the question and uses different information. If the original intention or difficulty level of the question is not reduced, deduct one mark only. If the original intention or difficulty level is reduced, do not award any marks for the question part.
The correct answer is in the wrong place.	Where a pupil has shown understanding of the question, the mark(s) should be given. In particular, where a word or number response is expected, a pupil may meet the requirement by annotating a graph or labelling a diagram elsewhere in the question.

What if ...

<table>
<tr><td rowspan="5">The final answer is wrong but the correct answer is shown in the working.</td><td colspan="2">Where appropriate, detailed guidance will be given in the mark scheme and must be adhered to. If no guidance is given, markers will need to examine each case to decide whether:</td></tr>
<tr><td>■ the incorrect answer is due to a transcription error</td><td>If so, award the mark.</td></tr>
<tr><td>■ in questions not testing accuracy, the correct answer has been given but then rounded or truncated</td><td>If so, award the mark.</td></tr>
<tr><td>■ the pupil has continued to give redundant extra working which does not contradict work already done</td><td>If so, award the mark.</td></tr>
<tr><td>■ the pupil has continued, in the same part of the question, to give redundant extra working which does contradict work already done.</td><td>If so, do not award the mark. Where a question part carries more than one mark, only the final mark should be withheld.</td></tr>
<tr><td>The pupil's answer is correct but the wrong working is seen.</td><td colspan="2">A correct response should always be marked as correct unless the mark scheme states otherwise.</td></tr>
<tr><td>The correct response has been crossed or rubbed out and not replaced.</td><td colspan="2">Mark, according to the mark scheme, any legible crossed or rubbed out work that has not been replaced.</td></tr>
<tr><td>More than one answer is given.</td><td colspan="2">If all answers given are correct or a range of answers is given, all of which are correct, the mark should be awarded unless prohibited by the mark scheme. If both correct and incorrect responses are given, no mark should be awarded.</td></tr>
<tr><td>The answer is correct but, in a later part of the question, the pupil has contradicted this response.</td><td colspan="2">A mark given for one part should not be disallowed for working or answers given in a different part, unless the mark scheme specifically states otherwise.</td></tr>
</table>

Marking specific types of question

Responses involving money

For example: £3.20 £7

Accept ✓	Do not accept ✗
✓ Any unambiguous indication of the correct amount eg £3.20(p), £3 20, £3,20, 3 pounds 20, £3-20, £3 20 pence, £3:20, £7.00	✗ Incorrect or ambiguous indication of the amount eg £320, £320p or £700p
✓ The unit, £ or p, is usually printed in the answer space. Where the pupil writes an answer outside the answer space with **no** units, accept responses that are unambiguous when considered alongside the given units eg with £ given in the answer space, accept 3.20, 7 or 7.00	✗ Ambiguous use of units outside the answer space eg with £ given in the answer space, do not accept 3.20p outside the answer space
✓ Given units amended eg with £ crossed out in the answer space, accept 320p, 700p	✗ Incorrect placement of decimal points, spaces, etc or incorrect use or omission of 0 eg £3.2, £3 200, £32 0, £3-2-0, £7.0

Responses involving negative numbers

For example: –2

Accept ✓	Do not accept ✗
	To avoid penalising the error below more than once within each question, do not award the mark for the *first* occurrence of the error within each question. Where a question part carries more than one mark, only the final mark should be withheld. ✗ Incorrect notation eg 2–

Responses involving the use of algebra

For example: $2 + n$ $n + 2$ $2n$ $\frac{n}{2}$ n^2

Accept ✓	Take care ! Do not accept ✗
✓ Unambiguous use of a different case or variable eg N used for n x used for n	! Unconventional notation eg $n \times 2$ or $2 \times n$ or $n2$ or $n + n$ for $2n$ $n \times n$ for n^2 $n \div 2$ for $\frac{n}{2}$ or $\frac{1}{2}n$ $2 + 1n$ for $2 + n$ $2 + 0n$ for 2 Within a question that demands simplification, do not accept as part of a final answer involving algebra. Accept within a method when awarding partial credit, or within an explanation or general working.
	✗ Embedded values given when solving equations eg in solving $3x + 2 = 32$, $3 \times 10 + 2 = 32$ for $x = 10$
	To avoid penalising the two types of error below more than once within each question, do not award the mark for the *first* occurrence of each type within each question. Where a question part carries more than one mark, only the final mark should be withheld.
✓ Words used to precede or follow equations or expressions eg $t = n + 2$ tiles or tiles = $t = n + 2$ for $t = n + 2$	! Words or units used within equations or expressions eg n tiles + 2 n cm + 2 Do not accept on their own. Ignore if accompanying an acceptable response.
✓ Unambiguous letters used to indicate expressions eg $t = n + 2$ for $n + 2$	✗ Ambiguous letters used to indicate expressions eg $n = n + 2$ for $n + 2$

Responses involving time

A time interval *For example: 2 hours 30 minutes*

Accept ✓	Take care ! Do not accept ✗
✓ Any unambiguous indication eg 2.5 (hours), 2h 30 ✓ Digital electronic time ie 2:30	✗ Incorrect or ambiguous time interval eg 2.3(h), 2.30, 2-30, 2h 3, 2.30 min ! The unit, hours and/or minutes, is usually printed in the answer space. Where the pupil writes an answer outside the answer space, or crosses out the given unit, accept answers with correct units, unless the question has specifically asked for other units to be used.

A specific time *For example: 8:40 am 17:20*

Accept ✓	Do not accept ✗
✓ Any unambiguous, correct indication eg 08.40, 8.40, 8:40, 0840, 8 40, 8-40, twenty to nine, 8,40 ✓ Unambiguous change to 12 or 24 hour clock eg 17:20 as 5:20 pm, 17:20 pm	✗ Incorrect time eg 8.4 am, 8.40 pm ✗ Incorrect placement of separators, spaces, etc or incorrect use or omission of 0 eg 840, 8:4:0, 084, 84

Responses involving coordinates

For example: (5, 7)

Accept ✓	Do not accept ✗
✓ Unconventional notation eg (05, 07) (five, seven) ($\overset{x}{5}$, $\overset{y}{7}$) ($x = 5$, $y = 7$)	✗ Incorrect or ambiguous notation eg (7, 5) ($\overset{y}{7}$, $\overset{x}{5}$) ($5x$, $7y$) (5^x, 7^y) ($x - 5$, $y - 7$)

Responses involving probability

A numerical probability should be expressed as a decimal, fraction or percentage only.

For example: 0.7 $\frac{7}{10}$ 70%

Accept ✓	Take care ! Do not accept ✗
✓ Equivalent decimals, fractions and percentages eg 0.700, $\frac{70}{100}$, $\frac{35}{50}$, 70.0%	The first **four** categories of error below should be ignored if accompanied by an acceptable response, but should not be accepted on their own. However, to avoid penalising the first **three** types of error below more than once within each question, do not award the mark for the *first* occurrence of each type of error unaccompanied by an acceptable response. Where a question part carries more than one mark, only the final mark should be withheld.
✓ A probability correctly expressed in one acceptable form which is then incorrectly converted, but is still less than 1 and greater than 0 eg $\frac{70}{100} = \frac{18}{25}$	! A probability that is incorrectly expressed eg 7 in 10 7 over 10 7 out of 10 7 from 10
	! A probability expressed as a percentage without a percentage sign.
	! A fraction with other than integers in the numerator and/or denominator.
	! A probability expressed as a ratio eg 7 : 10, 7 : 3, 7 to 10
	✗ A probability greater than 1 or less than 0

Recording marks awarded on the test paper

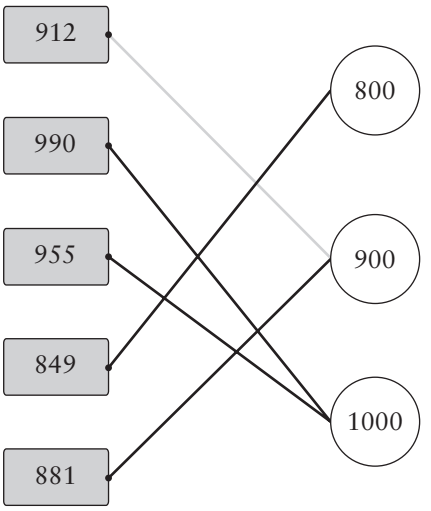
All questions, even those not attempted by the pupil, will be marked, with a 1 or a 0 entered in each marking space. Where 2m can be split into 1m gained and 1m lost, with no explicit order, then this will be recorded by the marker as 1 0

The total marks awarded for a double page will be written in the box at the bottom of the right-hand page, and the total number of marks obtained on the paper will be recorded on the front of the test paper.

A total of 120 marks is available in each of tiers 3–5, 4–6, 5–7 and 6–8.

Awarding levels

The sum of the marks gained on paper 1, paper 2 and the mental mathematics paper determines the level awarded. Level threshold tables, which show the mark ranges for the award of different levels, will be available on the NAA website *www.naa.org.uk/tests* from Monday 23 June 2008.

Tier & Question						
3-5	4-6	5-7	6-8		**Rounding**	
1					**Correct response**	**Additional guidance**
a				**2m**	Matches all four numbers correctly, ie 	! *Number matched to more than one nearest hundred* For 2m or 1m, do not accept as a correct match
				or		
				1m	Matches at least two numbers correctly	
b				**1m**	Gives a value greater than or equal to 45 but less than 55	✓ *Fractions or decimals* × *Value of exactly 55 given*
				1m	Gives a different value greater than or equal to 45 but less than 55 from any credited for the first mark	
				U1		

Tier & Question						
3-5	4-6	5-7	6-8		**Cuboid**	
2					**Correct response**	**Additional guidance**
a				**1m**	6	
b				**1m**	2	
				1m	3	

Tier & Question						
3-5	4-6	5-7	6-8		**Placing 40**	
3					**Correct response**	**Additional guidance**
				1m	Indicates 40 in the correct position, ie 	! *Inaccurate indication* Accept provided their indication is closer to the correct marker than any other
				1m	Indicates 40 in the correct position, ie 	! *Follow-through* For the second mark, accept responses in which the distance between the arrow and zero is half as big as for the first mark

Tier & Question						Directions
3-5	4-6	5-7	6-8			
4					**Correct response**	**Additional guidance**
a				**1m**	Indicates right then left	✓ ***Unambiguous indication*** eg, for part (a) ◆ r then l
b				**2m** ***or*** **1m** U1	Gives directions that state or imply the following four steps (or equivalent) in the correct order: 1. (Come out of house A and) turn right 2. (Take the) second road on the left 3. Turn right 4. (House C is on the) right Gives directions that state or imply all four steps, with not more than one error eg ▪ Right Left [indication of 'second' omitted] Right Right ▪ Turn right out of the house Take the second *right (error)* Take the first right The house is on the right or Gives directions that state or imply steps 2 and 3 above, even if steps 1 and/or 4 are incorrect or omitted or Gives correct directions for getting from house C to house A: 1. (Come out of house C and) turn left 2. (At the end of the road) turn left 3. Turn right 4. (House A is on the) left	✓ ***For part (b), unambiguous description for step 2, ie 'second road on the left'*** eg ◆ Cross the junction then turn left ◆ At the next turning, go straight on, then turn left

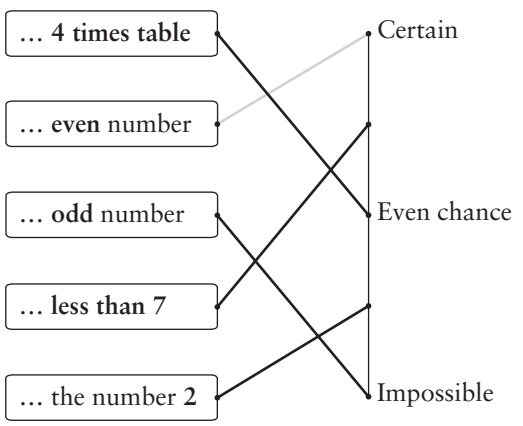
Tier & Question						
3-5	4-6	5-7	6-8		**Writing cheques**	
5					**Correct response**	**Additional guidance**
				1m	£ 102.70	! *Non-standard notation* Condone any unambiguous notation eg, for the first mark accept • £ 102 = 70
				1m	£ 120.07	

Tier & Question						
3-5	4-6	5-7	6-8		**Theme park**	
6					**Correct response**	**Additional guidance**
a				**1m**	8	
b				**1m**	7	
c				**1m**	5	

Tier & Question						
3-5	4-6	5-7	6-8			**Adding odd**
7					**Correct response**	**Additional guidance**
				1m	Gives a correct counter example showing the sum of two odd numbers eg ■ 1 + 3 = 4, which is even ■ 5 and 7 makes 12 ■ Odd = even + 1, so odd + odd = even + even + 2 = even	✓ *Minimally acceptable example* eg ◆ 1 + 3 = 4 ✓ *Odd numbers taken to be equal* eg ◆ 2 × 5 = 10 ! *Response uses negative numbers and/or zero* Accept negative odd numbers and zero as an even number within a correct response eg, accept ◆ –1 + 1 = 0 ! *Other calculations or general reasoning given alongside a correct response* Ignore other calculations, even if they are incorrect or do not relate to the given statement If a correct counter example is given, ignore any general explanation unless it contradicts the counter example given × *Incomplete or incorrect example* eg ◆ 1 + 3 = even ◆ Odd + odd = even ◆ Only odd + even = odd ◆ 15 + 17 = 42
				U1		

Tier & Question						
3-5	4-6	5-7	6-8			**Calculating**
8					**Correct response**	**Additional guidance**
a				**1m**	2134	
b				**1m**	663768	

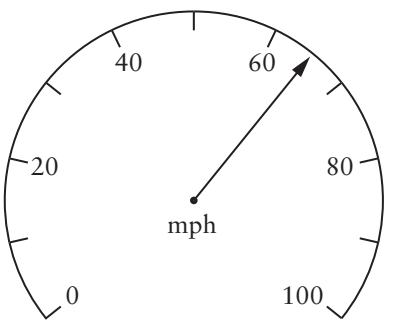
Tier & Question						
3-5	4-6	5-7	6-8		**Time machine**	
9	**1**				**Correct response**	**Additional guidance**
				2m	6	
				or		
				1m	Shows the value 94 or the values 4 and 2 or Shows a complete correct method with not more than one computational error eg ▪ 100 – 46 – 48 ▪ 100 – (46 + 48) ▪ 100 – 46 = *53 (error)* *53* – 48 = *5*	× *For 1m, necessary brackets omitted* eg ◆ 100 – 46 + 48

Tier & Question						
3-5	4-6	5-7	6-8		**Four cards**	
10	**2**				**Correct response**	**Additional guidance**
				2m	Matches all four statements to their correct positions, ie  	! *Statement matched to more than one position* For 2m or 1m, do not accept as a correct match
				or		
				1m	Matches any two statements to their correct positions	

Tier & Question						
3-5	4-6	5-7	6-8		**Sleep**	
11	**3**				**Correct response**	**Additional guidance**
a	a			**1m**	11	× *–11*
b	b			**2m**	7pm or 19:00	! *Incorrect notation for time* Condone eg, for 2m accept • 7 • 19 × *7am*
				or		
				1m	Shows or implies that 12 hours' sleep are needed eg ▪ 12 seen ▪ (30 – 6) ÷ 2 ▪ 30 – 6 = 24, 24 ÷ 2	! *For 1m, necessary brackets omitted* Condone eg, for 1m accept • 30 – 6 ÷ 2 ! *For 1m, incorrect order of operations shown* Condone provided evaluation using the correct order is seen eg, for 1m accept • 6 – 30 = 24, 24 ÷ 2 eg, for 1m do not accept • (6 – 30) ÷ 2 × *For 1m, –12*
				(U1)		

Tier & Question						
3-5	4-6	5-7	6-8		**Sorting shapes**	
12	**4**				**Correct response**	**Additional guidance**
				2m	Gives the three letters B, C and D in the correct places in the table, ie <table><tr><td>A</td><td></td><td>D</td></tr><tr><td></td><td>B</td><td>C</td></tr></table>	✓ *Unambiguous indication* × *Any letter repeated in an incorrect place in the table* eg, for 1 mark <table><tr><td>A</td><td>*A (error)*</td><td>D</td></tr><tr><td></td><td>B</td><td>C</td></tr></table> eg, for 0 marks <table><tr><td>A</td><td>*A (error)*</td><td>D</td></tr><tr><td>*C (error)*</td><td>B</td><td>C</td></tr></table>
				or		
				1m	Gives at least two of the letters in the correct places in the table, with not more than one error or omission	

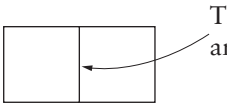
Tier & Question						Shopping
3-5	4-6	5-7	6-8			
13	**5**				**Correct response**	**Additional guidance**
a	a			**1m**	£ 1.15	
b	b			**1m**	5	! *Reference to remainder* Condone reference to the correct amount of money left over eg, accept • 5 with 20p change • 5 r 20 eg, do not accept • 5.5(…) or 5.6 • 5 with 55p change

Tier & Question						Speedometer
3-5	4-6	5-7	6-8			
14	**6**				**Correct response**	**Additional guidance**
a	a			**1m**	Indicates the correct value on the scale, ie 	! *Inaccurate indication* Accept provided their marker would touch the circumference of the dial within 2mm of the correct position, if extended
b	b			**1m**	40	

Tier & Question						
3-5	4-6	5-7	6-8		**Football survey**	
15	**7**				**Correct response**	**Additional guidance**
				2m	Gives the value 3 in the key and completes 3 circles for each of the Yes and No rows	! *Circles not shaded, or inaccurate in size* Accept provided the pupil's intention is clear
				or		
				1m	Shows or implies the value 9 eg ▪ Completes 9 circles for one or both rows or Draws the same number of circles for each of the Yes and No rows, provided this number is not 4, even if the value in the key is incorrect or omitted	
				U1		

Tier & Question						
3-5	4-6	5-7	6-8		**Jug**	
16	**8**				**Correct response**	**Additional guidance**
				1m	750	
				1m	100	
				1m	$\frac{1}{5}$ or equivalent fraction or decimal	

Tier & Question					Double shape	
3-5	4-6	5-7	6-8			
17	9				**Correct response**	**Additional guidance**
a	a			**1m**	Indicates Yes and gives a correct explanation The most common correct explanations:	! *Incorrect units* Condone eg, accept • 18cm, 9cm • 18^2, 9^2
					Show or imply the correct areas eg ■ The area of the rectangle is 18, the area of the square is 9 and 9 × 2 = 18 ■ A is 18 and B is 18 ÷ 2 = 9	✓ *Minimally acceptable explanation* eg • 18, 9 • 2 × 9 (or double 9), 9 • 18, 18 ÷ 2
						× *Incomplete explanation* eg • The area of the rectangle is 18
					Refer to the space taken up by each shape eg ■ Two of the squares can fit inside the rectangle ■ If you draw a line down the middle of the rectangle, you get two of the squares ■ A holds twice as many squares as B	✓ *Minimally acceptable explanation* eg • A holds two squares • You cut A in half to get B • Rectangle divided into two squares on the diagram • I counted the squares inside the shapes
						× *Incomplete explanation* eg • The area of A is twice the area of B • B is half of A • He's just added another shape on • I counted the squares
					Refer to the ratio of lengths together with the equal widths eg ■ They are the same width but the rectangle is twice as long as the square ■ 6 × 3 is twice 3 × 3	✓ *Minimally acceptable explanation* eg • Equal width, but the length is doubled • Same height, but width is twice as long • 6 × 3, 3 × 3
						× *Incomplete explanation* eg • The rectangle is twice as long as the square • Because A is 6 squares long and B is 3 squares long

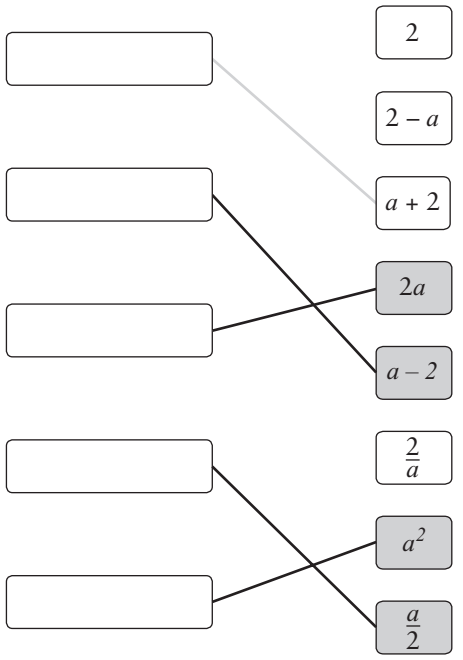
Tier & Question					Double shape (cont)	
3-5	4-6	5-7	6-8			
17	9				Correct response	Additional guidance
b	b			1m	Indicates No and gives a correct explanation The most common correct explanations:	! *Incorrect units* Condone eg, accept • $18cm^2$, $12cm^2$
					Show or imply the correct perimeters eg ▪ The perimeter of the rectangle is 18, the perimeter of the square is 12 but $2 \times 12 \neq 18$ ▪ 2×9 is not twice 2×6	✓ *Minimally acceptable explanation* eg • 18, 12 • 2×9, 2×6 • 12 + 6, 12 • It's 6cm more but that's not double 12 × *Incomplete or incorrect explanation* eg • The perimeter of the rectangle is 18 • Area A = 18, area B = 12
					Refer to the distance around each shape eg ▪ The length around the edge of the square goes more than halfway round the edge of the rectangle	✓ *Minimally acceptable explanation* eg • It's less than double the perimeter of the square • B's perimeter is more than half A's • I counted the distance round the sides × *Incomplete explanation* eg • The perimeter of A is not double the perimeter of B
					Refer to the rectangle's additional lengths eg ▪ You only add two of the square's sides to get the rectangle, not all four ▪ It's increased by 50%, not doubled ▪ You join two squares, but two of their sides will be touching	✓ *Minimally acceptable explanation* eg • It has two extra lengths of 3, not four • It's half as long again •  × *Incomplete explanation* eg • It has two extra sides
				U1		

Cube edges

Tier & Question 3-5	4-6	5-7	6-8		Correct response	Additional guidance
18	10	1		**2m**	Completes the table correctly to show the further 5 ways with no errors or duplicates, ie Ways of moving from A to H A → B → C → H A → B → G → H A → D → C → H A → D → E → H A → F → E → H A → F → G → H [rows in any order]	✓ *Unambiguous indication* eg, for A → B → G → H • ABGH ! *Correct vertices, but in an incorrect order* eg, for A → B → G → H • A → G → B → H Do not accept as a correct way
				or **1m**	Gives at least 3 of the correct ways, even if there are other errors or duplicates	

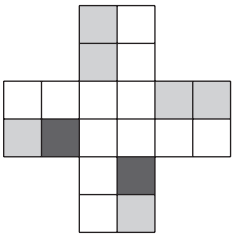
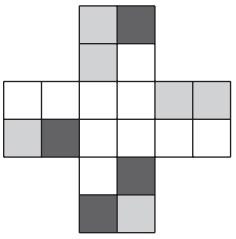
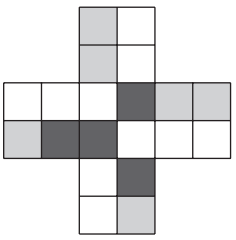
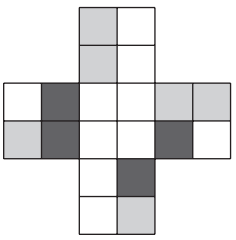
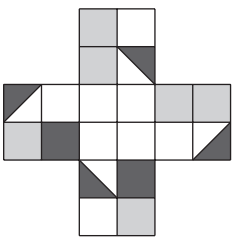
Track

Tier & Question 3-5	4-6	5-7	6-8		Correct response	Additional guidance
a	a	a		**1m**	5	! *Response assumes the piece of track shown has already been counted* For answers of 4 for part (a) followed by 5 for part (b), mark as 0, 1
b	b	b		**1m**	6	

Tier & Question						
3-5	4-6	5-7	6-8		**Matching expressions**	
20	**12**	**3**			**Correct response**	**Additional guidance**
				2m	Matches all four statements correctly, ie  	! *Statement matched to more than one expression* For 2m or 1m, do not accept as a correct match
				or		
				1m	Matches three of the statements correctly	

Tier & Question						
3-5	4-6	5-7	6-8		**Area**	
21	**13**	**4**			**Correct response**	**Additional guidance**
				1m	Gives both correct areas, ie 9 then 3	

Tier & Question						
3-5	4-6	5-7	6-8		**Values**	
22	**14**	**5**			**Correct response**	**Additional guidance**
a	a	a		**1m**	6	! *Incomplete processing* Penalise only the first occurrence eg, for parts (a) and (b) • 9 – 3 4 – 6 Mark as 0, 1
b	b	b		**1m**	–2	

Tier & Question						
3-5	4-6	5-7	6-8		**Symmetry patterns**	
23	**15**	**6**			**Correct response**	**Additional guidance**
a	a	a		**1m**	Indicates two squares so that the shape has rotation symmetry of order 4, ie 	✓ *Unambiguous indication*
b	b	b		**1m**	Indicates four squares in total [that include the same two squares required in part (a)] so that the shape has rotation symmetry of order 2 eg ■  ■  ■  ■ 	! *For part (b), response uses part squares* Accept provided the intended symmetry is clearly correct

Tier & Question						
3-5	4-6	5-7	6-8			**Shop**
24	**17**	**7**			**Correct response**	**Additional guidance**
				2m	£ 196.25	
				or		
				1m	Digits 19625 seen or Shows or implies the correct subtotals of pay for the hours worked at 6.35, or pay for the hours worked at 7.5(0) eg ▪ 158.75 ▪ 25 × 6.35 ▪ 37.5(0) ▪ 5 × 7.5(0) ▪ 15 and 22.5(0) seen or Shows the values 44.45, 40.4(0) and 22.5(0) or Shows or implies a complete correct method with not more than one computational error eg ▪ 7 + 7 + 4 + 7 = *26 (error)*, 26 × 6.35 + 5 × 7.5(0) = 202.60 or Gives an answer of 193.95 or 200.85 [the only error is to assume 6.35 or 7.50 for all hours on Wednesday]	Markers may find the following useful: Mon 7 × 6.35 = 44.45 Tues 7 × 6.35 = 44.45 Wed 4 × 6.35 = 25.4 and 2 × 7.5 = 15 or 4 × 6.35 + 2 × 7.5 = 40.4(0) Thur 7 × 6.35 = 44.45 (Fri 0) Sat 3 × 7.5 = 22.5 no. of hours worked / pay per hour / total 25 / 6.35 / 158.75 5 / 7.5(0) / 37.5(0) or 2 / 7.5(0) / 15(.00) 3 / 7.5(0) / 22.5(0)
				U1		

Tier & Question						
3-5	4-6	5-7	6-8			**Using algebra**
25	**18**	**8**			**Correct response**	**Additional guidance**
				1m	$n + 2$	! *Unsimplified expression or unconventional notation* eg, for Jo's age • $n + 1 + 1$ • $1n + 2$ eg, for Kate's age • $2 \times (n + 2)$ • $n \times 2 + 4$ Condone
				1m	$2(n + 2)$ or $2n + 4$	! *For the second mark, follow-through* Accept follow-through as 2 × their algebraic expression for Jo's age provided there are no other errors eg, from Jo's age as 2n accept • $4n$ • $n \times 4$ × *For the second mark, incomplete processing* eg • $2 \times n + 2 \times 2$ × *For the second mark, necessary brackets omitted* eg • $2 \times n + 2$ • $2(n + 2$

Tier & Question						
3-5	4-6	5-7	6-8			**Goldbach**
26	**16**	**9**			**Correct response**	**Additional guidance**
a	a	a		**1m**	Gives a pair of prime numbers that sum to 16, ie 3 and 13, in either order or 5 and 11, in either order	
				1m U1	Gives a different pair of prime numbers that sum to 16 from any credited for the first mark	× ***Values credited for the first mark repeated but in reverse order***
b	b	b		**1m**	Completes the sentence correctly, giving an even number greater than 16 and a correct pair of prime numbers that sum to their number eg ▪ … even number **20** … … prime numbers **7** and **13** ▪ … even number **22** … … prime numbers **11** and **11** ▪ … even number **50** … … prime numbers **3** and **47**	× ***Their even number is less than or equal to 16*** Markers may find the following values useful: Prime numbers up to 100 2, 3, 5, 7 11, 13, 17, 19 23, 29 31, 37 41, 43, 47 53, 59 61, 67 71, 73, 79 83, 89 97
				U1		

Tier & Question						
3-5	4-6	5-7	6-8		**Side length**	
27	**19**	**10**			**Correct response**	**Additional guidance**
				2m	6.3 or equivalent	
				or		
				1m	Shows the value 25.2 or equivalent or Shows a complete correct method with not more than one computational error eg ■ 8.4 × 3 ÷ 4 ■ (8.4 + 8.4 + 8.4) ÷ 4 ■ 8.4 + 8.4 + 8.4 = *25.6 (error)*, 25.6 ÷ 4 = 6.4	× ***For 1m, necessary brackets omitted*** eg ◆ 8.4 + 8.4 + 8.4 ÷ 4
				U1		

Tier & Question						
3-5	4-6	5-7	6-8		**Value of x**	
	20	**11**	**1**		**Correct response**	**Additional guidance**
	a	a	a	**1m** U1	Indicates … one particular number, ie ☑ 5 ☐ 6 ☐ 7 ☐ 8 ☐ 9	
	b	b	b	**1m** U1	Indicates … any number at all, ie ☐ 5 ☐ 6 ☐ 7 ☐ 8 ☑ 9	

Tier & Question					
3-5	4-6	5-7	6-8		**Darts**
	21	**12**	**2**		**Correct response**	**Additional guidance**
				1m	Gives all three correct numbers, ie 10, 15 and 20 [any order]	

Tier & Question						
3-5	4-6	5-7	6-8		**Conversions**	
	22	**13**	**3**		**Correct response**	**Additional guidance**
				1m	Gives a correct explanation The most common correct explanations:	× ***Explanation does not use the values in the given table*** eg • 1 ounce is more like 28g • They only use 25g as roughly equal, so those values are not accurate ! ***Explanation states or implies what values 'should be' or that the table is 'incorrect'*** Condone
					Show the values in grams do not consistently go up/down in steps of 25 per ounce eg ■ It goes up in 25s until the step from 3 to 4 ounces when it suddenly goes up 35 ■ It should go from 150g down to 125g, but it's 110g instead	✓ ***Minimally acceptable explanation*** eg • It goes up in 25s at first but then changes • It goes up 25, 25, 35, 40 and so it is not a steady pattern • It should go 25, 50, 75, 100 • The numbers should go up by the same amount each time × ***Incomplete explanation*** eg • 25, 25, 35, 40 • 4 ounces should be 100g and 10 ounces should be 250g • They don't go up in proportion
					Show that the relationship between two values in grams is not what other values would predict eg ■ If 1 ounce is 25g, then 4 ounces should be 25 × 4 = 100g not 110g ■ If 5 ounces is 150g, then 10 ounces should be 150 × 2 = 300g not 275g ■ 10 ounces in grams should be 25 × 10 = 250, but it is 275 in the table ■ 50 ÷ 2 = 25, but 150 ÷ 5 = 30	✓ ***Minimally acceptable explanation*** eg • 25 × 4 ≠ 110 • 4 should be 25 × 4 = 100 • 150 × 2 ≠ 275 • If 5 is 150, then 10 should be 300 • 50 ÷ 2 ≠ 150 ÷ 5 • 10oz should equal double 5oz but it doesn't × ***Incomplete explanation*** eg • 1 ounce is 25g so 4 ounces shouldn't be 110g • 5 ounces = 150g, but 10 ounces = 275g
				(U1)		

Tier & Question						
3-5	4-6	5-7	6-8		**Concorde**	
	23	**14**	**4**		**Correct response**	**Additional guidance**
				2m	1200	
				or		
				1m	Shows or implies a correct rate, other than 1 mile every 3 seconds, even if it doesn't use single units of time eg ▪ 20 (miles) per minute ▪ $\frac{1}{3}$ (mile) in a sec ▪ 10 miles in 30 seconds ▪ 60 miles every 3 mins or Shows or implies a complete correct method with not more than one computational or rounding error eg ▪ 20×60 ▪ $\frac{60}{3} \times 60$ ▪ $\frac{1}{3} \times 3600$ ▪ $1 \div 3 = 0.33$ *(premature rounding)* $0.33 \times 60^2 = 1188$	! ***For 1m, unit(s) abbreviated*** Condone provided unambiguous within the context of the question eg, for 1m accept ◆ 20m per min ◆ $\frac{1}{3}$ m/s [miles implied by given context] eg, for 1m do not accept ◆ 20m per m [ambiguity between miles and minutes]

Tier & Question					Counters in a bag	
3-5	4-6	5-7	6-8			
	24	15	5		Correct response	Additional guidance
				2m	Completes the sentence correctly with three positive integers r, w then y, such that $w = 2r$ and $y < r$ eg ■ 2, 4 then 1 ■ 3, 6 then 1 or 2 ■ 4, 8 then 1, 2 or 3	
				or		
				1m	Completes the sentence with three integers r, w then y, such that $w = 2r$ and $y = 0$ eg ■ 2, 4 then 0 ■ 3, 6 then 0 or Completes the sentence with three values r, w then y between zero and one, such that $r > \frac{1}{4}$, $w = 2r$ and $r + w + y = 1$ eg ■ $\frac{2}{7}$, $\frac{4}{7}$ then $\frac{1}{7}$ ■ 0.3, 0.6 then 0.1	× *For 1m, values for r or w negative or zero* eg ◆ –1, –2 then 0 ◆ 0, 0 then 0

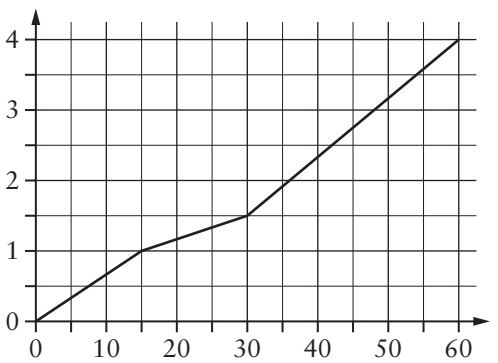
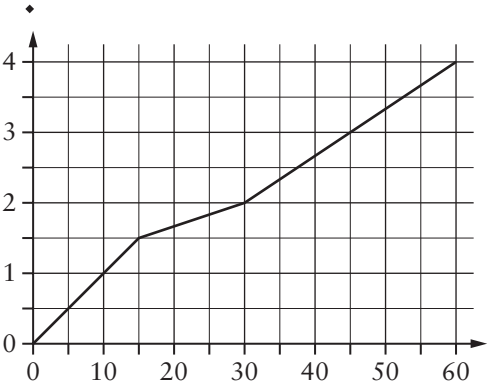
Tier & Question						Perimeters
3-5	4-6	5-7	6-8			
	25	16	6		Correct response	Additional guidance
	a	a	a	**1m**	$7a + 3$	! *Unsimplified expression or unconventional notation* eg • $\frac{42a + 18}{6}$ • $(42 \times a + 18) \div 6$ Condone × *Necessary brackets omitted* eg • $42a + 18 \div 6$
	b	b	b	**1m**	*5*	
	c	c	c	**1m**	24	! *Units given* Ignore, even if incorrect for a perimeter eg, accept • 24cm • $24cm^2$ × *Incomplete processing* eg • 4×6

Tier & Question						Yoghurt
3-5	4-6	5-7	6-8			
	26	17	7		Correct response	Additional guidance
				2m	125	
				or		
				1m	Shows or implies recognition of the need to divide by 7 eg ▪ $\frac{5}{7} \times 175$ ▪ $175 \div 7$ ▪ 25 seen or Shows the value 50 [mass of fruit]	

Tier & Question						
3-5	4-6	5-7	6-8		**Lawn**	
	27	**18**	**8**		**Correct response**	**Additional guidance**
				2m	28.(…) or 9π	
				or		
				1m	Shows or implies a complete correct method for finding the area of the lawn, with no evidence of conceptual error and not more than one computational or rounding error eg ▪ Shows the digits 282(…) or 283 ▪ $3^2 \times \pi$ ▪ π = *3 (rounding error)*, 9 × 3 = 27	× ***For 1m, conceptual error*** eg ◆ $3^2 \times \pi = 19$ or 18.8(…) or 6π ◆ $\pi 3^2 = 89$ ◆ Area = 2 × 3 × π

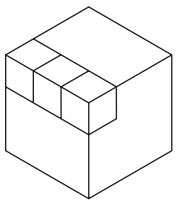
Tier & Question						
3-5	4-6	5-7	6-8		**Triangular numbers**	
	28	**19**	**9**		**Correct response**	**Additional guidance**
	a	a	a	**1m**	*55*	
	b	b	b	**1m**	5050	

Tier & Question					Isosceles triangle	
3-5	4-6	5-7	6-8			
	29	21	10		Correct response	Additional guidance
				2m	Gives $x = 74$, $y = 32$ and $z = 46$ and gives a correct reason for each angle The most common correct reasons:	
					For angle x, refer to the isosceles triangle eg ▪ It is an isosceles triangle, so it is equal to angle ADB ▪ The triangle is isosceles so it is the same as the 74° angle marked	✓ *Minimally acceptable reason* eg ◆ Isosceles × *Incomplete reason without the correct geometrical property identified* eg ◆ It is equal to angle ADB ◆ It is the same as the 74° angle marked
					For angle y, refer to angles in a triangle eg ▪ Angles in a triangle, so 180 – 74 – 74 ▪ 74 + 74 = 148 and 180 – 148 because they add up to 180 in a triangle	✓ *Minimally acceptable reason* eg ◆ Angles in a triangle ! *Follow-through from their x* For angle y, accept 106 – their x accompanied by a correct reason × *Incomplete reason without the correct geometrical property identified* eg ◆ 180 – 74 – 74 ◆ 74 + 74 = 148 and 180 – 148
					For angle z, refer to angles in a triangle and angles on a straight line or just angles in a triangle or exterior angle of a triangle eg ▪ Angles in a triangle, 180 – 28 – 74 – 32 ▪ Angles on a straight line, 180 – 74 = 106, angles in a triangle, 180 – 106 – 28 ▪ Exterior angle of a triangle, 74 – 28	✓ *Minimally acceptable reason* eg ◆ Angles in a triangle ◆ Angles on a straight line and angles in a triangle ◆ Exterior angle of a triangle ! *Follow-through from their x and their y* For angle z, accept 152 – their x – their y accompanied by a correct reason × *Incomplete reason without the correct geometrical property identified* eg ◆ 180 – 28 – 74 – 32 ◆ 180 – 74 = 106, 180 – 106 – 28
				or		
				1m	Gives two correct angles with a correct reason for each or Gives all three correct angles, even if reasons are incorrect or omitted	✓ *For 1m, follow-through* Accept follow-through for each angle as detailed above
				U1		

Tier & Question						
3-5	4-6	5-7	6-8		**Journeys**	
	30	**20**	**11**		**Correct response**	**Additional guidance**
		a	a	**1m**	Gives all four names in the correct order, ie Chris Dee Ann Ben	✓ ***Unambiguous indication*** eg • C D A B
		b	b	**2m**	Joins the points (0, 0), (15, 1), (30, 1.5) and (60, 4) with straight lines, ie  	! ***Lines not ruled or accurate*** Accept provided the pupil's intention is clear
				or		
				1m	Indicates at least two of the points (15, 1), (30, 1.5) and (60, 4) on the graph, even if they are not joined or are joined incorrectly or Shows or implies all three sets of coordinates (15, 1), (30, 1.5) and (60, 4) in working, even if the graph is incorrect or omitted	! ***For 1m, follow-through from their (15, 1) with an incorrect y-value*** For an incorrect y-value between 0.5 and 3 inclusive, accept their (30, 1.5) as (30, their incorrect y-value + 0.5) eg, for 1m accept • 
		c	c	**1m**	*5*	! ***Follow-through from their graph in part (b)*** Provided their line for the final section of the graph has a positive gradient and passes through (60, 4), accept follow-through as 2 × (4 – their y-coordinate for (30, 1.5))

Tier & Question						
3-5	4-6	5-7	6-8			**Special offer**
		22	**12**		**Correct response**	**Additional guidance**
				2m	Indicates Both paid the same and gives a correct justification eg ▪ Marie paid 96 – 9.60 = 86.40 Richard paid 108 – 21.60 = 86.40 ▪ 0.9 × 96 = 86.4 0.8 × 108 = 86.4	✓ ***For 2m, minimally acceptable justification*** eg ◆ 96 – 9.6(0), 108 – 21.6(0) ◆ 0.9 × 96, 0.8 × 108 ◆ 86.4(0) × ***For 2m or 1m, incomplete justification*** eg ◆ 10% off 96 is the same as 20% off 108 ◆ It works out to be the same
				or		
				1m	Gives a correct justification but makes an incorrect or no decision or Gives a correct justification with not more than one computational or rounding error, but follows through to make their correct decision eg ▪ Marie paid 96 – 9.60 = *87.4(0) (error)* Richard paid 108 – 21.60 = 86.4(0) [indicates Marie]	× ***For 1m, conceptual error*** eg ◆ 20% off 108 = 108 – (108 ÷ 20) = 108 – 5.40 = 102.60
				U1		

Tier & Question				*Marking overlay available*		**Planes**
3-5	4-6	5-7	6-8			
		23	**13**		**Correct response**	**Additional guidance**
		a	a	**1m**	Indicates the correlation is positive	! *Positive qualified* Ignore eg, accept • Strong positive • Direct positive × *Sign of correlation not indicated* eg • High • Strong ! *Relationship quantified* Ignore alongside a correct response × *Relationship described without reference to correlation* eg • The greater the wingspan, the more passengers it can hold
		b	b	**1m**	Draws a line of best fit within the tolerance, and at least of the length, as shown on the overlay	! *Line not ruled or accurate* Accept provided the line is within tolerance, and at least of the length required ! *Line of best fit is incorrect beyond the dashed lines on the overlay* Condone eg, accept • A correct line of best fit that is then joined to the origin
		c	c	**2m** *or* **1m** or Shows a value that follows through from their line of best fit eg ■ Their line passes through the point (40, 280), final answer: 5600 U1	3600 to 5200 inclusive Shows a value between 180 and 260 inclusive	! *For 1m, range for follow-through value* If their line goes through (40, y) accept follow-through as $20 \times (y \pm 10)$ provided their line always has a positive gradient

Tier & Question					Cubes	
3-5	4-6	5-7	6-8			
		24	14		Correct response	Additional guidance
				2m	27	
				or		
				1m	Shows the values 216 (or 6^3 or $6 \times 6 \times 6$) and 8 (or 2^3 or $2 \times 2 \times 2$), even if there are errors or Shows or implies that 3 of the smaller cubes will fit along each edge of the larger cube eg ▪ 3^3 or $3 \times 3 \times 3$ ▪ 3 by 3 by 3 ▪ 	

Tier & Question						
3-5	4-6	5-7	6-8		**Best buy**	
		25	**15**		**Correct response**	**Additional guidance**
				2m	Indicates A and gives a correct justification, based on correctly calculating a pair of comparable values The most common justifications: Compare pence (or pounds) per gram eg ▪ 159 ÷ 454 = 0.35(…) ▪ 125 ÷ 340 = 0.36(…) (or 0.37) Compare grams per penny (or per pound) eg ▪ 454 ÷ 159 = 2.8(…) (or 2.9) 340 ÷ 125 = 2.7(2) ▪ 454 ÷ 1.59 = 285.(…) (or 286) 340 ÷ 1.25 = 272 Reason proportionally using the prices eg ▪ 125 ÷ 340 × 454 = 166.(…) (or 167) That's more than 159 ▪ 159 ÷ 454 × 340 = 119.(…), which is < 125 ▪ 1.59 × 340 = 540(.6) (or 541) 1.25 × 454 = 567(.5) (or 568) ▪ 2 × 340 = 680g, which is £2.50 1.5 × 454 = 681g, which is only £2.39 ▪ 4 × 340g = 1360g for £5 3 × 454g = 1362g for £4.77 ▪ If A were decreased by 114g its price should go down by 40p (or 39.(..)p), but the difference is 34p so it's a worse reduction ▪ 454 – 340 = 114g, £1.59 – £1.25 = 34p but $\frac{114}{340} \times 1.25$ = 42p (or 41.(…)p)	✓ *For 2m, correct decision and any pair of comparable values shown* Note that common pairs are: 0.35(…) and 0.36(…) or 0.37 (p per g) 0.0035(…) and 0.0036(…) or 0.0037 (£ per g) 2.8(…) or 2.9 and 2.7(2) (g per p) 285.(…) or 286 and 272 (g per £) 159 and 166.(…) or 167 (p per 454g) 119.(…) and 125 (p per 340g) 540(.6) or 541 and 567(.5) or 568 (£ per 154 360g) 34 and 39.(…) or 40 (p for 114g extra compared to A) 34 and 41.(…) or 42 (p for 114g extra compared to B) ! *Correct decision and comparison is per 454g or per 340g but given price is not restated* Condone eg, for 2m accept ◆ 125 ÷ 340 × 454 = 167 ! *Correct decision but units omitted, incorrect or inconsistent* Condone provided any values used to make a decision are comparable eg, for 2m accept ◆ 1.59 ÷ 454 = 0.35 1.25 ÷ 340 = 0.37 ! *Additional incorrect working* Ignore × *For 2m or 1m, incomplete justification* eg ◆ 454 – 340 = 114g £1.59 – £1.25 = 34p Therefore jar A because you get 114g more for only 34p extra × *For 2m or 1m, comparable values, or the method to calculate them, not shown* eg ◆ The big jar is 8p cheaper
				or		
				1m	Shows a correct pair of comparable values but makes an incorrect or no decision or Shows correct calculations for a pair of comparable values, with not more than one error if evaluation is attempted, then follows through to make their correct decision eg ▪ 159 ÷ 454 and 125 ÷ 340, so A ▪ 454 ÷ 159 = 2.8(…) 340 ÷ 125 = *27.2 (error)*, so B	
				(U1)		

Tier & Question						
3-5	4-6	5-7	6-8			**Shadows**
		26	**16**		**Correct response**	**Additional guidance**
				2m	4.2 or equivalent	
				or		
				1m	Shows the value $\frac{2}{3}$ or $\frac{3}{2}$ or equivalents or Shows or implies a complete correct method with not more than one computational or rounding error eg ▪ 1.8 ÷ 2.7 × 6.3 ▪ 1.8 ÷ 2.7 = *0.6 (rounding error)* 0.6 × 6.3 = 3.78 ▪ 6.3 ÷ 2.7 = *2.3 (rounding error)* 1.8 × 2.3 = 4.14	**!** ***For 1m, value rounded*** For $\frac{2}{3}$, accept 0.66(…) or 0.67

Tier & Question						1, 2, 4
3-5	4-6	5-7	6-8			
		27	17		Correct response	Additional guidance
				3m	Gives a complete correct response that satisfies all four of the following conditions: 1. Indicates that A is 8 2. Indicates that B is 7 3. Indicates that C is 8 4. Shows or implies correct substitution at least for value C eg ▪ $\frac{4(4^2 - 3 \times 4 + 8)}{6}$ ▪ $\frac{4 \times 12}{6}$ ▪ $48 \div 6$	
				or		
				2m	Gives a response that satisfies three of the four conditions	
				or		
				1m	Gives a response that satisfies two of the four conditions	

Tier & Question						Triangles
3-5	4-6	5-7	6-8			
		28	18		Correct response	Additional guidance
			a	**2m**	14.4(…), or $4\sqrt{13}$, or $\sqrt{208}$	! *Value of 14* Do not accept unless a correct method or a more accurate value is seen × *For 2m or 1m, method uses accurate or scale drawing*
				or		
				1m	Shows a correct method that indicates at least the intention to square and subtract the two given lengths eg ▪ $17^2 - 9^2$ ▪ 289 – 81 ▪ 208 seen	
			b	**2m**	7.8 or 7.79(…)	! *Value of 8* Do not accept unless a correct method or a more accurate value is seen × *For 2m or 1m, method uses accurate or scale drawing*
				or		
				1m	Shows or implies a correct trigonometric ratio involving not more than one unknown eg ▪ Answer of 7.7 ▪ 12 tan 33 ▪ $\tan 33 = \frac{DF}{12}$ ▪ tan 33 = *0.6 (premature rounding)*, $12 \times 0.6 = 7.2$ ▪ $\tan 57 = \frac{12}{x}$	! *For 1m, no indication of which angle is being considered* eg • $\tan = \frac{DF}{12}$ For 1m, accept only if the trigonometric ratio is correct for the given angle DEF

Tier & Question						Box plots	
3-5	4-6	5-7	6-8				
			19			**Correct response**	**Additional guidance**
			a	**1m**	6		
			b	**1m**	Gives a correct justification eg ▪ Median for year 10 = 56, Median for year 11 = 65, 65 – 56 = 9 ▪ The medians are the vertical lines inside the grey boxes, they are $4\frac{1}{2}$ divisions apart and this is 9 marks since 1 division = 2 marks	✓ *Minimally acceptable justification* eg ◆ 56, 65 ◆ The medians are the vertical lines inside the boxes and they are 9 marks apart ◆ There is a gap of 9 [with both medians indicated on the graph] ! *Ambiguous notation* eg ◆ 56 – 65 Condone × *Incomplete justification* eg ◆ The difference between the medians is 9 marks on the graph
			c	**1m** U1	Indicates Yes and gives a correct explanation, referring to the inter-quartile range eg ▪ Inter-quartile range for year 10 = 33, Inter-quartile range for year 11 = 18, so year 11 was more consistent ▪ The middle half of the year group was less spread out for year 11 than for year 10 ▪ The grey box shows the inter-quartile range and it is shorter for year 11	✓ *Minimally acceptable explanation* eg ◆ 33, 18 ◆ Its inter-quartile range is 15 less ◆ The IQ range is smaller ◆ The IQ range is bigger for year 10 ◆ The box is shorter (or smaller) ◆ For Y10: 43 to 76, for Y11: 51 to 69 ◆ It is shorter [distance between upper and lower quartiles indicated on both box plots] ! *'Inter-quartile range' referred to as 'range' within an otherwise correct explanation* Accept only if it is clear the response actually refers to the inter-quartile range eg, accept ◆ For year 10, range = 33 For year 11, range = 18 eg, do not accept ◆ The range is bigger for year 10 × *Incomplete explanation* eg ◆ Year 11 is shorter than year 10 ◆ The results for year 10 are more spread out than in year 11

Tier & Question						Circle graph	
3-5	4-6	5-7	6-8				
			20			**Correct response**	**Additional guidance**
			a	**2m**	Completes both pairs of coordinates correctly, ie (3, 4) and (3, –4), in either order	
				or		
				1m	Completes either pair of coordinates correctly or Shows the value 16 or Shows or implies a correct method for finding the value of y eg ▪ $y^2 = 25 - 3^2$	
			b	**1m**	5	× *–5 or ± 5*
			c	**2m**	Gives P as (3.5, 3.5)	! *For 2m, gives P as (–3.5, –3.5)* Condone × *For 2m, equivalent fractions or decimals*
				or		
				1m	Shows the value 3.5(…) or 12.5 or equivalent or Shows or implies a correct method for finding the value of x or y eg ▪ $2y^2 = 25$ ▪ $x^2 = 25 \div 2$	

Tier & Question						Giant pandas
3-5	4-6	5-7	6-8			
			21		Correct response	Additional guidance
				2m	1100	! *For 2m upper bound used* Since pupils could assume 1600 is given to the nearest 100 in the context of the question, accept use of upper bound provided a correct method is seen eg, for 2m accept • 1650 ÷ 140 × 100, answer: 1200
				or		
				1m	Shows the digits 11(…) or Shows or implies a complete correct method eg ▪ 1600 ÷ 140 × 100 ▪ $\frac{1600}{1.4}$ ▪ $\frac{160\ 000}{140}$	✓ *For 1m, lower and/or upper bound used within a correct method* eg, for 1m accept • 1650 ÷ 140 × 100 • 1550 ÷ 1.4

Tier & Question						Prism
3-5	4-6	5-7	6-8			
			22		Correct response	Additional guidance
				3m	6.9(…), or $4\sqrt{3}$, or $\sqrt{48}$	**!** *Value of 7* Do not accept unless a correct method or a more accurate value is seen
				or		
				2m	Shows or implies a correct method with not more than one computational or rounding error eg ▪ $\sqrt{32 + 16}$ ▪ $\sqrt{32} = 5.6$ *(rounding error)* $AC^2 = 5.6^2 + 4^2$ AC = 6.8(…) ▪ $\sqrt{32} = 6$ *(premature rounding)* $\sqrt{36 + 16} = 7.2$	**×** ***For 3m, 2m or 1m, method uses accurate or scale drawing***
				or		
				1m	Shows sufficient working to indicate correct application of Pythagoras' theorem for at least one triangle eg ▪ $4^2 + 4^2$ ▪ 2×16 ▪ 5.6(…) or 5.7 seen ▪ (Their BC)$^2 + 4^2$	
				(U1)		

Tier & Question						
3-5	4-6	5-7	6-8		**Number cards**	
			23		**Correct response**	**Additional guidance**
				2m	Gives all three correct values, ie 15 20 25 in any order	
				or		
				1m	Gives any two correct values, with not more than one error or omission or	
					States or implies that n is a multiple of 5 and that there are $\frac{n}{5}$ square numbers eg ▪ There must be 1 out of 5, 2 out of 10, 3 out of 15 etc for the fraction to be right ▪ (1) 2 3 (4) 5, but should be only one 6 7 8 (9) 10, but should be only two 11 12 13 14 15, correct	! ***For 1m, minimally acceptable implication*** For 1m, accept responses in which there are at least three examples using multiples of 5, (with no examples not using multiples of 5) and some square numbers identified, even if there are errors or omissions eg ◆ 1, 2, 3, 4, 5, so n could be 5 6, 7, 8, 9, 10, so n could be 10 11, 12, 13, 14, 15
				(U1)		

Tier & Question						Window
3-5	4-6	5-7	6-8			
			24		Correct response	Additional guidance
				3m	Gives an integer value between 3925 and 3928 inclusive	
				or		
				2m	Shows a non-integer value between 3925 and 3927.5 inclusive [rounding to the nearest whole number omitted] or Shows an integer value between 7850 and 7855 inclusive [division of whole circle area by 2 omitted] or Shows or implies a complete correct method with not more than one error, and follows through to give their value correct to the nearest whole number eg ▪ 1m ÷ 2 = 50cm, $\frac{\pi \times 50^2}{2}$ = *integer response outside correct range* ▪ π × 0.5 × 0.5 = *0.79 (premature rounding)*, 0.79 ÷ 2 = 0.395, 0.395 × 10 000 = 3950 ▪ $\frac{\pi \times 0.5^2}{2}$ × *100 (error)* = 39	× ***For 2m or 1m, conceptual error*** eg ◆ π × 100 ÷ 2 = 157 × ***For 2m uses a radius of 25 or 0.25***
				or		
				1m	Shows a non-integer value between 7850 and 7855 inclusive or Shows the value 0.39(…) or equivalent [ie, the correct area in m²] or Shows or implies a complete correct method with not more than one error but fails to follow through to give their value correct to the nearest whole number eg ▪ 1m ÷ 2 = 50cm, $\frac{\pi \times 50^2}{2}$ = *non-integer response outside correct range* ▪ π × *25² (error)* ÷ 2 = 981.75	
				(U1)		

Tier				Question	Page
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Tier				Question	Page
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