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KEY STAGE

**3**

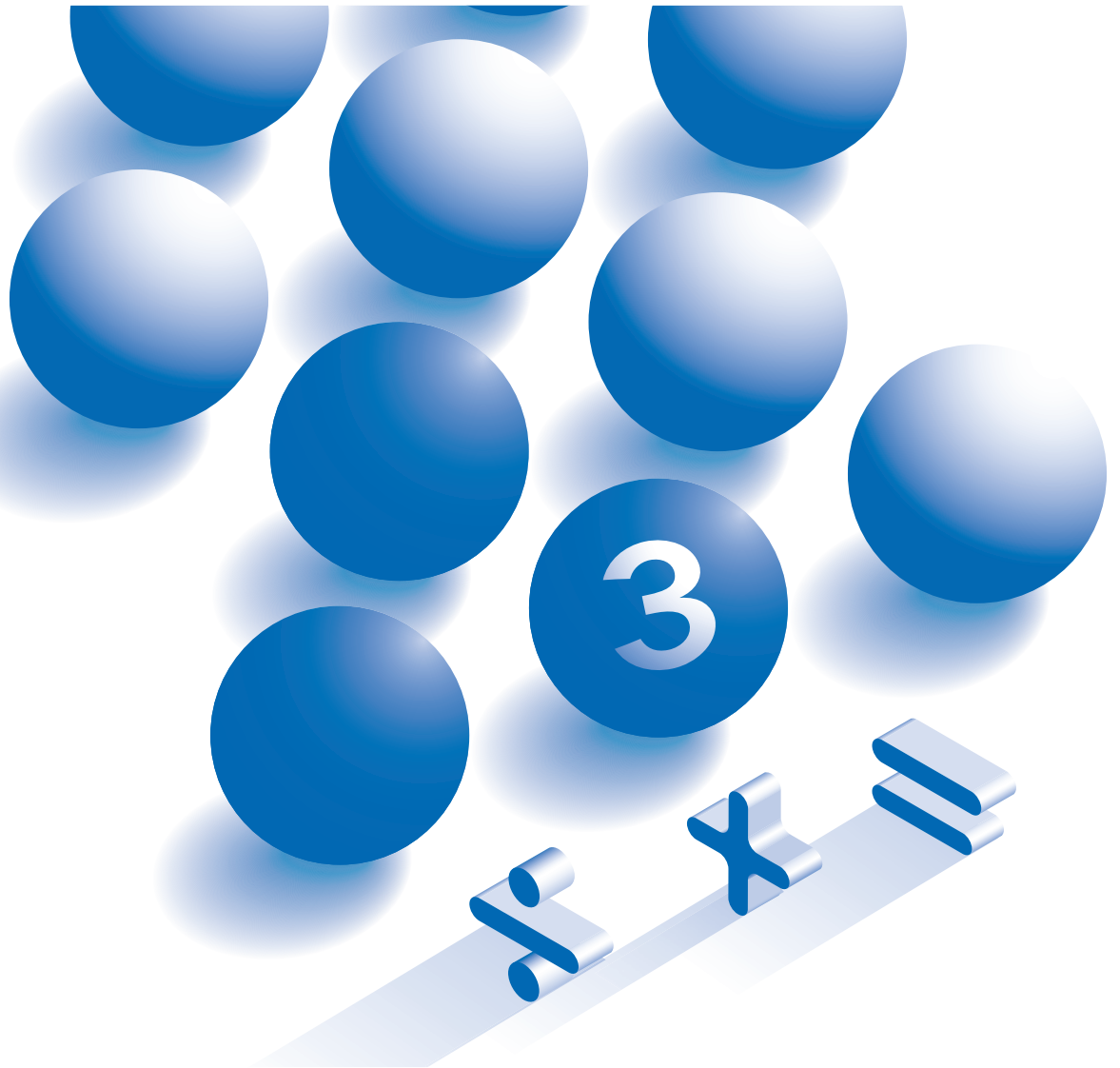
ALL TIERS

Mathematics tests

**Mark scheme**

for Paper 2

Tiers 3–5, 4–6, 5–7 and 6–8



National curriculum assessments

**2009**

# Introduction

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 each question is set out in the form of tables, which start on page 10 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 *Using and applying mathematics (UAM)* element are identified in the mark scheme by the symbol  $\textcircled{U1}$ . The number 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 2009 key stage 3 mathematics tests and mark schemes were developed by the Test Development Team at Pearson Research and Assessment.

# 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, time, measures, coordinates, probability or algebra. Unless otherwise specified in the mark scheme, markers should apply the following guidelines in all cases.

## Recording marks awarded on the test paper

All questions, even those not attempted by the pupil, should 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  $\begin{matrix} 1 \\ 0 \end{matrix}$

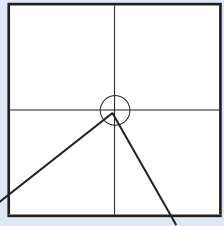
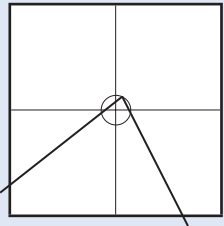
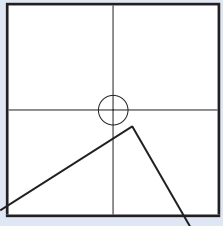
The total marks awarded for a double page should be written in the box at the bottom of the right-hand page, and the total number of marks obtained on the paper should be recorded on the front of the test paper.

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](http://www.naa.org.uk/tests) from April 2009.

What if...	Marking procedure	
<i>The pupil's response is numerically or algebraically equivalent to the answer in the mark scheme.</i>	Markers should award the mark unless the mark scheme states otherwise.	
<i>The pupil's response does not match closely any of the examples given.</i>	Markers should use their judgement in deciding whether the response corresponds with the statement of the requirements given in the 'Correct response' column. Refer also to the 'Additional guidance'.	
<i>The pupil has responded in a non-standard way.</i>	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, should be accepted. Provided there is no ambiguity, condone the continental practice of using a comma for a decimal point.	
<i>There appears to be a misreading affecting the working.</i>	This is when the pupil misreads the information given in the question and uses different information without altering the original intention or difficulty level of the question. For each misread that occurs, deduct one mark only.	
<i>No answer is given in the expected place, but the correct answer is given elsewhere.</i>	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.	
<i>The final answer is wrong, but the correct answer is shown in the working.</i>	<ul style="list-style-type: none"> <li>the incorrect answer is due to a transcription error</li> </ul>	If so, award the mark.
	<ul style="list-style-type: none"> <li>in questions not testing accuracy, the correct answer has been given but then rounded or truncated</li> </ul>	If so, award the mark.
	<ul style="list-style-type: none"> <li>the pupil has continued to give redundant extra working which does not contradict work already done</li> </ul>	If so, award the mark.
	<ul style="list-style-type: none"> <li>the pupil has continued, in the same part of the question, to give redundant extra working which does contradict work already done.</li> </ul>	If so, do not award the mark. Where a question part carries more than one mark, only the final mark should be withheld.
<i>The pupil's answer is correct but the wrong working is shown.</i>	A correct response should always be marked as correct unless the mark scheme states otherwise.	

What if...	Marking procedure
<p>The pupil has made a conceptual error.</p>	<p>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 <math>4 \times 6 = 18</math> 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:</p> <ul style="list-style-type: none"> <li>• misunderstanding of place value, such as multiplying by 2 rather than 20 when calculating <math>35 \times 27</math></li> <li>• subtracting the smaller value from the larger in calculations such as <math>45 - 26</math> to give the answer 21</li> <li>• incorrect signs when working with negative numbers.</li> </ul>
<p>The correct response has been crossed or rubbed out and not replaced.</p>	<p>Any legible crossed or rubbed out work that has not been replaced should be marked according to the mark scheme. If the work is replaced, then crossed or rubbed out work should not be considered.</p>
<p>More than one answer is given.</p>	<p>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.</p>
<p>The pupil's answer correctly follows through from earlier incorrect work.</p>	<p>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.</p>
<p>The answer is correct but, in a later part of the question, the pupil has contradicted this response.</p>	<p>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.</p>
<p>The pupil's accuracy is marginal according to the overlay provided.</p>	<p>Overlays can never be 100% accurate. However, provided the answer is within or touches the boundaries given, the mark(s) should be awarded.</p>
<p>The pupil has drawn lines which do not meet at the correct point.</p>	<p>Markers should interpret the phrase 'lines not accurate' to mean meeting within or on a circle of radius 2mm with centre at the correct point.</p> <div style="display: flex; justify-content: space-around; align-items: flex-end;"> <div style="text-align: center;">  <p>within the circle accepted</p> </div> <div style="text-align: center;">  <p>on the circle accepted</p> </div> <div style="text-align: center;">  <p>outside the circle not accepted</p> </div> </div>

### Responses involving money

	✓ Accept	✗ Do not accept
<p><b>Where the £ sign is given</b></p> <p>for example: £3.20, £7</p>	<p>✓ £3.20 £7 £7.00</p> <p>Any unambiguous indication of the correct amount, eg £3.20p £3 20 pence £3 20 £3,20 £3-20 £3:20 320p with £ sign crossed out</p>	<p>✗ Incorrect placement of pounds or pence, eg £320 £320p</p> <p>Incorrect placement of decimal point, or incorrect use or omission of 0, eg £3.2 £3 200 £32 0 £3-2-0</p>
<p><b>Where the p sign is given</b></p> <p>for example: 40p</p>	<p>✓ 40p</p> <p>Any unambiguous indication of the correct amount, eg £0.40p £.40p £0.40 with p sign crossed out</p>	<p>✗ Incorrect or ambiguous use of pounds or pence, eg 0.40p £40p</p>
<p><b>Where no sign is given</b></p> <p>for example: £3.20, 40p</p>	<p>✓ £3.20 320p 40p £0.40</p> <p>Any unambiguous indication of the correct amount in £ or p as shown above</p> <p>At <b>levels 3 and 4 only</b> also accept omission of units, eg 3.20 320 40 0.40</p>	<p>✗ Omission of final zero, eg 3.2 0.4</p>

### Responses involving negative numbers

	✓ Accept	✗ Do not accept
<p>For example: -2</p>		<p>To avoid penalising the error below more than once within each question, do not award the mark for the <i>first</i> occurrence of the error within each question. Where a question part carries more than one mark, only the final mark should be withheld.</p> <p>✗ Incorrect notation, eg 2-</p>

### Responses involving time

	✓ Accept	✗ Do not accept
<p><b>A time interval</b></p> <p>for example: 2 hours 30 minutes</p>	<p>✓ 2 hours 30 minutes</p> <p>Any unambiguous, correct indication, eg</p> <p><math>2\frac{1}{2}</math> hours</p> <p>2.5 hours</p> <p>2h 30</p> <p>2h 30 min</p> <p>2 30</p> <p>Digital electronic time, ie</p> <p>2:30</p>	<p>✗ Incorrect or ambiguous time interval, eg</p> <p>2.3 hours</p> <p>2.3h</p> <p>2h 3</p> <p>2.30 min</p> <p>2.30</p> <p>2-30</p> <p>2,30</p> <p>2.3</p>
<p><b>A specific time</b></p> <p>for example: 8:40am, 17:20</p>	<p>✓ 8:40am</p> <p>8:40</p> <p>twenty to nine</p> <p>Any unambiguous, correct indication, eg</p> <p>08.40</p> <p>8.40</p> <p>0840</p> <p>8 40</p> <p>8-40</p> <p>8,40</p> <p>Unambiguous change to 12 or 24 hour clock, eg</p> <p>17:20 as 5:20pm or 17:20pm</p>	<p>✗ Incorrect time, eg</p> <p>8.4am</p> <p>8.40pm</p> <p>Incorrect placement of separators, spaces, etc or incorrect use or omission of 0, eg</p> <p>840</p> <p>8:4:0</p> <p>8.4</p> <p>084</p> <p>84</p>

### Responses involving measures

	✓ Accept	✗ Do not accept
<p><b>Where units are given</b></p> <p>(eg kg, m, l)</p> <p>for example: 8.6kg</p>	<p>✓ 8.6kg</p> <p>Any unambiguous indication of the correct measurement, eg</p> <p>8.60kg</p> <p>8.6000kg</p> <p>8kg 600g</p>	<p>✗ Incorrect or ambiguous use of units, eg</p> <p>8600kg</p>

#### Note

If a pupil leaves the answer box empty but writes the answer elsewhere on the page, then that answer must be consistent with the units given in the answer box and the conditions listed above.

If a pupil changes the unit given in the answer box, then their answer must be equivalent to the correct answer, using the unit they have chosen, unless otherwise indicated in the mark scheme.

### Responses involving coordinates

	✓ Accept	✗ Do not accept
<p>For example: (5, 7)</p>	<ul style="list-style-type: none"> <li>✓ Unconventional notation, eg (05, 07) (five, seven)</li> <li><math>\begin{matrix} x &amp; y \\ (5, &amp; 7) \end{matrix}</math></li> <li><math>(x=5, y=7)</math></li> </ul>	<ul style="list-style-type: none"> <li>✗ Incorrect or ambiguous notation, eg (7, 5) <math>\begin{matrix} y &amp; x \\ (7, &amp; 5) \end{matrix}</math> (5x, 7y) (5<sup>x</sup>, 7<sup>y</sup>) (x-5, y-7)</li> </ul>

### Responses involving probability

	✓ Accept	! Take care ✗ Do not accept
<p><b>A numerical probability should be expressed as a decimal, fraction or percentage only.</b></p> <p>for example:</p> <p>0.7    <math>\frac{7}{10}</math>    70%</p>	<ul style="list-style-type: none"> <li>✓ Equivalent decimals, fractions and percentages, eg 0.700 <math>\frac{70}{100}</math> <math>\frac{35}{50}</math> 70.0%</li> <li>✓ A probability correctly expressed in one acceptable form which is then incorrectly converted, but is still less than 1 and greater than 0, eg <math>\frac{70}{100} = \frac{18}{25}</math></li> </ul>	<p>The first <b>four</b> 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 <b>three</b> types of error below more than once within each question, do not award the mark for the <i>first</i> 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.</p> <ul style="list-style-type: none"> <li>! A probability that is incorrectly expressed, eg 7 in 10 7 over 10 7 out of 10 7 from 10</li> <li>! A probability expressed as a percentage without a percentage sign.</li> <li>! A fraction with other than integers in the numerator and/or denominator.</li> <li>! A probability expressed as a ratio, eg 7:10 7:3 7 to 10</li> <li>✗ A probability greater than 1 or less than 0</li> </ul>



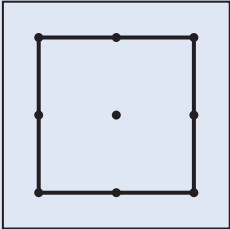
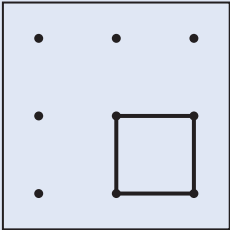
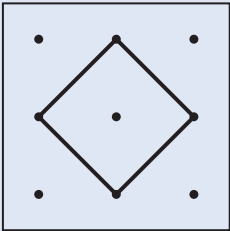
## Responses involving the use of algebra

	✓ Accept	! Take care ✗ Do not accept
<p>For example:</p> <p><math>2 + n</math></p> <p><math>n + 2</math></p> <p><math>2n</math></p> <p><math>\frac{n}{2}</math></p> <p><math>n^2</math></p>	<p>✓ Unambiguous use of a different case or variable, eg  <math>N</math> used for <math>n</math>  <math>x</math> used for <math>n</math></p> <p>✓ Words used to precede or follow equations or expressions, eg  <math>t = n + 2</math> tiles or tiles = <math>t = n + 2</math>  for <math>t = n + 2</math></p> <p>✓ Unambiguous letters used to indicate expressions, eg  <math>t = n + 2</math> for <math>n + 2</math></p>	<p>! Unconventional notation, eg  <math>n \times 2</math>, or <math>2 \times n</math>, or <math>n2</math>  or <math>n + n</math> for <math>2n</math>  <math>n \times n</math> for <math>n^2</math>  <math>n \div 2</math> for <math>\frac{n}{2}</math> or <math>\frac{1}{2}n</math>  <math>2 + 1n</math> for <math>2 + n</math>  <math>2 + 0n</math> for <math>2</math></p> <p>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.</p> <p>✗ Embedded values given when solving equations, eg  in solving <math>3x + 2 = 32</math>,  <math>3 \times 10 + 2 = 32</math> for <math>x = 10</math></p> <p>To avoid penalising the two types of error below more than once within each question, do not award the mark for the <i>first</i> occurrence of each type within each question. Where a question part carries more than one mark, only the final mark should be withheld.</p> <p>! Words or units used within equations or expressions, eg  <math>n</math> tiles + 2  <math>n</math> cm + 2</p> <p>Do not accept on their own. Ignore if accompanying an acceptable response.</p> <p>✗ Ambiguous letters used to indicate expressions, eg  <math>n = n + 2</math> for <math>n + 2</math></p>

Tier & Question							<b>School shop</b>	
3–5	4–6	5–7	6–8	1	Mark	Correct response	Additional guidance	
a				1m	19			
b				1m	Friday		✓ <b>Unambiguous indication</b> eg, for part (b) <ul style="list-style-type: none"> <li>• F</li> </ul> eg, for part (c) <ul style="list-style-type: none"> <li>• R</li> </ul>	
c				1m	Ruler			
					(U1)			

Tier & Question							<b>Missing numbers</b>	
3–5	4–6	5–7	6–8	2	Mark	Correct response	Additional guidance	
				1m	26			
				1m	3			

Tier & Question							<b>Parcels</b>	
3–5	4–6	5–7	6–8	3	Mark	Correct response	Additional guidance	
				2m or 1m	£ 6.10			
					Gives the answer 6.1			
					or			
					Shows the value 3.9(0) or 390			
					or			
					Shows a complete correct method with not more than one computational error			
					eg			
					<ul style="list-style-type: none"> <li>• <math>1.3(0) \times 3 = 3.6(0)</math> (error),  <math>10 - 3.6(0) = 6.4(0)</math></li> </ul>			

Tier & Question				Mark	Correct response	Additional guidance	Joining
3–5	4–6	5–7	6–8				
4							
				<p><b>2m</b> Draws all three different sized squares, in any order eg</p> <ul style="list-style-type: none"> <li>  </li> </ul>	<p><b>! Lines not ruled or accurate</b> Accept provided the pupil's intention is clear</p> <p><b>! Internal lines shown</b> Only the outline of any shape drawn should be considered</p> <p><b>✗ Vertices of square do not use the pins</b></p>		
							
							
			<p><b>or</b></p> <p><b>1m</b> Draws any two of the three different sized squares</p>				
			<p><b>U1</b></p>				

Tier & Question						<b>Spinner</b>											
3–5	4–6	5–7	6–8	Mark	Correct response	Additional guidance											
5																	
				<b>2m</b>	Makes all four correct decisions, ie  <table style="margin-left: 20px;"> <tr> <td>True</td> <td>False</td> </tr> <tr> <td><input checked="" type="checkbox"/></td> <td><input type="checkbox"/></td> </tr> <tr> <td><input type="checkbox"/></td> <td><input checked="" type="checkbox"/></td> </tr> <tr> <td><input type="checkbox"/></td> <td><input checked="" type="checkbox"/></td> </tr> <tr> <td><input checked="" type="checkbox"/></td> <td><input type="checkbox"/></td> </tr> </table>	True	False	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<b>✓ Unambiguous indication</b> eg • ✓ for True, ✗ for False	
True	False																
<input checked="" type="checkbox"/>	<input type="checkbox"/>																
<input type="checkbox"/>	<input checked="" type="checkbox"/>																
<input type="checkbox"/>	<input checked="" type="checkbox"/>																
<input checked="" type="checkbox"/>	<input type="checkbox"/>																
			<b>or</b> <b>1m</b>	Makes three correct decisions													

Tier & Question						<b>Fractions</b>	
3–5	4–6	5–7	6–8	Mark	Correct response	Additional guidance	
6							
a				<b>1m</b>	Indicates any three squares	<b>! Squares not shaded</b> Accept any unambiguous indication  <b>! Part squares indicated</b> Accept provided the pupil's intention is clear	
b				<b>1m</b>	$\frac{3}{5}$ or equivalent	<b>✗ Equivalent decimals</b>	

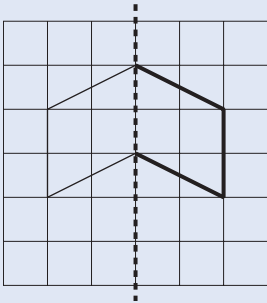
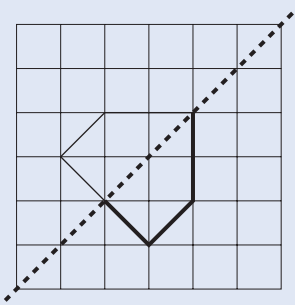
Tier & Question				Mark	Correct response	Additional guidance	Number of sides
3–5	4–6	5–7	6–8				
7							
				2m	Matches all three shapes correctly, ie	<p><b>! Shape matched to more than one number</b> For 2m or 1m, do not accept as a correct match</p> <p><b>! Extra shapes added</b> Ignore extra shapes and any lines drawn from them</p>	
				or 1m	Matches any two shapes correctly		

Tier & Question				Mark	Correct response	Additional guidance	Grid
3–5	4–6	5–7	6–8				
8							
				2m	Completes the grid correctly, ie		
				or 1m	Completes both the middle column and the bottom row correctly		

2	3	1
1	2	3
3	1	2

U2

Tier & Question				Mark	Correct response	Additional guidance	Digital
3–5	4–6	5–7	6–8				
9				1m	10:45	<p><b>! Indication of am or pm</b>                      Condone either am or pm shown or implied                      eg, accept</p> <ul style="list-style-type: none"> <li>• 10:45 am</li> <li>• 22:45</li> </ul> <p><b>! Words and numbers used in description</b>                      Condone, provided the time has been interpreted correctly                      eg, accept</p> <ul style="list-style-type: none"> <li>• 5 past 10</li> </ul> <p><b>x 'Digital time' described in words</b>                      eg</p> <ul style="list-style-type: none"> <li>• Ten O five</li> </ul> <p><b>x Description of time incorrect or using numbers</b>                      eg</p> <ul style="list-style-type: none"> <li>• Ten five</li> <li>• 10 5</li> </ul>	
				1m	Gives a correct description of the time in words eg <ul style="list-style-type: none"> <li>• Five past ten</li> </ul>		

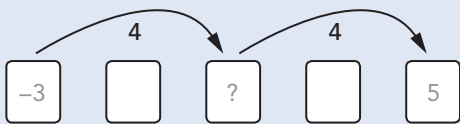
Tier & Question				Mark	Correct response	Additional guidance	Reflecting
3–5	4–6	5–7	6–8				
10	1			1m	Reflects the shape correctly in the mirror line, ie 	<p><b>! Throughout the question, lines not ruled or accurate</b>                      Accept provided the pupil's intention is clear</p> <p><b>! Throughout the question, extra lines drawn</b>                      Accept provided the pupil's intention is clear</p>	
				1m	Reflects the shape correctly in the mirror line, ie 		

Tier & Question						Test
3–5	4–6	5–7	6–8	Mark	Correct response	
12	2					
a	a			1m	C	
b	b			1m	21	
				U1		

Tier & Question						Rounding
3–5	4–6	5–7	6–8	Mark	Correct response	
13	3					
a	a			1m	2700	
				1m	3000	
b	b			1m	Gives a value greater than or equal to 795 but less than 805	✓ 800

Tier & Question						Castle
3–5	4–6	5–7	6–8	Mark	Correct response	
11	4					
				2m	£ 5(.00)	
				or 1m	Shows the value 22(.00)	
					or	
					Shows or implies a complete correct method with not more than one computational error	
					eg	
					<ul style="list-style-type: none"> <li>12.00 (error) + 9 = 21.00</li> </ul>	
					Answer given as 4.00	

Tier & Question						<b>Baby</b>	
3-5	4-6	5-7	6-8	Mark	Correct response	Additional guidance	
14	5						
a	a			1m	4	✗ Any reference to extra days	
b	b			1m	9	✗ Any reference to extra weeks or days	

Tier & Question						<b>Count on</b>	
3-5	4-6	5-7	6-8	Mark	Correct response	Additional guidance	
15	6						
a	a			1m	27		
b	b			2m or 1m	1  Shows or implies that the size of two steps is 4 eg <ul style="list-style-type: none"> <li>• </li> <li>• <math>-3 + 4</math></li> </ul> or Shows or implies that the size of one step is 2 eg <ul style="list-style-type: none"> <li>• The gaps are 2</li> <li>• <math>-3 + 2</math></li> <li>• Second number is <math>-1</math></li> <li>• Fourth number is 3</li> <li>• <math>-3</math> to 5 is 8, <math>8 \div 4</math></li> </ul>	✗ Shows steps of unequal size	

U1



Tier & Question						Shoe sizes
3–5	4–6	5–7	6–8	Mark	Correct response	
16	7					
a	a			1m	12	
b	b			1m	3	
c	c			1m	<p>Indicates Both the same and gives a correct explanation</p> <p>The most common correct explanations:</p> <p>Use given values eg</p> <ul style="list-style-type: none"> <li>• Range of boys is 4, range of girls is 4</li> <li>• 8 – 4 is the same as 9 – 5</li> <li>• 5 to 9 = 4 to 8</li> </ul> <p>Reason generally about spread eg</p> <ul style="list-style-type: none"> <li>• Boys cover 5 sizes, girls cover 5 sizes</li> </ul>	<p>✓ <b>Minimally acceptable explanation</b> eg</p> <ul style="list-style-type: none"> <li>• 4, 4</li> <li>• 8 – 4, 9 – 5</li> <li>• Both 4</li> </ul> <p>! <b>Ambiguous notation</b> eg</p> <ul style="list-style-type: none"> <li>• 4 – 8, 5 – 9</li> </ul> <p>Condone</p> <p>✓ <b>Minimally acceptable explanation</b> eg</p> <ul style="list-style-type: none"> <li>• Both have the same number of sizes</li> </ul> <p>! <b>Explanation implies references to the number of blank sizes</b> eg</p> <ul style="list-style-type: none"> <li>• Boys have one blank, girls have one blank</li> <li>• Because the girls didn't have size 9 and the boys didn't have size 4</li> </ul> <p>Condone</p> <p>✗ <b>Ambiguous or incorrect explanation</b> eg</p> <ul style="list-style-type: none"> <li>• 5 in each</li> <li>• They both have a range of five sizes</li> <li>• Girls: 4, 5, 6, 7, 8</li> <li>• Boys: 5, 6, 7, 8, 9</li> </ul>

U1

Tier & Question						<b>Finding <math>x</math> and <math>y</math></b>	
3–5	4–6	5–7	6–8	Mark	Correct response	Additional guidance	
17	8			1m	652		
				1m	442		

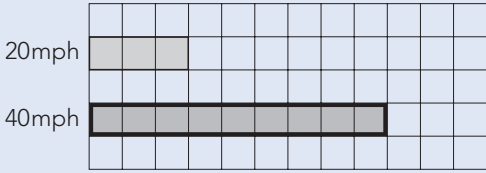
Tier & Question						<b>Seventy</b>	
3–5	4–6	5–7	6–8	Mark	Correct response	Additional guidance	
18	9			1m	<p>Indicates No and gives a correct explanation that shows or implies at least one odd factor</p> <p>eg</p> <ul style="list-style-type: none"> <li>Factors of 70 are 1, 2, 5, 7, 10, 14, 35 and 70, so some are odd and some are even</li> <li>There are four odd factors and four even factors of 70</li> <li>It could be 1 (odd)</li> <li><math>5 \times 14 = 70</math></li> <li><math>70 \div 2 = 35</math></li> <li>70 is even, but 1 is odd and goes into everything</li> </ul>	<p>✓ <b>Minimally acceptable explanation</b></p> <p>eg</p> <ul style="list-style-type: none"> <li>1, 2, 5, 7, 10, 14, 35 and 70</li> <li>7</li> </ul> <p>! <b>Incomplete list of factors given</b></p> <p>Condone, provided none is incorrect and at least one odd factor is shown</p> <p>eg, accept</p> <ul style="list-style-type: none"> <li>The factors of 70 are 1, 2, 5 and 7</li> </ul> <p>✗ <b>Incomplete or incorrect explanation</b></p> <p>eg</p> <ul style="list-style-type: none"> <li>70 has some odd and some even factors</li> <li>70 is a factor of 1</li> <li>All factors of 70 are odd</li> </ul>	

U1

Tier & Question				Mark	Correct response	Additional guidance	Units																																		
3-5	4-6	5-7	6-8																																						
20	10	1																																							
				<p><b>2m</b> Completes all five rows of the table correctly, ie</p> <table border="1" style="margin-left: 20px;"> <thead> <tr> <th></th> <th>L</th> <th>A</th> <th>V</th> <th>M</th> </tr> </thead> <tbody> <tr> <td>cm</td> <td>✓</td> <td></td> <td></td> <td></td> </tr> <tr> <td>l</td> <td></td> <td></td> <td>✓</td> <td></td> </tr> <tr> <td>miles</td> <td>✓</td> <td></td> <td></td> <td></td> </tr> <tr> <td>g</td> <td></td> <td></td> <td></td> <td>✓</td> </tr> <tr> <td>m<sup>2</sup></td> <td></td> <td>✓</td> <td></td> <td></td> </tr> <tr> <td>oz</td> <td></td> <td></td> <td></td> <td>✓</td> </tr> </tbody> </table> <p><b>or</b></p> <p><b>1m</b> Completes at least three rows of the table correctly</p>		L	A	V	M	cm	✓				l			✓		miles	✓				g				✓	m <sup>2</sup>		✓			oz				✓		
	L	A	V	M																																					
cm	✓																																								
l			✓																																						
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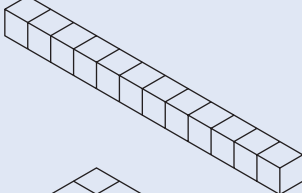
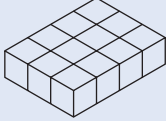
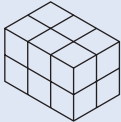
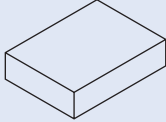
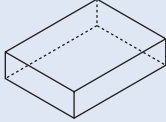
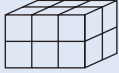
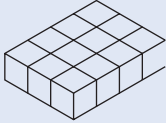
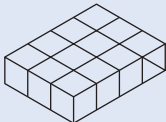
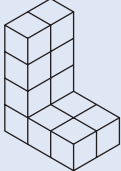
Tier & Question				Mark	Correct response	Additional guidance	Rainforest
3-5	4-6	5-7	6-8				
19	11	2					
a	a	a		<p><b>1m</b> 27</p>			
b	b	b		<p><b>1m</b> 175 to 185 inclusive</p>			
c	c	c		<p><b>1m</b> Indicates January, ie</p> <div style="text-align: center; margin-left: 20px;"> <p>The diagram shows a calendar grid with five horizontal lines representing days. The first line has a horizontal bar in the middle, which is circled. There are four more horizontal lines below it, each with a horizontal bar in the middle.</p> </div>			

Tier & Question				Mark	Correct response	Additional guidance	Doughnuts
3–5	4–6	5–7	6–8				
21	12	3					
				<b>2m</b>	<p>Indicates shop A and gives a correct justification, based on correctly calculating a pair of comparable values eg</p> <ul style="list-style-type: none"> <li>At shop A: <math>2 \times 5 = 10</math>, at shop B: <math>3.5(0) \times 3 = 10.5(0)</math></li> <li><math>3.5 \times 3 - 2 \times 5 = 0.5</math></li> <li><math>2 \div 3 = 0.6(\dots)</math>, <math>3.50 \div 5 = 0.7</math></li> <li>For £1 you get <math>1\frac{1}{2}</math> doughnuts or <math>1\frac{3}{7}</math> doughnuts</li> <li>You pay £1.50 extra for 2 more doughnuts, but at shop A they're less than 75p each so shop A must be a better deal</li> </ul>	<p><b>✗ For 2m, no decision</b></p> <p><b>✓ For 2m, correct decision and any pair of comparable values shown</b> Note that common pairs (in pounds) are: 10 and 10.5(0) (per 15 doughnuts) 0.6(...) and 0.7(0) (per 1 doughnut) 2 and 2.1(0) (per 3 doughnuts) 3.3(...) and 3.5(0) (per 5 doughnuts) 1.5 and 1.4(...) (doughnuts per pound)</p> <p><b>! For 2m or 1m, comparison is per 3 doughnuts or per 5 doughnuts but the given price is not restated</b> Condone eg, for 2m accept • At shop B, 3 doughnuts would be £2.10</p> <p><b>! Additional incorrect working</b> Ignore</p>	
				<b>or</b> <b>1m</b>	<p>Shows a correct pair of comparable values but makes either an incorrect or no decision</p> <p>or</p> <p>Shows a complete correct method for finding a pair of comparable values with not more than one computational or rounding error, and follows through to make their correct decision eg</p> <ul style="list-style-type: none"> <li><math>5 \times 2, 3 \times 3.50</math>, shop A indicated</li> <li><math>2 \div 3 = 0.75</math> (error), <math>3.50 \div 5 = 0.7</math>, shop B indicated</li> </ul> <p>or</p> <p>Makes a correct decision but the justification uses only the difference between a pair of comparable values eg</p> <ul style="list-style-type: none"> <li>A doughnut is 3.3(...)p cheaper at shop A</li> </ul>		

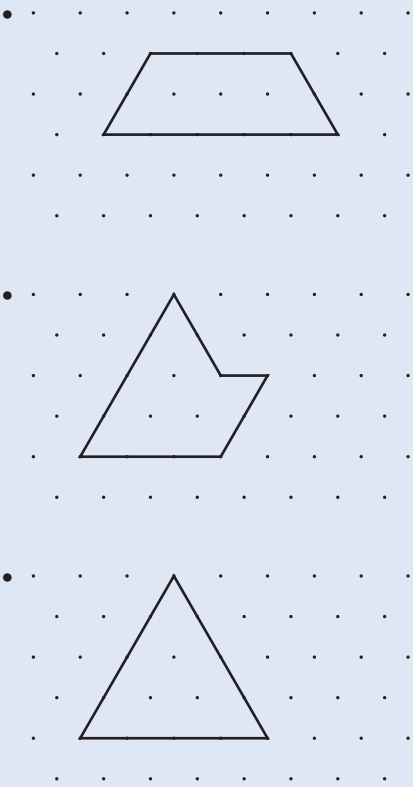
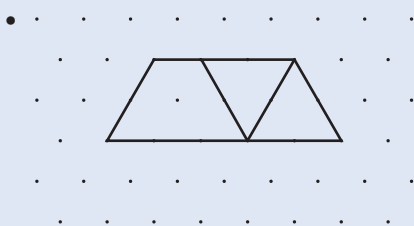
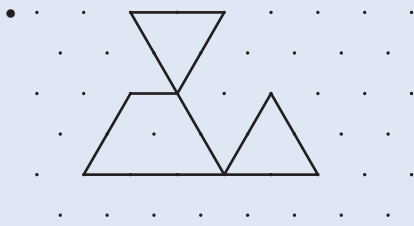
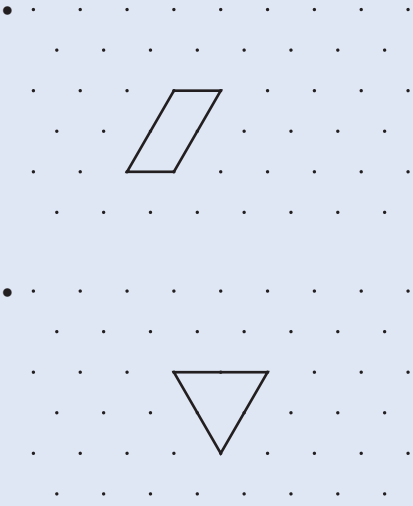
Tier & Question						<b>Stopping distances</b>	
3–5	4–6	5–7	6–8	Mark	Correct response	Additional guidance	
22	13	4					
a	a	a		1m	Draws a bar for the stopping distance for 40mph of length 9cm, ie  	<b>! Bar incorrectly positioned</b> Condone if bar is drawn correctly one line above or below the position shown	
b	b	b		1m	18	<b>! Follow-through</b> Allow follow-through as $2 \times$ the length of their bar in (a), provided the result is greater than 12	

Tier & Question				Marking overlay available		<b>Rotate 180</b>	
3–5	4–6	5–7	6–8	Mark	Correct response	Additional guidance	
23	14	5					
				2m or 1m	Draws the correct shape with all four vertices within the tolerances as shown on the overlay  Shows at least three vertices within the tolerances as shown on the overlay  or  Shows a correct shape in the correct orientation, with all four vertices within the tolerances as shown on the overlay, but in an incorrect position on the grid	<b>! Lines not ruled or accurate</b> Accept provided the pupil's intention is clear	

Tier & Question						<b>Value</b>	
3–5	4–6	5–7	6–8	Mark	Correct response	Additional guidance	
24	15	6					
				1m	196	<b>✗ Incomplete processing</b>	
				1m	4		
				1m	1225		

Tier & Question				Mark	Correct response	Additional guidance
3–5	4–6	5–7	6–8			
25	16	7				<b>12 cubes</b>
				<b>2m</b>	<p>Draws a 1 by 1 by 12, a 1 by 3 by 4 or a 2 by 2 by 3 cuboid, using the isometric grid eg</p> <ul style="list-style-type: none"> <li></li> <li></li> <li></li> </ul>	<p><b>✗ 1 by 2 by 6 cuboid repeated</b></p> <p><b>✓ For 2m or 1m, internal lines omitted</b> eg, for 2m accept</p> <ul style="list-style-type: none"> <li></li> </ul> <p><b>! For 2m or 1m, hidden lines shown</b> For 2m, accept provided they are clearly indicated as hidden lines eg, for 2m accept</p> <ul style="list-style-type: none"> <li></li> </ul> <p><b>! Lines not ruled</b> Accept provided the pupil's intention is clear</p> <p><b>! Drawing not accurate</b> Accept vertices within 2mm of the dots of the grid</p> <p><b>✗ Isometric grid not used correctly</b> eg</p> <ul style="list-style-type: none"> <li></li> </ul> <p><b>! Other shapes drawn</b> As these could be trials, ignore</p>
				<b>or 1m</b>	<p>The only error is to omit some external lines or to show some hidden lines eg</p> <ul style="list-style-type: none"> <li></li> <li></li> </ul> <p>or</p> <p>Correctly draws a possible 3-D shape made from 12 cubes that is not a cuboid, using the isometric grid eg</p> <ul style="list-style-type: none"> <li></li> </ul>	

Tier & Question						<b>Cost of delivery</b>	
3–5	4–6	5–7	6–8	Mark	Correct response	Additional guidance	
26	17	8					
a	a	a		1m	Gives both correct values correctly positioned, ie 7 then 20	✓ <b>Range given instead of 20</b> eg • 0 – 20	
				1m	Gives a correct value with the correct unit for that value eg • 25p • 25 pence • £0.25		
b	b	b		1m	18.25		

Tier & Question				Mark	Correct response	Additional guidance	Shape area
3–5	4–6	5–7	6–8				
27	18	9					
a	a	a		1m	<p>Gives a shape with area <math>a + 2b</math>, ie 16 small triangles eg</p> 	<p><b>! Lines not ruled or accurate</b> Accept provided the pupil's intention is clear</p> <p><b>✓ Internal lines shown</b> eg, for part (a)</p>  <p><b>✗ Shape formed with triangles and trapezium not joined side to side</b> eg, for part (a)</p>  <p><b>! Other shapes drawn</b> As these could be trials, ignore</p>	
b	b	b		1m	<p>Gives a shape with area <math>a - b</math>, ie 4 small triangles eg</p> 		

U1



Tier & Question						Midpoints
3–5	4–6	5–7	6–8	Mark	Correct response	
19	10	1				
				1m	Gives P as (30, 35)	<p><b>! Answers for P and Q transposed but otherwise completely correct</b>                      If this is the only error, ie                      gives P as (42, 0) and                      gives Q as (30, 35), mark as 0, 1</p> <p><b>! Follow-through for R as (their x coordinate of Q, their y coordinate of P)</b>                      Allow follow-through provided their coordinates for P, Q and R are different</p>
				1m	Gives Q as (42, 0)	
				1m	Gives R as (42, 35)	
				<b>U1</b>		

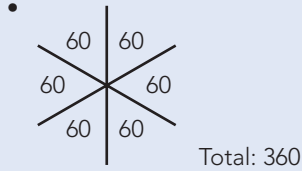
Tier & Question						<b>Rainfall</b>	
3–5	4–6	5–7	6–8	Mark	Correct response	Additional guidance	
20	11	2					
				<b>2m</b>	Indicates place A and gives a correct justification eg • $10 \times 8 + 20 \times 4 = 160\text{cm}$ $5 \times 10 + 50 \times 2 = 150\text{cm}$ • $(80 + 80) \div 12 = 13.\dots\text{cm per month}$ $(50 + 100) \div 12 = 12.5\text{cm per month}$ • $(80 + 80) \div 2 = 80\text{cm per 6 months}$ $(50 + 100) \div 2 = 75\text{cm per 6 months}$	✓ <b>For 2m, minimally acceptable justification</b> eg • 160, 150 seen • 80, 80 and 50, 100 seen • $10 \times 8 + 20 \times 4 > 5 \times 10 + 50 \times 2$ • 13.(...), 12.5 seen	
				<b>or</b> <b>1m</b>	Gives a correct justification, even if the decision is incorrect or omitted  or  Shows a complete correct method with not more than one computational error, and follows through to make their correct decision eg • $10 \times 8 + 20 \times 4 = 120$ (error) $5 \times 10 + 50 \times 2 = 150$ , so place B		
				<b>U1</b>			

Tier & Question						<b>Thinking distances</b>	
3–5	4–6	5–7	6–8	Mark	Correct response	Additional guidance	
21	12	3					
	a	a	a	<b>2m</b> <b>or</b> <b>1m</b>	315  Shows the value 245  or  Shows a complete correct method, in which the 'squared' has been correctly interpreted, with not more than one computational error eg • $70 + \frac{70 \times 70}{20}$ • $70^2 = 4900, 4900 \div 20 = 2450$ (error), $70 + 2450 = 2520$		
	b	b	b	<b>1m</b>	50		

Tier & Question						<b>Two shapes</b>	
3–5	4–6	5–7	6–8	Mark	Correct response	Additional guidance	
22	13	4					
				<b>2m</b> <b>or</b> <b>1m</b>	60  Shows the value 6  or  Shows a complete correct method with not more than one computational error eg <ul style="list-style-type: none"> <li>• <math>72 \div 12 = 8</math> (error), <math>10 \times 8 = 80</math></li> </ul>		
				<b>U1</b>			

Tier & Question						<b>Recycling</b>	
3–5	4–6	5–7	6–8	Mark	Correct response	Additional guidance	
23	14	5					
				<b>2m</b> <b>or</b> <b>1m</b>	760 000  Shows the value 1 240 000  or  Shows a complete correct method with not more than one error eg <ul style="list-style-type: none"> <li>• <math>2\,000\,000 \times 0.38</math></li> <li>• <math>38 \div 100 \times 2 \times 1\,000\,000</math></li> <li>• 2 million = 20 000 000 (error) <math>20\,000\,000 \times 0.38 = 7\,600\,000</math></li> </ul>		

Tier & Question						Shapes on a grid	
3–5	4–6	5–7	6–8	Mark	Correct response		
	24	15	6				
a	a	a		1m	<p>Gives a correct explanation</p> <p>The most common correct explanations:</p> <p>Refer to the sum of the angles in a triangle eg</p> <ul style="list-style-type: none"> <li>The angles are equal and add up to 180, so <math>180 \div 3 = 60</math></li> <li>Angles in a triangle add up to 180, the three angles are equal so <math>60 + 60 + 60 = 180</math></li> </ul> <p>Refer to the sum of angles at a point eg</p> <ul style="list-style-type: none"> <li>You can see that six of the triangles fit together at a point, so <math>360 \div 6 = 60</math></li> </ul>		<p>✓ <b>Minimally acceptable explanation</b> eg</p> <ul style="list-style-type: none"> <li><math>180 \div 3</math></li> <li><math>60 \times 3 = 180</math></li> <li>The angles are the same and add up to 180</li> </ul> <p>✗ <b>Incomplete explanation</b> eg</p> <ul style="list-style-type: none"> <li>The three angles add up to 180</li> <li>Angles in a triangle add up to 180</li> <li>The three angles are equal</li> <li><math>60 \times 3</math></li> <li>It's an equilateral triangle</li> </ul> <p>✓ <b>Minimally acceptable explanation</b> eg</p> <ul style="list-style-type: none"> <li><math>360 \div 6</math></li> <li><math>60 \times 6 = 360</math></li> </ul> <p>✗ <b>Incomplete explanation</b> eg</p> <ul style="list-style-type: none"> <li>Six of the angles add up to 360</li> <li>Angles at a point add up to 360</li> <li><math>60 \times 6</math></li> </ul>
b	b	b		2m or 1m	<p>Gives all three correct angles, ie <math>a = 60</math>, <math>b = 120</math> and <math>c = 240</math></p> <p>Gives two correct angles</p>		<p>! <b>For 1m, follow-through</b> Provided their <math>b</math> is obtuse, accept <math>c</math> as <math>2 \times</math> their <math>b</math> or <math>360 -</math> their <math>b</math></p>



U1

Tier & Question				Mark	Correct response	Additional guidance	Five bags
3–5	4–6	5–7	6–8				
25	16	7					
				<b>2m</b>	Matches all four bags to the correct probabilities, ie	<b>! For 2m or 1m, bag matched to more than one probability</b> Do not accept as a correct match	
				<b>or 1m</b>	Matches two of the four bags to the correct probabilities		

Tier & Question				Mark	Correct response	Additional guidance	Bicycles
3–5	4–6	5–7	6–8				
26	17	8					
				<b>2m</b>	184		
				<b>or 1m</b>	Shows or implies a complete correct method with not more than one computational error eg <ul style="list-style-type: none"> <li>• <math>\frac{46}{2} \times 8</math></li> <li>• <math>46 \times 4</math></li> <li>• <math>46 \div 2 = 22</math> (error), <math>22 \times 8 = 176</math></li> <li>• <math>\frac{2}{8}</math> is 46, so <math>\frac{4}{8}</math> is 82 (error), so total is 164</li> <li>• Digits 184 seen</li> </ul>		
					<b>U1</b>		

Tier & Question				Mark	Correct response	Additional guidance	Eggs
3–5	4–6	5–7	6–8				
		18	9				
				2m	<p>Indicates the grade is medium and shows or implies a correct method for calculating the mass of the egg that interprets the 'cubed' correctly, even if a final value is not shown</p> <p>eg</p> <ul style="list-style-type: none"> <li>Value between 60 and 60.12 inclusive seen</li> <li><math>5.5 \times 5.5 \times 5.5 \times \pi \div 10 \times 1.15</math></li> <li><math>166.375 \times \pi \times 0.115</math></li> </ul>		
				or 1m	<p>Makes an incorrect or no decision about the grade of the egg, but shows or implies a correct method for calculating the mass of the egg that interprets the 'cubed' correctly, even if a final value is not shown</p> <p>eg</p> <ul style="list-style-type: none"> <li><math>5.5 \times 5.5 \times 5.5 \times \pi \div 10 \times 1.15</math></li> <li><math>522.7 \div 10 \times 1.15</math></li> </ul> <p>or</p> <p>Shows or implies a correct method for calculating the mass of the egg that interprets the 'cubed' correctly, with not more than one computational or rounding error, and makes their correct decision for the grade of the egg</p> <p>eg</p> <ul style="list-style-type: none"> <li><math>5.5^3 \times 3</math> (error) <math>\div 10 \times 1.15 = 57(\dots)</math>, so medium</li> <li><math>5.5^3 = 166</math> (premature rounding), <math>166 \times 3.14 \times 0.115 = 59.9(\dots)</math>, so medium</li> </ul>		
						<ul style="list-style-type: none"> <li><b>✗ For 1m, final value and decision not shown within a method containing a computational or rounding error</b></li> <li><b>✗ For 1m, conceptual error</b> eg <ul style="list-style-type: none"> <li><math>5.5^3 = 16.5</math>, <math>16.5 \times \pi \div 10 \times 1.15 = 5.9(\dots)</math> or 6, so small</li> </ul> </li> </ul>	

Tier & Question						Ring size
3–5	4–6	5–7	6–8	Mark	Correct response	Additional guidance
		19	10			
	a	a		1m	57 or 57.1(...) or 57.2	
	b	b		2m	Indicates size 6 and gives a correct justification eg <ul style="list-style-type: none"> <li>• <math>51 \div \pi = 16.2(\dots)</math></li> <li>• <math>51 \div 3.14 = 16.2(\dots)</math></li> <li>• <math>16.5 \times \pi = 51.8(\dots)</math> or 52</li> <li>• <math>15.7 \times \pi = 49.(\dots)</math></li> <li>• <math>16.5 \times \pi = 51.8(\dots)</math> and <math>15.7 \times \pi &lt; 51</math></li> </ul>	<p>✓ <b>For 2m, minimally acceptable justification</b> eg</p> <ul style="list-style-type: none"> <li>• 16.2(...)</li> <li>• 49.(...) and 51.8(...) or 52 seen</li> </ul> <p>✗ <b>For 2m, incomplete justification</b> eg</p> <ul style="list-style-type: none"> <li>• <math>51 \div \pi</math></li> <li>• <math>51 \div 3.14</math></li> <li>• <math>16.5 \times \pi = 51.8(\dots)</math></li> </ul> <p>✗ <b>For 1m, incorrect or no justification alongside a correct decision</b> eg</p> <ul style="list-style-type: none"> <li>• <math>51 \div 3 = 17</math>, so size 6</li> <li>• Because the circumference of a size 6 is 51</li> </ul>
				or 1m	Shows a correct justification but makes an incorrect or no decision  or Indicates size 6 and gives an incomplete justification eg <ul style="list-style-type: none"> <li>• <math>51 \div \pi</math></li> <li>• <math>51 \div 3.14</math></li> <li>• 51.8(...) or 52</li> <li>• 49.(...)</li> <li>• <math>15.7 \times \pi &lt; 51</math></li> </ul>	

Tier & Question				Mark	Correct response	Additional guidance	Missing power
3–5	4–6	5–7	6–8				
		20	11				
				<b>2m</b>	<p>Shows correct working and gives the value of <math>x</math> as 3 eg</p> <ul style="list-style-type: none"> <li><math>3^5 + 10^2 = 343</math> <math>7 \times 7 \times 7 = 343</math></li> <li><math>3^5 = 243, 10^2 = 100</math> <math>343 \div 7 = 49, 49 \div 7 = 7</math></li> <li> <math display="block">  \begin{array}{c}  343 \\  \swarrow \quad \searrow \\  7 \qquad 49 \\  \quad \swarrow \quad \searrow \\  \quad 7 \qquad 7  \end{array}  </math> </li> <li><math>7^3 = 343</math></li> </ul>	<p><b>! Value embedded</b> Accept provided there is no ambiguity and correct working is shown eg, for 2m accept</p> <ul style="list-style-type: none"> <li><math>7^3</math> shown in correct working eg, for 2m do not accept</li> <li><math>7^3</math> on the answer line, even with correct working</li> </ul>	
				<p><b>or</b> <b>1m</b></p> <p>Gives the value of <math>x</math> as 3, even if working is incomplete or omitted</p> <p>or</p> <p>Shows the value 343</p> <p>or</p> <p>Shows the values 243 and 100</p>			

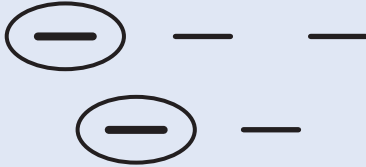


Tier & Question						<b>School size</b>	
3–5	4–6	5–7	6–8	Mark	Correct response	Additional guidance	
		21	12				
				<b>2m</b>	Shows that the average number of pupils in a secondary school is about four times as many as the average number in a primary school eg <ul style="list-style-type: none"> <li>Primary school: <math>4\ 069\ 385 \div 17\ 642 = 230(\dots)</math> (or 231)</li> <li>Secondary school: <math>3\ 315\ 805 \div 3385 = 979(\dots)</math> (or 980)</li> <li><math>979 \div 230 = 4.2(\dots)</math></li> <li><math>17\ 642 \div 3\ 385 = 5.2(\dots)</math></li> <li><math>4\ 069\ 385 \div 3\ 315\ 805 = 1.2(\dots)</math></li> <li><math>5.2(\dots) \div 1.2(\dots) = 4.2(\dots)</math> or 4.3 recurring</li> </ul>	✓ <b>For 2m, minimally acceptable justification</b> eg <ul style="list-style-type: none"> <li><math>979(\dots) \div 230(\dots)</math></li> <li><math>980 \div 231</math></li> <li><math>4\ 100\ 000 \div 18\ 000 \div (3\ 300\ 000 \div 3000)</math></li> <li><math>980, 4 \times 230 = 920</math></li> <li><math>231, 980 \div 4 = 245</math></li> </ul>	
				<b>or</b>	Shows the values $230(\dots)$ (or 231) and $979(\dots)$ (or 980)		
				<b>1m</b>	Shows the intention to divide the total number of pupils by the number of schools for both categories using any reasonably rounded values eg <ul style="list-style-type: none"> <li><math>4\ 069\ 385 \div 17\ 642, 3\ 315\ 805 \div 3385</math></li> <li><math>4\ 100\ 000 \div 18\ 000, 3\ 300\ 000 \div 3000</math></li> <li><math>4\ 000\ 000 \div 18\ 000, 3\ 000\ 000 \div 3000</math></li> </ul>		
				<b>U1</b>			

Tier & Question						<b>Container</b>	
3–5	4–6	5–7	6–8	Mark	Correct response	Additional guidance	
		22	13				
				<b>2m</b>	15		
				<b>or</b>			
				<b>1m</b>	Shows or implies a complete correct method with not more than one error eg <ul style="list-style-type: none"> <li><math>12000 \div 800</math></li> <li><math>12000 \div (40 \times 20)</math></li> <li>Shows the digits 15</li> </ul>		

Tier & Question				Mark	Correct response	Additional guidance															
3–5	4–6	5–7	6–8																		
		23	14			<b><math>n</math>th term expressions</b>															
				<b>3m</b>	<p>Completes all three rows of the table correctly, ie</p> <table border="1" style="margin-left: 20px;"> <thead> <tr> <th>Expression</th> <th>... <math>n</math>th term expression?</th> <th>... 4th term</th> </tr> </thead> <tbody> <tr> <td><math>5n</math></td> <td>No</td> <td>✗</td> </tr> <tr> <td><math>n + 11</math></td> <td>No</td> <td>✗</td> </tr> <tr> <td><math>11n - 6</math></td> <td>Yes</td> <td>38</td> </tr> <tr> <td><math>n^2(6 - n)</math></td> <td>Yes</td> <td>32</td> </tr> </tbody> </table>	Expression	... $n$ th term expression?	... 4th term	$5n$	No	✗	$n + 11$	No	✗	$11n - 6$	Yes	38	$n^2(6 - n)$	Yes	32	<p>✓ <i>Unambiguous indication of 'Yes' or 'No'</i></p> <p>✓ <i>Space for 4th term left blank for the expression <math>n + 11</math></i></p>
Expression	... $n$ th term expression?	... 4th term																			
$5n$	No	✗																			
$n + 11$	No	✗																			
$11n - 6$	Yes	38																			
$n^2(6 - n)$	Yes	32																			
			<b>or</b>	<b>2m</b>	Completes two rows of the table correctly																
			<b>or</b>	<b>1m</b>	Completes either the row for the expression $11n - 6$ or the row for the expression $n^2(6 - n)$ correctly																
					<p>or</p> <p>Completes the middle column of the table correctly, even if the right-hand column is incorrect or omitted</p>																

Tier & Question				Mark	Correct response	Additional guidance	Exam
3–5	4–6	5–7	6–8				
		24	15				
				2m	90		
				or 1m	Shows or implies a complete correct method eg <ul style="list-style-type: none"> <li>Total mark on 6 units must be <math>80 \times 6 = 480</math> Total so far = <math>78 \times 5 = 390</math> <math>480 - 390</math></li> <li><math>80 \times 6 - 78 \times 5</math></li> <li><math>80 - 78 = 2, 2 \times 5 = 10, 80 + 10</math></li> </ul> or Shows the value 480 or 390 or Shows or implies a complete correct method with not more than one computational error eg <ul style="list-style-type: none"> <li>Total mark on 6 units must be <math>80 \times 6 = 420</math> (error) <math>420 - 78 \times 5 = 30</math></li> <li><math>80 \times 6 - 78 \times 5</math></li> <li><math>80 - 78 = 2, 2 \times 5 = 10, 80 + 10</math></li> </ul>	✓ For 2m, reference to 100 marks eg <ul style="list-style-type: none"> <li>90 out of 100</li> <li><math>\frac{90}{100}</math></li> </ul>	

Tier & Question				Equations		
3–5	4–6	5–7	6–8	Mark	Correct response	Additional guidance
		25	16			
	a	a		1m	Indicates both correct equations, ie 	
	b	b		1m	Gives two pairs of coordinates for which $y = x + 1$ and gives a correct equation eg <ul style="list-style-type: none"> <li>• (3, 4) and (0, 1) <math>y = x + 1</math></li> <li>• (1, 2) and (2, 3) <math>x = y - 1</math></li> <li>• (-2, -1) and <math>(\frac{1}{2}, 1\frac{1}{2})</math> <math>y - x = 1</math></li> </ul>	! <b>Unconventional notation</b> eg, for $y = x + 1$ <ul style="list-style-type: none"> <li>• <math>y1 = 1 \times x + 1</math></li> </ul> Condone

Tier & Question				House sales		
3–5	4–6	5–7	6–8	Mark	Correct response	Additional guidance
		26	17			
	a	a		1m	75 000	
	b	b		1m	$33\frac{1}{3}$	! <b>Value rounded</b> Accept 33 or better
		c		1m	64 000	

Tier & Question						Standard form	
3–5	4–6	5–7	6–8	Mark	Correct response	Additional guidance	
			18	1m	Indicates $2 \times 10^8$ and $2.5 \times 10^8$ , in either order	✓ <b>Unambiguous indication</b> eg, for part (a) <ul style="list-style-type: none"> <li>• 200 000 000 and 250 000 000</li> </ul>	

Tier & Question						Greater		
3–5	4–6	5–7	6–8	Mark	Correct response	Additional guidance		
			19	a	1m	$d$ , by 7		
				b	1m	$f$ , by 1		

Tier & Question						Three years old	
3–5	4–6	5–7	6–8	Mark	Correct response	Additional guidance	
			20	2m or 1m	558 000  Shows the value 557 551.(...)  or  Shows a complete correct method with not more than one computational or rounding error, even if their value is not rounded to the nearest thousand eg <ul style="list-style-type: none"> <li>• <math>546\,400 \div 98 \times 100</math></li> <li>• <math>550\,000</math> (premature rounding) <math>\div 0.98 = 561\,224</math></li> </ul>	✓ <b>558 thousand</b>  ✗ <b>For 1m, conceptual error</b> eg <ul style="list-style-type: none"> <li>• <math>0.02 \times 546\,400 + 546\,400 = 557\,328</math></li> </ul>	

Tier & Question						Height	
3–5	4–6	5–7	6–8	Mark	Correct response		Additional guidance
				21			
				2m	7.2 or 7.18(...)	<p>✗ <b>Method used is accurate or scale drawing</b></p> <p>! <b>For 2m, answer of 7</b> Do not accept unless a correct method or a more accurate value is seen</p> <p>! <b>Units given</b> Ignore</p>	
				or 1m	Shows or implies a correct trigonometric ratio eg <ul style="list-style-type: none"> <li>• <math>17 \times \sin 25</math></li> <li>• <math>\frac{h}{17} = \sin 25</math></li> <li>• <math>17 \times \cos 65</math></li> </ul>		

Tier & Question						Fewest men
3–5	4–6	5–7	6–8	Mark	Correct response	
				22		
				2m or 1m	115  Shows the digits 114(...) or 115  or  Shows a complete correct method with not more than one computational or rounding error eg <ul style="list-style-type: none"> <li>• <math>100 \div 87 \times 100</math></li> <li>• <math>100 \div 87 = 1.1</math> (<i>premature rounding</i>), <math>1.1 \times 100 = 110</math></li> </ul>	

Tier & Question						Daisies	
3–5	4–6	5–7	6–8	Mark	Correct response		Additional guidance
				23			
				a	1m	32	
				b	1m	7	
				c	1m	25	

Tier & Question						<b>Using Pythagoras</b>	
3-5	4-6	5-7	6-8	Mark	Correct response	Additional guidance	
			<b>24</b>				
				<b>2m</b>	20.8(...)	<p><b>!<!-- Value of 20 or 21</b--> Do not accept unless a correct method or a more accurate value is seen</b></p> <p><b>! For 1m, value rounded or truncated</b> Accept 9.1(...) or 9.2 Do not accept 9 unless a correct method or a more accurate value is seen</p>	
				<b>or 1m</b>	Shows or implies a correct method, using Pythagoras' theorem, for calculating the length of the missing side of the right-angled triangle with a hypotenuse of 22cm eg <ul style="list-style-type: none"> <li>• <math>x^2 = 22^2 - 20^2</math></li> <li>• <math>x = \sqrt{84}</math></li> <li>• <math>\sqrt{(22^2 - 20^2)}</math></li> <li>• <math>\sqrt{84}</math></li> <li>• <math>2\sqrt{21}</math></li> <li>• 9.165</li> </ul>		
				<b>U1</b>			

Tier & Question				Mark	Correct response	Additional guidance	Booklet
3–5	4–6	5–7	6–8				
			25				
				3m or 2m	<p>60</p> <p>Shows a correct value for the mass of the booklet eg</p> <ul style="list-style-type: none"> <li>• 59.8752</li> </ul> <p>or</p> <p>Shows or implies a correct method with not more than one error or omission, and follows through to give their value correct to 2 significant figures, provided some rounding is required eg</p> <ul style="list-style-type: none"> <li>• <math>297 \times 420 \times 6 = 748\,440</math>, <math>748\,440 \times 80 = 59\,875\,200</math>, so 60 000 000 [failure to convert to m<sup>2</sup>]</li> <li>• <math>297 \times 420 \div 1000</math> (error) = 124.74, <math>124.74 \times 6 \times 80 = 59\,875.2</math>, so 60 000 [incorrect conversion to m<sup>2</sup>]</li> <li>• <math>0.297 \times 0.42 \times 80 = 10</math> [failure to find mass of 6 pages]</li> </ul>	<p><b>! For 2m, value rounded or truncated</b> Accept 59, 59.8(...) or 59.9</p>	
				or 1m	<p>Shows or implies a correct method with not more than one error or omission, even if their value is not given correct to 2 significant figures eg</p> <ul style="list-style-type: none"> <li>• <math>0.297 \times 0.42 \times 6 \times 80</math></li> <li>• <math>297 \times 420 \times 6 = 748\,440</math>, <math>748\,440 \times 80</math> (error) = 59 875 200</li> <li>• <math>0.297 \times 0.42 \times 80 = 9.9(\dots)</math></li> </ul>		



Tier & Question				26	Mark	Correct response	Additional guidance	Hemisphere																		
3-5	4-6	5-7	6-8																							
						<p><b>2m</b> Completes the table correctly with two fully simplified expressions, ie</p> <table border="1"> <thead> <tr> <th>Radius</th> <th>Volume</th> <th>Surface area</th> </tr> </thead> <tbody> <tr> <td><math>r</math></td> <td><math>\frac{2}{3}\pi r^3</math></td> <td><math>3\pi r^2</math></td> </tr> </tbody> </table> <p><b>or</b></p> <p><b>1m</b> Gives one correct and fully simplified expression or Gives both correct, unsimplified expressions eg</p> <ul style="list-style-type: none"> <li> <table border="1"> <thead> <tr> <th>Radius</th> <th>Volume</th> <th>Surface area</th> </tr> </thead> <tbody> <tr> <td><math>r</math></td> <td><math>\frac{4}{3}\pi r^3 \div 2</math></td> <td><math>2\pi r^2 + \pi r^2</math></td> </tr> </tbody> </table> </li> <li> <table border="1"> <thead> <tr> <th>Radius</th> <th>Volume</th> <th>Surface area</th> </tr> </thead> <tbody> <tr> <td><math>r</math></td> <td><math>\frac{4}{6}\pi r^3</math></td> <td><math>3\pi r \times r</math></td> </tr> </tbody> </table> </li> </ul>	Radius	Volume	Surface area	$r$	$\frac{2}{3}\pi r^3$	$3\pi r^2$	Radius	Volume	Surface area	$r$	$\frac{4}{3}\pi r^3 \div 2$	$2\pi r^2 + \pi r^2$	Radius	Volume	Surface area	$r$	$\frac{4}{6}\pi r^3$	$3\pi r \times r$		
Radius	Volume	Surface area																								
$r$	$\frac{2}{3}\pi r^3$	$3\pi r^2$																								
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$r$	$\frac{4}{6}\pi r^3$	$3\pi r \times r$																								

## Index to mark schemes

	Tier				Question	Page
	3-5	4-6	5-7	6-8		
1					School shop	10
2					Missing numbers	10
3					Parcels	10
4					Joining	11
5					Spinner	12
6					Fractions	12
7					Number of sides	13
8					Grid	13
9					Digital	14
10	1				Reflecting	14
12	2				Test	15
13	3				Rounding	15
11	4				Castle	15
14	5				Baby	16
15	6				Count on	16
16	7				Shoe sizes	17
17	8				Finding $x$ and $y$	18
18	9				Seventy	18
20	10	1			Units	19
19	11	2			Rainforest	19
21	12	3			Doughnuts	20
22	13	4			Stopping distances	21
23	14	5			Rotate 180	21
24	15	6			Value	21
25	16	7			12 cubes	22
26	17	8			Cost of delivery	23
27	18	9			Shape area	24

Tier				Question	Page
3-5	4-6	5-7	6-8		
	19	10	1	Midpoints	25
	20	11	2	Rainfall	26
	21	12	3	Thinking distances	26
	22	13	4	Two shapes	27
	23	14	5	Recycling	27
	24	15	6	Shapes on a grid	28
	25	16	7	Five bags	29
	26	17	8	Bicycles	29
		18	9	Eggs	30
		19	10	Ring size	31
		20	11	Missing power	32
		21	12	School size	33
		22	13	Container	33
		23	14	$n$ th term expressions	34
		24	15	Exam	35
		25	16	Equations	36
		26	17	House sales	36
			18	Standard form	37
			19	Greater	37
			20	Three years old	37
			21	Height	38
			22	Fewest men	38
			23	Daisies	38
			24	Using Pythagoras	39
			25	Booklet	40
			26	Hemisphere	41



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