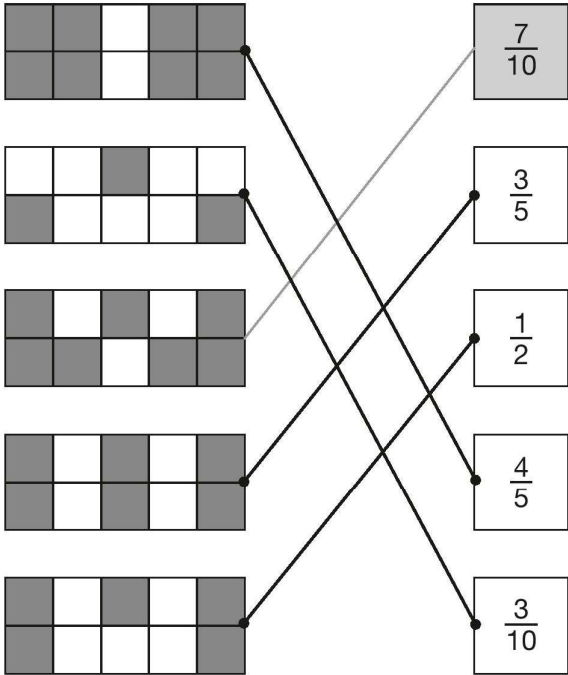
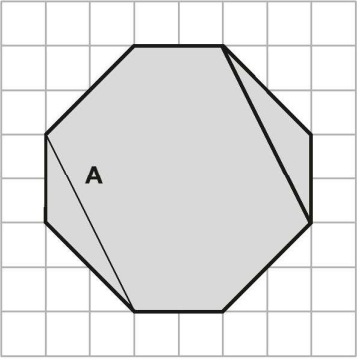
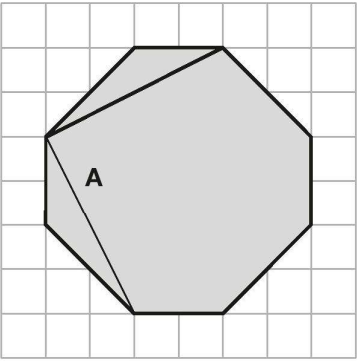
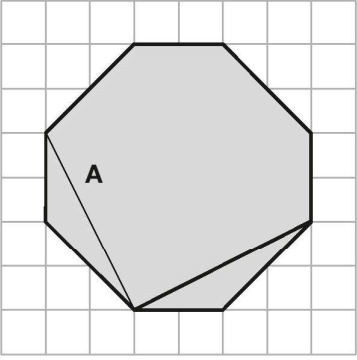


## 8. Mark schemes for Paper 2: reasoning

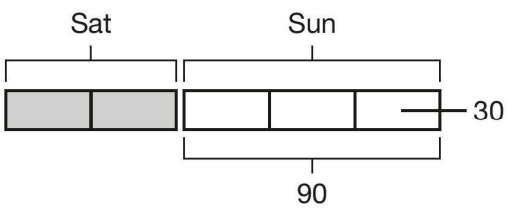
Qu.	Requirement	Mark	Additional guidance
1	257	1m	
2	<p>Award <b>TWO</b> marks for the correct answer of 122</p> <p>If the answer is incorrect, award <b>ONE</b> mark for evidence of an appropriate method, e.g.</p> <ul style="list-style-type: none"> <li><math>4 \times 7 = 28</math></li> <li><math>150 - 28</math></li> </ul>	Up to 2m	Answer need not be obtained for the award of <b>ONE</b> mark.
3a	Paris	1m	
3b	3		<b>Do not</b> accept $-3$
4	<p>Award <b>TWO</b> marks for four shapes matched correctly as shown:</p>  <p>If the answer is incorrect, award <b>ONE</b> mark for three shapes matched correctly.</p>	Up to 2m	<p>Lines need not touch shapes or fraction boxes, provided the intention is clear.</p> <p><b>Do not</b> credit any shape that has been matched to more than one fraction.</p>
5	7 hours and 24 minutes	1m	
6	7 minutes to 9 <b>OR</b> 8:53	1m	

Qu.	Requirement	Mark	Additional guidance
7	<p>Award <b>TWO</b> marks for three rows completed correctly as shown:</p> <p>50</p> <p>120 <b>OR</b> 140 <b>OR</b> 160 <b>OR</b> 180</p> <p>210 <b>OR</b> 240 <b>OR</b> 270</p> <p>320 <b>OR</b> 360</p> <p>If the answer is incorrect, award <b>ONE</b> mark for two rows correct.</p>	Up to 2m	
8a	£2.55	1m	
8b	<p>Award <b>TWO</b> marks for the correct answer of 25</p> <p>If the answer is incorrect, award <b>ONE</b> mark for evidence of an appropriate method, e.g.</p> <ul style="list-style-type: none"> <li>• £5.15 – 15p = £5</li> <li>• £5 ÷ 20p</li> </ul> <p><b>OR</b></p> <ul style="list-style-type: none"> <li>• £5.15 – 15p = £5</li> <li>• 5 × 5</li> </ul>	Up to 2m	Answer need not be obtained for the award of <b>ONE</b> mark.
<p><b>Question 8b commentary:</b> The 2014 national curriculum specifies that pupils should use simple formulae (6A2).</p>			
9a	Answer in the range 5.5cm to 5.9cm <b>inclusive</b> .	1m	
9b	Answer in the range 143° to 147° <b>inclusive</b> .	1m	
<p><b>Question 9b commentary:</b> Some measures questions specify the unit to be used. Where the unit is given in the question lozenge and in the answer box, it must be used. If pupils express their answers using a different unit, e.g. as 57mm in the first part of this question, the mark will not be awarded.</p>			
10	<p>Award <b>TWO</b> marks for both digits correct, as shown:</p> $\begin{array}{r} 4 \boxed{1} \\ \times \quad \boxed{2} 6 \\ \hline 246 \\ 820 \\ \hline 1066 \end{array}$ <p>If the answer is incorrect, award <b>ONE</b> mark for one digit correct.</p>	Up to 2m	

Qu.	Requirement	Mark	Additional guidance
11	115	1m	
<p><b>Question 11 commentary:</b> The 2014 national curriculum specifies that pupils should read Roman numerals to 100 (4N3a) and then to 1000 (5N3a).</p>			
12	1.75	1m	
13a	Line drawn parallel to A, as shown:	1m	Accept slight inaccuracies in drawing, provided the intention is clear.
			
13b	Line drawn perpendicular to A, as shown:	1m	Accept slight inaccuracies in drawing, provided the intention is clear.
	 <p>OR</p> 		

Qu.	Requirement	Mark	Additional guidance
14	<p>Award <b>TWO</b> marks for all three numbers correctly rounded:</p> <p>120 000</p> <p>125 000</p> <p>124 500</p> <p>If the answer is incorrect, award <b>ONE</b> mark for any two numbers correctly rounded.</p>	Up to 2m	
15	<p>Award <b>TWO</b> marks for the correct answer of <math>104^\circ</math></p> <p>If the answer is incorrect, award <b>ONE</b> mark for evidence of an appropriate method, e.g.</p> <ul style="list-style-type: none"> <li><math>180 - 38 - 38 = a</math></li> </ul>	Up to 2m	Answer need not be obtained for the award of <b>ONE</b> mark.
16	<p>Award <b>TWO</b> marks for the correct answer of £5.75</p> <p>If the answer is incorrect, award <b>ONE</b> mark for evidence of an appropriate method, e.g.</p> <ul style="list-style-type: none"> <li><math>\text{£}6.75 \times 3 = \text{£}20.25</math>  <math>\text{£}20.25 + \text{£}8.50 = \text{£}28.75</math>  <math>\text{£}28.75 \div 5</math></li> </ul>	Up to 2m	Answer need not be obtained for the award of <b>ONE</b> mark.
17	<p>Award <b>TWO</b> marks for the correct answer of 145</p> <p>If the answer is incorrect, award <b>ONE</b> mark for evidence of an appropriate method, e.g.</p> <ul style="list-style-type: none"> <li> <math display="block">\begin{array}{r} 144 \\ 136 \\ 142 \\ 143 \\ 152 \\ 148 \\ + 150 \\ \hline 1015 \end{array}</math> <math>1015 \div 7</math> </li> </ul>	Up to 2m	Answer need not be obtained for the award of <b>ONE</b> mark.

Qu.	Requirement	Mark	Additional guidance
18	<p>Award <b>ONE</b> mark for an explanation which recognises that the two pie charts represent different numbers of children, e.g.</p> <ul style="list-style-type: none"> <li>• ‘25 boys like milk chocolate best and more than 25 girls do’</li> <li>• ‘It’s almost half of 100 girls and that’s more than half of 50 boys’</li> <li>• ‘The pie chart shows that half of the boys chose milk chocolate and that’s 25. About 45 girls chose milk chocolate because it’s nearly half of the girls’ pie chart’</li> <li>• ‘25 boys chose milk chocolate, but (whole number in the range 40–49) girls chose milk chocolate’</li> <li>• ‘There are twice as many girls as boys so a quarter of the girls’ pie chart is the same number as half of the boys’ pie chart, and it’s more than a quarter of the girls’</li> <li>• ‘<math>\frac{1}{2}</math> of 50 boys chose milk = 25 <math>\frac{1}{4}</math> of 100 girls chose plain = 25 and from the girls’ pie chart it is obvious that more chose milk than plain’</li> <li>• ‘There are twice as many girls as boys and the sizes of the pie charts show this and the area for boys who like milk chocolate is smaller than the area for girls who like it’.</li> </ul>	1m	<p><b>Do not</b> accept vague or incomplete explanations, e.g.</p> <ul style="list-style-type: none"> <li>• ‘100 is more than 50’</li> <li>• ‘More girls took part than boys so more girls like milk chocolate’</li> <li>• ‘The section for boys who like milk chocolate is smaller than the section for girls who like it’.</li> </ul>
<p><b>Question 18 commentary:</b> The pie charts are presented using the mathematical convention that their areas are proportional to the numbers they represent, i.e. in this example the chart for girls has twice the area of the chart for boys.</p>			

Qu.	Requirement	Mark	Additional guidance
19	<p>Award <b>TWO</b> marks for the correct answer of £16470</p> <p>If the answer is incorrect, award <b>ONE</b> mark for evidence of an appropriate method, e.g.</p> <ul style="list-style-type: none"> <li>• <math>£32.94 \times 1000 = £32\,940</math> <math>£32\,940 \div 2</math></li> </ul> <p><b>OR</b></p> <ul style="list-style-type: none"> <li>• <math>£32.94 \times 500</math> <math>= £3294 \times 5</math></li> </ul>	Up to 2m	Answer need not be obtained for the award of <b>ONE</b> mark.
20	<p>Award <b>TWO</b> marks for the correct answer of 150 pages.</p> <p>If the answer is incorrect, award <b>ONE</b> mark for evidence of an appropriate method, e.g.</p> <ul style="list-style-type: none"> <li>• <math>\frac{3}{5} = 90</math> <math>9 \div 3 = 30</math> <math>30 \times 5</math></li> </ul> <p><b>OR</b></p> <ul style="list-style-type: none"> <li>• </li> </ul> <p><math>30 \times 5</math></p>	Up to 2m	Answer need not be obtained for the award of <b>ONE</b> mark.