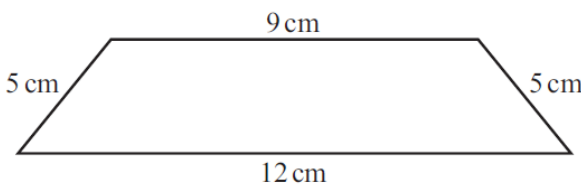


BOUNDS-SET-1-ms

1	<p>In 2005 there were 9 million bicycles in Beijing, correct to the nearest million. The average distance travelled by each bicycle in one day was 6.5 km correct to one decimal place. Work out the upper bound for the total distance travelled by all the bicycles in one day.</p> <p style="text-align: right;"><i>Answer</i> km [2]</p>				
MS-1	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 50%; padding: 2px;">62225000 or 6.2225×10^7 or 62.225 million</td> <td style="width: 50%; padding: 2px; text-align: right;">cao</td> </tr> </table>	62225000 or 6.2225×10^7 or 62.225 million	cao	2	<p>M1 9.5(million) and 6.55 seen 3sf not appropriate for UB and not allowed for 2 marks</p>
62225000 or 6.2225×10^7 or 62.225 million	cao				
2	<p>A fence is made from 32 identical pieces of wood, each of length 2 metres correct to the nearest centimetre.</p> <p>Calculate the lower bound for the total length of the wood used to make this fence.</p> <p>Write down your full calculator display.</p> <p style="text-align: right;"><i>Answer</i> m [3]</p>				
MS-2	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 50%; padding: 2px;">63.84 cao</td> <td style="width: 50%;"></td> </tr> </table>	63.84 cao		3	<p>M1 figs 1995 M1 $32 \times$ their lower bound</p>
63.84 cao					

3	<p>Ashraf takes 1500 steps to walk d metres from his home to the station. Each step is 90 centimetres correct to the nearest 10 cm.</p> <p>Find the lower bound and the upper bound for d.</p> <p style="text-align: right;"><i>Answer</i> $\leq d <$ [3]</p>		
MS-3	1275, 1425	3	B1 85 or 95 or 0.85 or 0.95 M1 their LB or UB \times 1500 where $85 \leq \text{LB} < 90$ $90 < \text{UB} \leq 95$
4	<p>Helen measures a rectangular sheet of paper as 197 mm by 210 mm, each correct to the nearest millimetre. Calculate the upper bound for the perimeter of the sheet of paper.</p> <p style="text-align: right;"><i>Answer</i> mm [2]</p>		
MS-4	816 cm	2	M1 197.5 and 210.5 seen
5	<p>The sides of a rectangle are 6.3 cm and 4.8 cm, each correct to 1 decimal place. Calculate the upper bound for the area of the rectangle.</p> <p style="text-align: right;"><i>Answer</i> cm^2 [2]</p>		

MS-5		30.7975 cao	2	M1 6.35 and 4.85 seen
6	<div style="text-align: center;">  </div> <p style="text-align: right;">NOT TO SCALE</p> <p>The diagram shows a quadrilateral. The lengths of the sides are given to the nearest centimetre.</p> <p>Calculate the upper bound of the perimeter of the quadrilateral.</p> <p style="text-align: right;"><i>Answer</i> cm [2]</p>			
MS-6		33 cao www	2	M1 any two of 5.5, 9.5, 12.5 seen
7	<p>An equilateral triangle has sides of length 16.1 cm, correct to the nearest millimetre.</p> <p>Find the lower and upper bounds of the perimeter of the triangle.</p> <p style="text-align: right;"><i>Answer</i> Lower bound = cm</p> <p style="text-align: right;">Upper bound = cm [2]</p>			
MS-7		48.15, 48.45 cao	2	B1 B1 If 0 then M1 for 16.0 and 16.15 soi

8	<p>Joe measures the side of a square correct to 1 decimal place. He calculates the upper bound for the area of the square as 37.8225 cm^2.</p> <p>Work out Joe's measurement for the side of the square.</p> <p style="text-align: right;"><i>Answer</i> cm [2]</p>				
MS-8		6.1 final answer	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 20%; text-align: center;">2</td> <td style="width: 80%;">M1 for $[\sqrt{37.8225}] = 6.15$</td> </tr> </table>	2	M1 for $[\sqrt{37.8225}] = 6.15$
2	M1 for $[\sqrt{37.8225}] = 6.15$				
9	<p>A rectangle has length 127.3 cm and width 86.5 cm, both correct to 1 decimal place.</p> <p>Calculate the upper bound and the lower bound for the perimeter of the rectangle.</p> <p style="text-align: right;"><i>Answer</i> Upper bound = cm Lower bound = cm [3]</p>				

MS-9		427.8 427.4	3	<p>M2 for $2 \times (127.35 + 86.55)$ or $2 \times (127.35 + 86.45)$</p> <p>or B1 for two of these figures: 127.35, 86.55, 127.25, 86.45 seen</p> <p>If zero scored, SC2 for upper bound 427.8 or lower bound 427.4 provided nfw</p>
10	<p>Rice is sold in 75 gram packs and 120 gram packs. The masses of both packs are given correct to the nearest gram.</p> <p>Calculate the lower bound for the difference in mass between the two packs.</p> <p style="text-align: right;"><i>Answer</i> g [2]</p>			
MS-10	44		2	B1 for 75.5 or 119.5 seen
11	<p>One year ago Ahmed's height was 114 cm. Today his height is 120 cm. Both measurements are correct to the nearest centimetre.</p> <p>Work out the upper bound for the increase in Ahmed's height.</p> <p style="text-align: right;"><i>Answer</i> cm [2]</p>			
MS-11	7		2	B1 for 120.5 or 113.5 seen