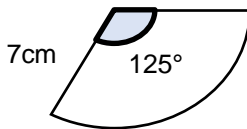
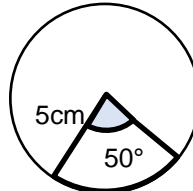
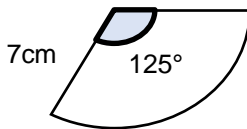
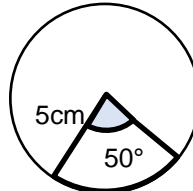
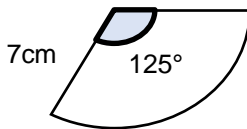
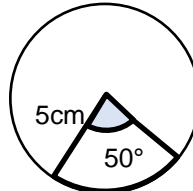


Guidance for tutors

Outcome	SLAV6	Student can consistently:	Find the lengths of arcs and area of sectors.				
How the topic is examined	<ul style="list-style-type: none">Examined through test paper questions.Questions are equally likely to appear on calculator and non-calculator papers.If a question appears on a non-calculator paper students may be expected to leave their answer in terms of π if it has circular parts (e.g. cylinder)						
Prior knowledge	<ul style="list-style-type: none">Students should be confident with:<ul style="list-style-type: none">Four rules with fractions (NF1)Finding the circumference and area of a circle (SLAV2)Compound shapes (SLAV3)In addition questions involving this topic can have links to:<ul style="list-style-type: none">Pie charts (S1)						
Suggested tuition approaches	<ul style="list-style-type: none">Students should understand that a sector is a slice of a circle and the arc is the part of the circumference that forms the sector.Students will be given the radius of the circle and the angle. It may be drawn as part of a circle or within a full circle. You would use the same formulae regardless.The key to this topic is to realise that a sector is a fraction of a circle. <table><tr><th>Length of an arc</th><th>Area of a sector</th></tr><tr><td><p>The length of the arc is a fraction of the circumference.</p></td><td><p>The area of sector is a fraction of the area of the circle.</p></td></tr></table>			Length of an arc	Area of a sector	 <p>The length of the arc is a fraction of the circumference.</p>	 <p>The area of sector is a fraction of the area of the circle.</p>
Length of an arc	Area of a sector						
 <p>The length of the arc is a fraction of the circumference.</p>	 <p>The area of sector is a fraction of the area of the circle.</p>						

Guidance for tutors

	<div style="display: flex; justify-content: space-between;"> <div style="width: 48%;"> $\text{Arc length} = \frac{\text{Angle}}{360} \times 2\pi r$ <p>So the length of this arc is</p> $\text{Arc length} = \frac{125}{360} \times 2 \times \pi \times 7$ <p>Always simplify your answer as far as you can</p> $\text{Arc length} = \frac{1750\pi}{360} = \frac{175\pi}{36} = 15.3\text{cm}$ </div> <div style="width: 48%;"> $\text{Area of sector} = \frac{\text{Angle}}{360} \times \pi r^2$ <p>So the length of this arc is</p> $\text{Area of sector} = \frac{50}{360} \times \pi \times 25$ <p>Always simplify your answer as far as you can</p> $\text{Area of sector} = \frac{1250\pi}{360} = \frac{125\pi}{36} = 10.9\text{cm}^2$ </div> </div> <ul style="list-style-type: none"> • Try to work with the exact answers in terms of π as much as you can. • If leaving your answers in terms of π make sure you simplify as far as you can. • To make calculations easier you could simplify the fraction first before multiplying. • Occasionally students may need to rearrange the formulae to find the angle or radius if you are told the arc length or sector area. • To find the perimeter of the sector you need to add the arc length to the two radii.
<p>Common errors and misconceptions</p>	<ul style="list-style-type: none"> • Students forget to put units – particularly when answers are given in terms of π • Errors are made when working out the area of shapes without a calculator, particularly when simplifying the final answer. • One mark is given for 'stating the units' of an answer – many students lose the mark because they forget to or state the wrong units. • The units of perimeter are length (e.g. mm, cm, metres etc...) • When finding the perimeter of sector students forget to add on the radii as otherwise they would just be finding the arc length. Perimeter is the distance all the way around the shape.

Guidance for tutors

Suggested resources

- Questions
 - <http://www.cimt.org.uk/mepjamaica/unit13/StudentText.pdf> (pp 15 - 18)
 - <https://corbettmaths.files.wordpress.com/2013/02/arc-length.pdf>
 - <https://corbettmaths.files.wordpress.com/2013/02/area-of-a-sector.pdf>
- Past GCSE Questions
 - https://keshgcsemaths.files.wordpress.com/2013/11/107_area-of-sector-and-length-of-arcs.pdf
- Video tutorial
 - <http://corbettmaths.com/2012/08/02/area-of-a-sector-video/>
 - <http://corbettmaths.com/2013/03/26/arc-length/>