

WJEC GCSE MATHS • GRADE 7

MATHS



EXAM QUESTION PACK

AREA OF A SEGMENT

SCORE

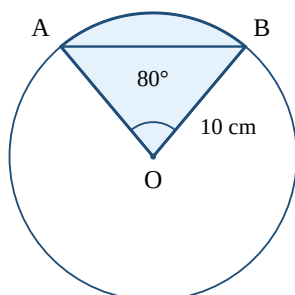
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PERCENTAGE

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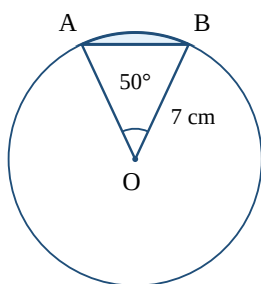
STEMUP

- 1 The diagram shows a circle, centre O, with radius 10 cm and angle $AOB = 80^\circ$.
Work out the area of sector AOB. Give your answer correct to 3 significant figures.



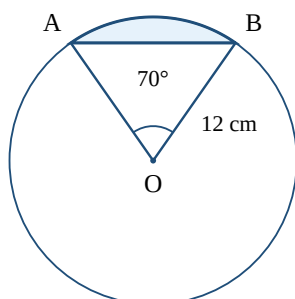
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- 2 The diagram shows a circle with centre O. A and B are points on the circle. The shaded region is a segment of the circle.
Work out the area of the shaded segment. Give your answer correct to 3 significant figures.



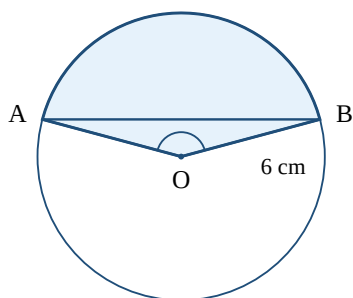
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- 3 The diagram shows a circle, centre O, with radius 12 cm and angle $AOB = 70^\circ$.
Show that the area of the shaded segment is 20.3 cm^2 , correct to 3 significant figures.



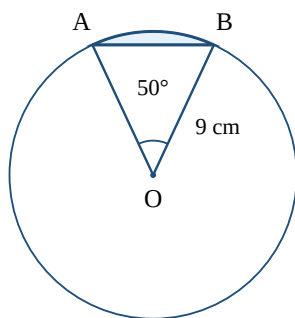
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- 4 The diagram shows a circle, centre O, with radius 6 cm and angle $AOB = 150^\circ$.
Work out the area of sector AOB. Give your answer correct to 3 significant figures.



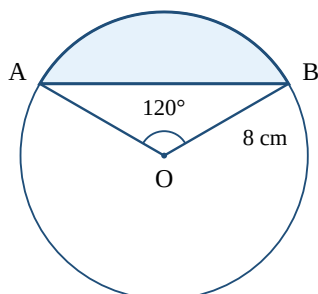
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- 5 The diagram shows a circle, centre O. The shaded region is a segment of the circle.
Work out the area of the shaded segment. Give your answer correct to 3 significant figures.



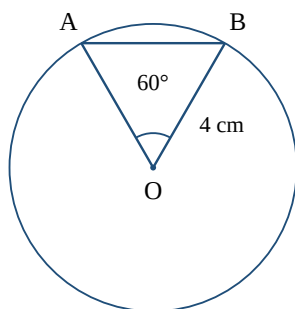
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- 6 The diagram shows a circle, centre O, with radius 8 cm and angle $AOB = 120^\circ$.
Show that the area of the shaded segment is 39.3 cm^2 , correct to 3 significant figures.



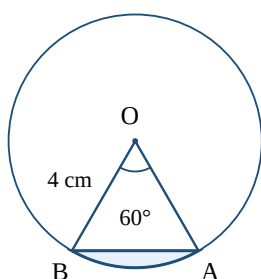
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- 7 The diagram shows a circle, centre O, with radius 4 cm and angle $AOB = 60^\circ$.
Work out the length of arc AB. Give your answer correct to 3 significant figures.



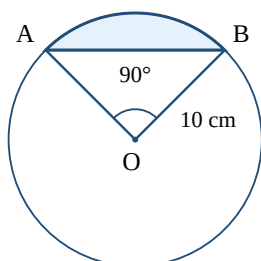
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- 8 The diagram shows a circle with centre O. A and B are points on the circle. The shaded region is a segment of the circle.
Work out the area of the shaded segment. Give your answer correct to 3 significant figures.



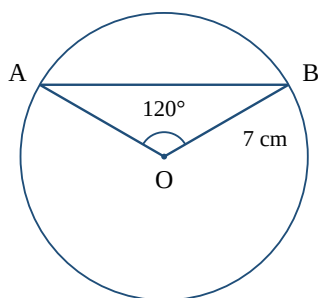
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- 9 The diagram shows a circle, centre O, with radius 10 cm and angle $AOB = 90^\circ$.
Work out the exact area of the shaded segment.
Give your answer in terms of π .



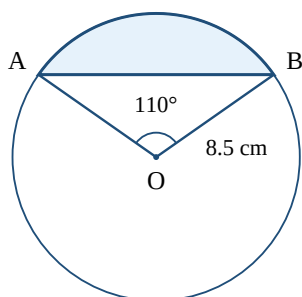
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- 10** The diagram shows a circle, centre O, with radius 7 cm and angle $AOB = 120^\circ$.
Work out the area of triangle AOB. Give your answer correct to 3 significant figures.



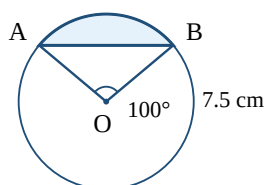
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- 11** The diagram shows a circle, centre O. The shaded region is a segment of the circle.
Work out the area of the shaded segment. Give your answer correct to 3 significant figures.



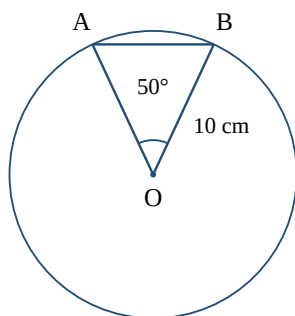
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- 12** AB is a chord of a circle, centre O. The radius of the circle is 7.5 cm and angle $AOB = 100^\circ$.
(a) Work out the area of sector AOB.
(b) Work out the area of triangle AOB.
(c) Work out the area of the shaded segment.
Give your answers correct to 3 significant figures.



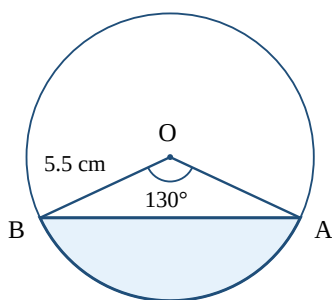
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- 13** The diagram shows a circle, centre O, with radius 10 cm and angle $AOB = 50^\circ$.
Work out the area of triangle AOB. Give your answer correct to 3 significant figures.



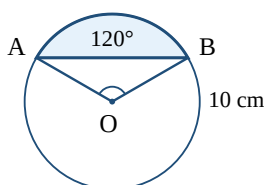
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- 14** AB is a chord of a circle, centre O. The shaded region is a segment of the circle.
Work out the area of the shaded segment. Give your answer correct to 3 significant figures.



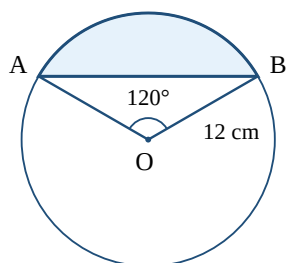
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- 15** AB is a chord of a circle, centre O. The radius of the circle is 10 cm and angle $AOB = 120^\circ$.
(a) Work out the area of sector AOB.
(b) Work out the area of triangle AOB.
(c) Work out the area of the shaded segment.
Give your answers correct to 3 significant figures.



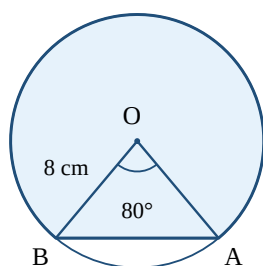
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- 16** The diagram shows a circle, centre O, with radius 12 cm and angle $AOB = 120^\circ$.
Work out the exact area of the shaded segment.
Give your answer in the form $a\pi - b\sqrt{3}$, where a and b are numbers.



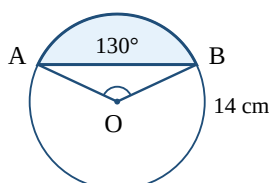
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- 17** The diagram shows a circle, centre O, with radius 8 cm and angle $AOB = 80^\circ$.
Work out the area of the shaded major segment. Give your answer correct to 3 significant figures.



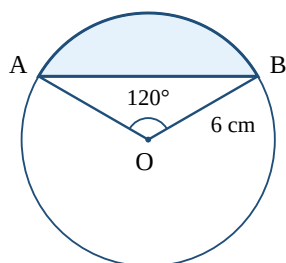
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- 18** AB is a chord of a circle, centre O. The radius of the circle is 14 cm and angle $AOB = 130^\circ$.
(a) Work out the area of sector AOB.
(b) Work out the area of triangle AOB.
(c) Work out the area of the shaded segment.
Give your answers correct to 3 significant figures.



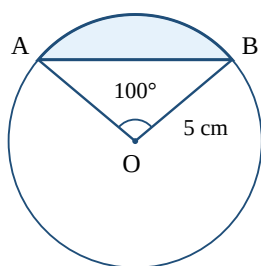
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- 19** The diagram shows a circle, centre O, with radius 6 cm and angle $AOB = 120^\circ$.
Work out the exact area of the shaded segment.
Give your answer in the form $a\pi - b\sqrt{3}$, where a and b are numbers.



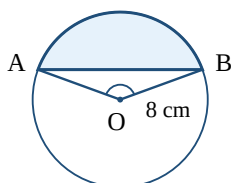
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- 20** The diagram shows a circle, centre O, with radius 5 cm and angle $AOB = 100^\circ$.
Work out the area of the shaded segment as a percentage of the area of the circle.
Give your answer correct to 1 decimal place.



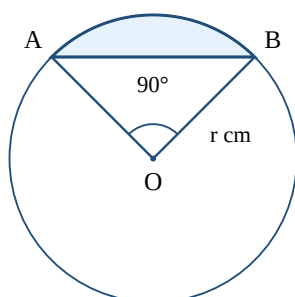
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- 21** AB is a chord of a circle, centre O. The radius of the circle is 8 cm and angle $AOB = 140^\circ$.
(a) Work out the area of sector AOB.
(b) Work out the area of triangle AOB.
(c) Work out the area of the shaded segment.
Give your answers correct to 3 significant figures.



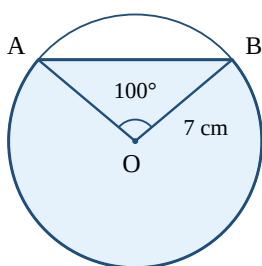
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- 22 The diagram shows a circle, centre O, and a chord AB. Angle $AOB = 90^\circ$. The area of the shaded segment is $9\pi - 18 \text{ cm}^2$. Find the radius of the circle.



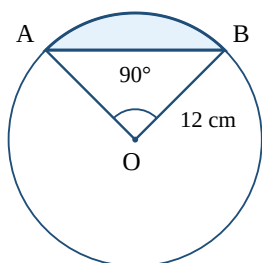
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- 23 The diagram shows a circle, centre O, with radius 7 cm and angle $AOB = 100^\circ$. Work out the area of the shaded major segment. Give your answer correct to 3 significant figures.



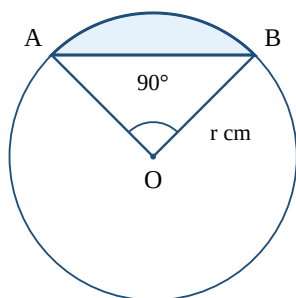
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- 24 The diagram shows a circle, centre O, with radius 12 cm and angle $AOB = 90^\circ$. Work out the area of the shaded segment as a percentage of the area of the circle. Give your answer correct to 1 decimal place.



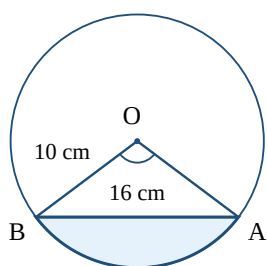
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- 25 The diagram shows a circle, centre O, and a chord AB. Angle $AOB = 90^\circ$. The area of the shaded segment is $36\pi - 72 \text{ cm}^2$. Find the radius of the circle.



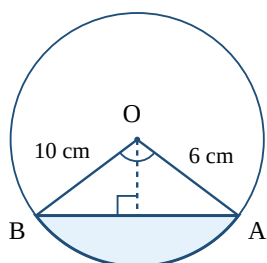
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- 26 The diagram shows a circle, centre O, with radius 10 cm. The chord AB has length 16 cm.
- (a) Work out the size of angle AOB. Give your answer correct to 1 decimal place.
- (b) Work out the area of the shaded segment. Give your answer correct to 3 significant figures.



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- 27 The diagram shows a circle, centre O, with radius 10 cm. The distance from O to the chord AB is 6 cm.
- Work out the area of the shaded segment. Give your answer correct to 3 significant figures.

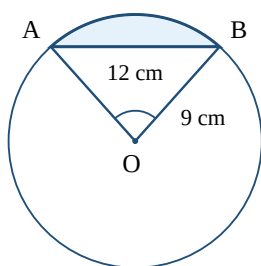


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- 28** Bethan and Owen each cut a segment from a circular pizza base.
 Bethan: radius 6 cm, angle at the centre 100° .
 Owen: radius 4 cm, angle at the centre 110° .
 Who cuts the segment with the larger area? You must show your working.

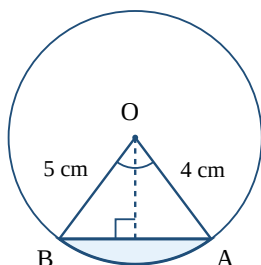
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- 29** The diagram shows a circle, centre O, with radius 9 cm. The chord AB has length 12 cm.
 (a) Work out the size of angle AOB. Give your answer correct to 1 decimal place.
 (b) Work out the area of the shaded segment. Give your answer correct to 3 significant figures.



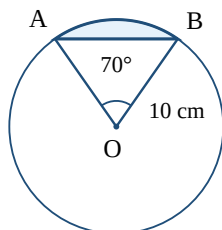
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- 30** The diagram shows a circle, centre O, with radius 5 cm. The distance from O to the chord AB is 4 cm.
 Work out the area of the shaded segment. Give your answer correct to 3 significant figures.



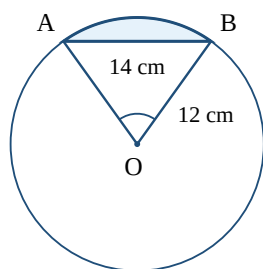
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- 31** The diagram shows a circle, centre O, with radius 10 cm and angle $AOB = 70^\circ$.
 (a) Work out the area of the shaded segment.
 (b) Work out the perimeter of the shaded segment.
 Give your answers correct to 3 significant figures.



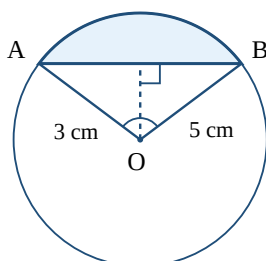
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- 32** The diagram shows a circle, centre O, with radius 12 cm. The chord AB has length 14 cm.
 (a) Work out the size of angle AOB. Give your answer correct to 1 decimal place.
 (b) Work out the area of the shaded segment. Give your answer correct to 3 significant figures.



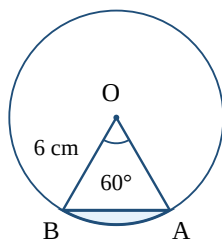
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- 33** The diagram shows a circle, centre O, with radius 5 cm. The distance from O to the chord AB is 3 cm.
 Work out the area of the shaded segment. Give your answer correct to 3 significant figures.



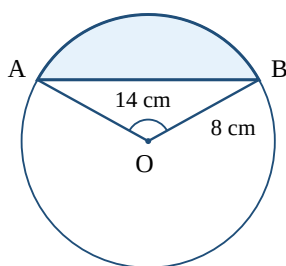
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- 34** The diagram shows a circle, centre O, with radius 6 cm and angle $AOB = 60^\circ$.
 (a) Work out the area of the shaded segment.
 (b) Work out the perimeter of the shaded segment.
 Give your answers correct to 3 significant figures.



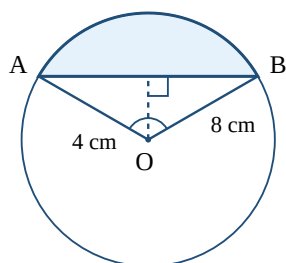
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- 35** The diagram shows a circle, centre O, with radius 8 cm. The chord AB has length 14 cm.
 (a) Work out the size of angle AOB. Give your answer correct to 1 decimal place.
 (b) Work out the area of the shaded segment. Give your answer correct to 3 significant figures.



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- 36** The diagram shows a circle, centre O, with radius 8 cm. The distance from O to the chord AB is 4 cm.
 Work out the area of the shaded segment. Give your answer correct to 3 significant figures.

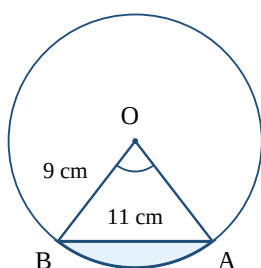


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- 37** Dylan and Megan each cut a segment from a circular pizza base.
 Dylan: radius 7 cm, angle at the centre 110° .
 Megan: radius 5 cm, angle at the centre 80° .
 Who cuts the segment with the larger area? You must show your working.

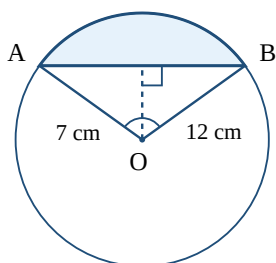
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- 38** The diagram shows a circle, centre O, with radius 9 cm. The chord AB has length 11 cm.
 (a) Work out the size of angle AOB. Give your answer correct to 1 decimal place.
 (b) Work out the area of the shaded segment. Give your answer correct to 3 significant figures.



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- 39** The diagram shows a circle, centre O, with radius 12 cm. The distance from O to the chord AB is 7 cm.
 Work out the area of the shaded segment. Give your answer correct to 3 significant figures.

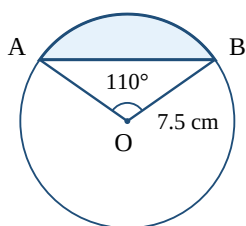


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- 40** Elin and Iwan each cut a segment from a circular pizza base.
 Elin: radius 8 cm, angle at the centre 60° .
 Iwan: radius 4 cm, angle at the centre 80° .
 Who cuts the segment with the larger area? You must show your working.

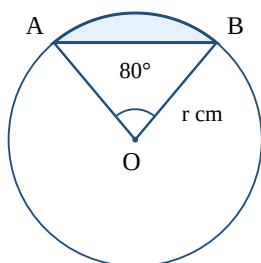
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- 41** The diagram shows a circle, centre O, with radius 7.5 cm and angle $AOB = 110^\circ$.
 (a) Work out the area of the shaded segment.
 (b) Work out the perimeter of the shaded segment.
 Give your answers correct to 3 significant figures.



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- 42** The diagram shows a circle, centre O, with radius r cm and angle $AOB = 80^\circ$.
 The area of the shaded segment is 29.6 cm^2 , correct to 3 significant figures.
 Work out the value of r . Give your answer as a whole number.

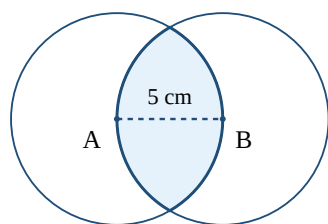


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- 43 Megan and Mari each cut a segment from a circular pizza base.
 Megan: radius 4 cm, angle at the centre 60° .
 Mari: radius 10 cm, angle at the centre 100° .
 Who cuts the segment with the larger area? You must show your working.

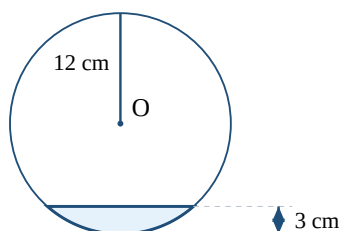
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- 44 Two circles, each with radius 5 cm, overlap as shown.
 The centre of each circle lies on the circumference of the other circle.
 Work out the area of the shaded region.
 Give your answer correct to 3 significant figures.



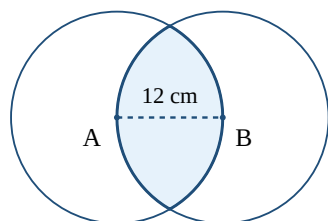
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- 45 The diagram shows a circular pipe of radius 12 cm. The depth of water is 3 cm.
 (a) Work out the area of the cross section of the water.
 (b) The pipe is 8 m long. Work out the volume of water in the pipe, in litres.
 Give your answers correct to 3 significant figures.



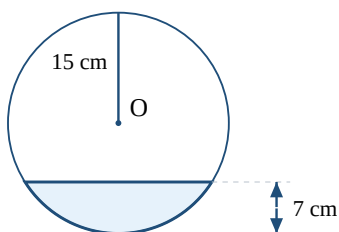
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- 46** Two circles, each with radius 12 cm, overlap as shown.
The centre of each circle lies on the circumference of the other circle.
Work out the area of the shaded region.
Give your answer correct to 3 significant figures.



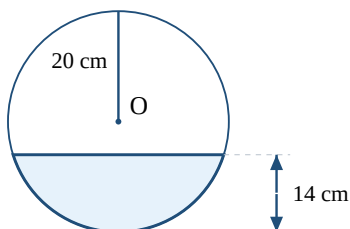
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- 47** The diagram shows a circular pipe of radius 15 cm. The depth of water is 7 cm.
(a) Work out the area of the cross section of the water.
(b) The pipe is 2 m long. Work out the volume of water in the pipe, in litres.
Give your answers correct to 3 significant figures.



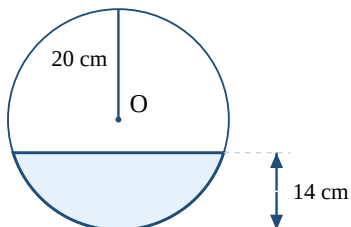
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- 48** The diagram shows a circular pipe of radius 20 cm. The depth of water is 14 cm.
(a) Work out the area of the cross section of the water.
(b) The pipe is 3 m long. Work out the volume of water in the pipe, in litres.
Give your answers correct to 3 significant figures.



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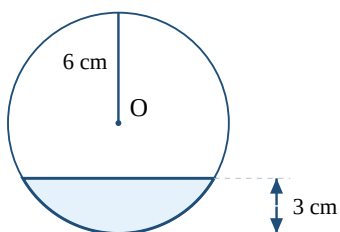
- 49** The diagram shows a circular pipe of radius 20 cm. The depth of water is 14 cm.
- (a) Work out the area of the cross section of the water.
- (b) The pipe is 8 m long. Work out the volume of water in the pipe, in litres.
- Give your answers correct to 3 significant figures.



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- 50** The diagram shows a circular pipe of radius 6 cm. The depth of water is 3 cm.
- (a) Work out the area of the cross section of the water.
- (b) The pipe is 3 m long. Work out the volume of water in the pipe, in litres.
- Give your answers correct to 3 significant figures.



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