

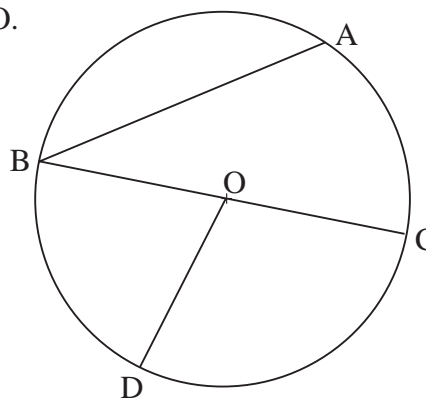
# UNIT 16 *Circles and Cylinders*

# Extra Exercises 16.1

1.
  - (a) Draw a circle of radius 4 cm.
  - (b) Inside the circle, draw an isosceles triangle which has 2 sides of length 6 cm.
  - (c) What is the length of the third side of the triangle?
  - (d) Measure the angles in the triangle.
  
2.
  - (a) Draw a circle of radius 3 cm.
  - (b) Draw a chord of length 4 cm.
  - (c) Shade the minor segment.
  
3.
  - (a) Draw a circle of radius 5 cm.
  - (b) Draw a diameter.
  - (c) Mark a point anywhere on the circle.
  - (d) Join this point to each end of the diameter.
  - (e) Measure the angle between the two chords you have drawn.
  - (f) Repeat for some different points on the circle.
  - (g) What do you notice?

4. The diagram shows a circle which has its centre at O.  
Copy and complete the following sentences:

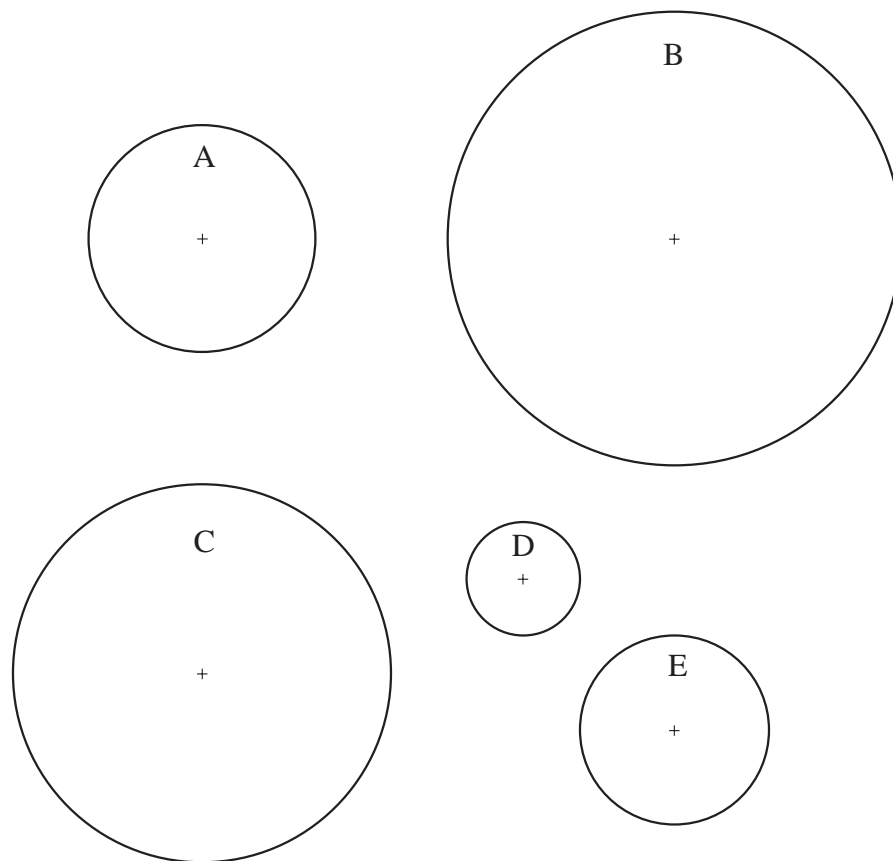
- (a) The line A B is a .....
- (b) The line B C is a .....
- (c) The line O D is a .....



# UNIT 16 *Circles and Cylinders*

## Extra Exercises 16.2

1. Measure the diameter and circumference of each of the following circles. Then copy and complete the table shown at the bottom of the page.

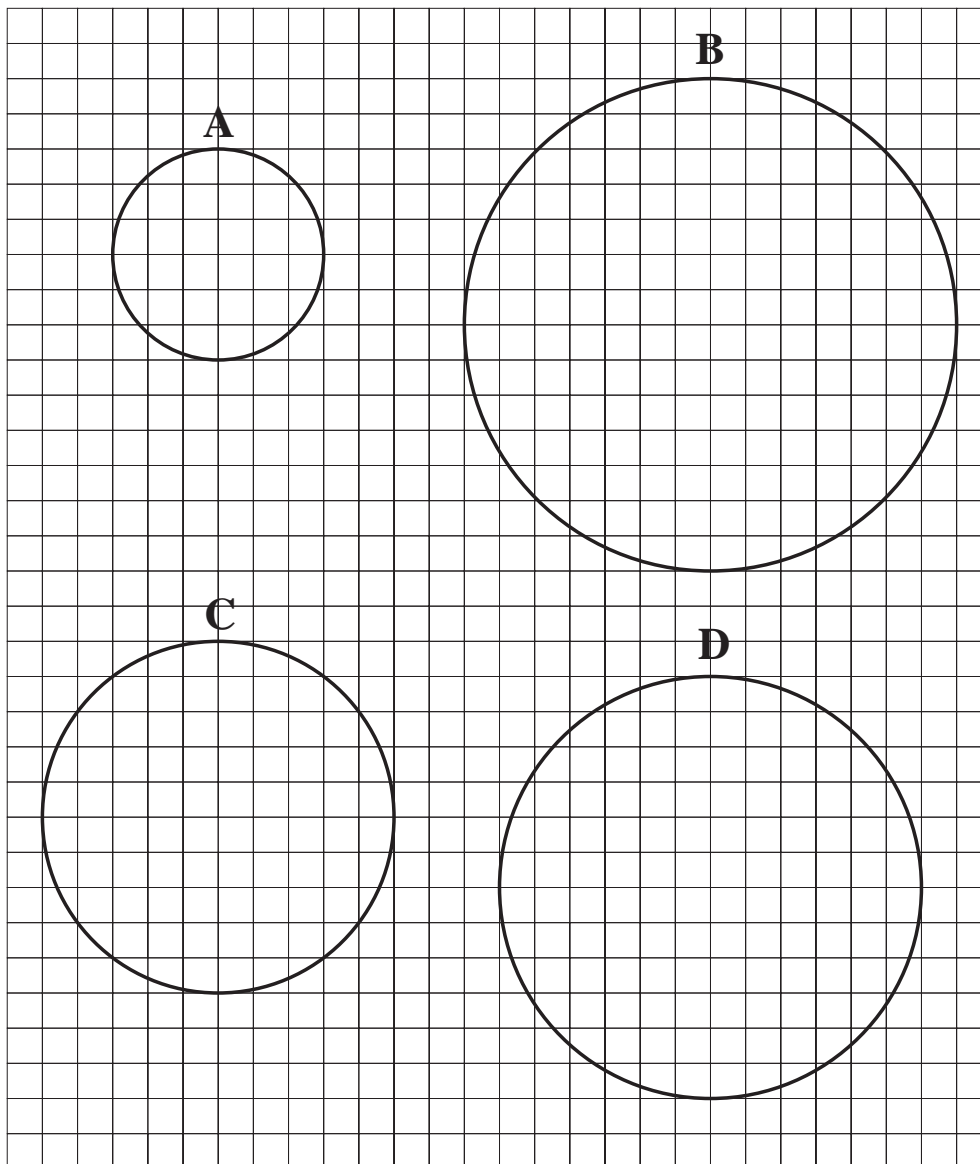


<i>Circle</i>	<i>Diameter</i>	<i>Circumference</i>	<i>Circumference ÷ Diameter</i>
A			
B			
C			
D			
E			

# UNIT 16 *Circles and Cylinders*

# Extra Exercises 16.3

1. (a) *Estimate* the area of each of the circles shown.
- (b) *Measure* the radius of each circle.
- (c) Copy and complete the table below.



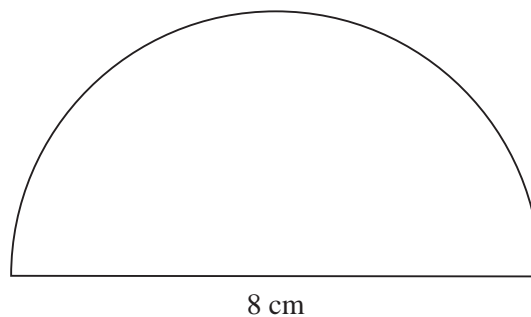
<i>Circle</i>	<i>Area</i>	<i>Radius</i>	$Area \div (Radius)^2$
A			
B			
C			
D			

**UNIT 16** *Circles and Cylinders***Extra Exercises 16.4**

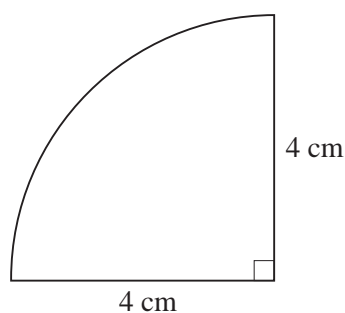
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(Where necessary, answers to be given to 3 significant figures.)

1. A circle has radius 20 cm. Calculate:
  - (a) its *diameter*,
  - (b) its *circumference*,
  - (c) its *area*.
2. Calculate the *area* and *circumference* of a circle with radius 6.2 cm.
3. Calculate the *area* and *circumference* of a circle with diameter 9 cm.
4. Calculate the *area* and *perimeter* of the semicircle shown.



5. Calculate the *area* of the following shape:



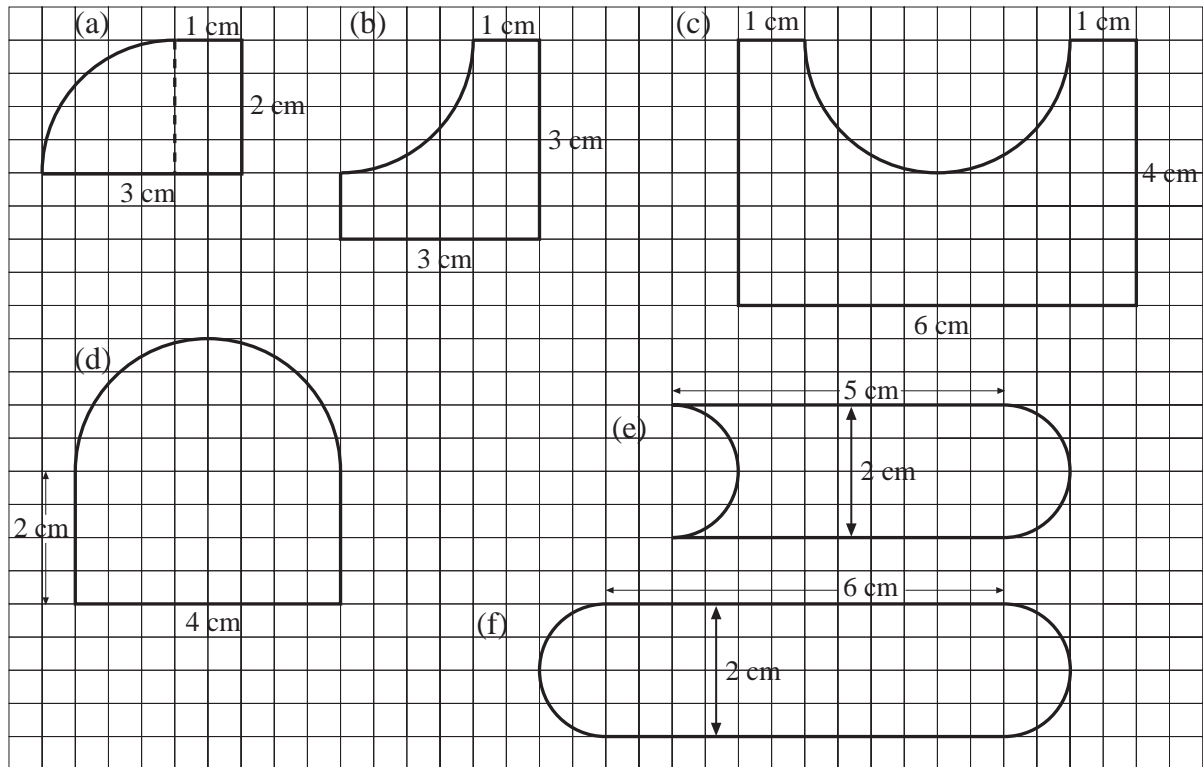
6. A circle has a circumference of 30 cm. What is the *radius* of this circle?

# UNIT 16 *Circles and Cylinders*

# Extra Exercises 16.5

(Where necessary, answers to be given to 3 significant figures.)

- Calculate the area of each of the shapes shown, which have been formed by adding or removing semicircles and quarter-circles.



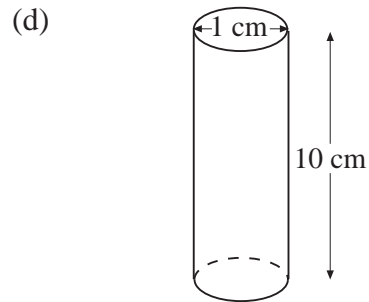
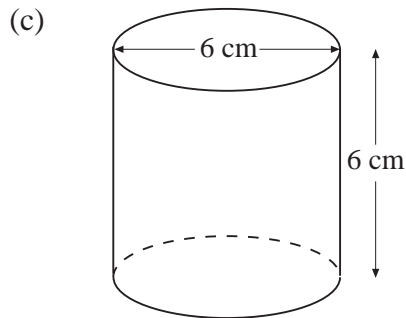
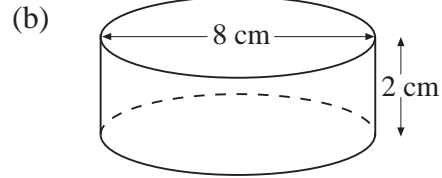
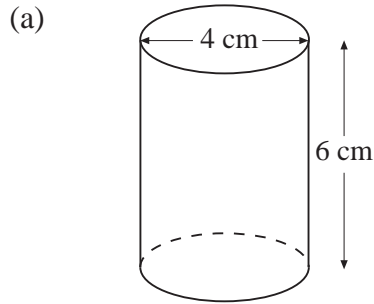
- A hole of radius 6 cm is cut in a rectangle with sides of length 20 cm and 15 cm. What is the *area* of the shape that is left?
- A metal disc has radius 2 cm. A hole of radius 1.5 cm is cut in the disc to form a washer. What is the area of one surface of the washer?

**UNIT 16** *Circles and Cylinders***Extra Exercises 16.6**

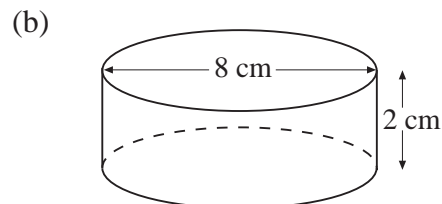
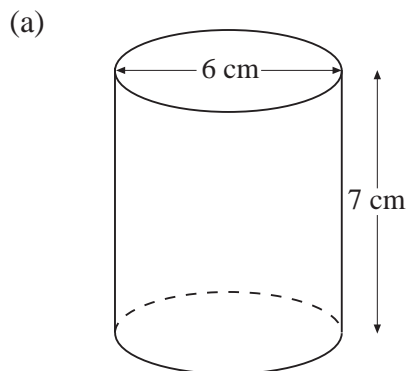
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(Where necessary, answers to be given to 1 decimal place.)

1. Calculate the volume of each of the following cylinders:



2. Calculate the total surface area of each of the following cylinders:



## Extra Exercises 16.1 Answers

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- (c) 7.9 cm                      (d) 48.5 °, 48.5 ° and 83 °
- Always a right angle.
- (a) chord                      (b) diameter                      (c) radius

## Extra Exercises 16.2 Answers

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- Circumference  $\div$  diameter =  $\pi$

## Extra Exercises 16.3 Answers

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- Area  $\div$  (radius)<sup>2</sup> =  $\pi$

## Extra Exercises 16.4 Answers

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- (a) 40 cm                      (b) 126 cm                      (c) 1257 cm
- 121 cm<sup>2</sup>, 39.0 cm
- 63.6 cm<sup>2</sup>, 28.3 cm
- 25.1 cm<sup>2</sup>, 20.6 cm
- 12.6 cm<sup>2</sup>
- 4.77 cm

## Extra Exercises 16.5 Answers

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- (a) 5.14 cm<sup>2</sup>                      (b) 5.86 cm<sup>2</sup>                      (c) 17.7 cm<sup>2</sup>  
(d) 14.3 cm<sup>2</sup>                      (e) 10 cm<sup>2</sup>                      (f) 15.1 cm<sup>2</sup>
- 187 cm<sup>2</sup>
- 5.50 cm<sup>2</sup>

## Extra Exercises 16.6 Answers

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- (a) 75.4 cm<sup>3</sup>                      (b) 100.5 cm<sup>3</sup>                      (c) 169.6 cm<sup>3</sup>                      (d) 7.85 cm<sup>3</sup>
  - (a) 188.5 cm<sup>2</sup>                      (b) 150.8 cm<sup>2</sup>
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