Area and Circumference of Circles

1. Copy and complete the table below for each circle.

|	Radius	Diameter	Circumference	Area
(a)	10 m			
(b)			176 mm	
(c)				616 cm^2
(d)		3.6 m		

2. Calculate the circumference and area of each circle given its diameter.

    (a) 70 mm   (b) 28 cm   (c) 35 cm

3. Calculate the circumference and area of each circle given its radius, giving your answer correct to 2 decimal places.

    (a) 3.5 cm   (b) 13.8 m   (c) 5.25 cm

4. Find the radius of a circle whose area is 44 cm^2.
    Give your answer correct to 2 decimal places.

5. Find the diameter of a circle whose area is 22 cm^2.
    Give your answer correct to 1 decimal place.

6. Find the areas of the shaded regions, given that O is the centre of each circle.
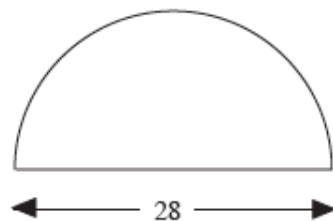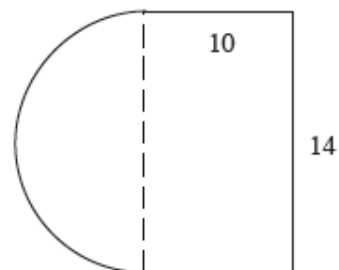
(a)

O   3 cm

(b)

8 m
O
4 m
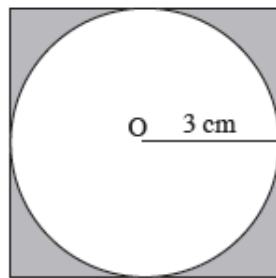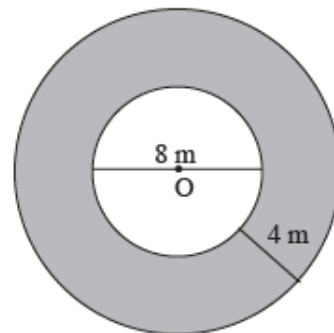
7. Find the perimeter and area of each of the following figures. All dimensions are given in cm and the circular portions are semicircles.

(a)
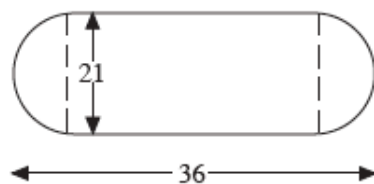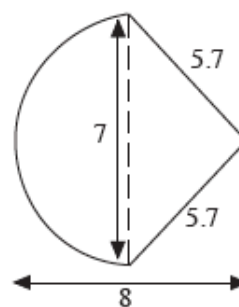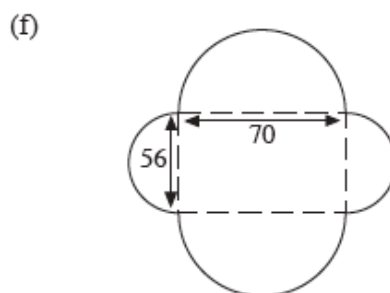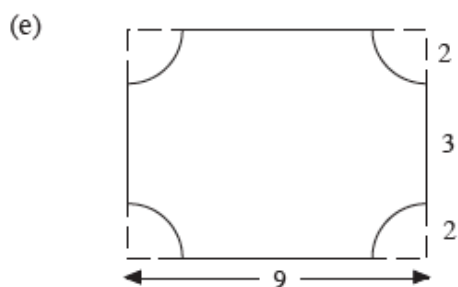
28

(b)

10

14

(c)

21

36

(d)

5.7

7

5.7

8

(e)

(f)

8. Two wire circles of diameters 12 cm and 8 cm are cut and then joined to make one large circle. Find the diameter of this larger circle.

9. A bicycle wheel has a radius of 30 cm.
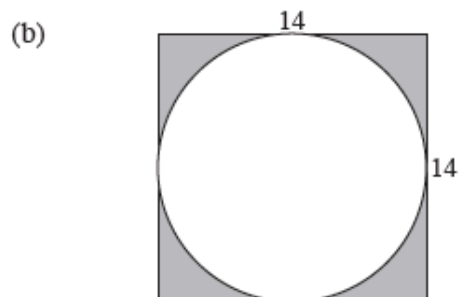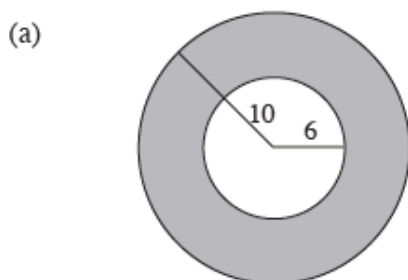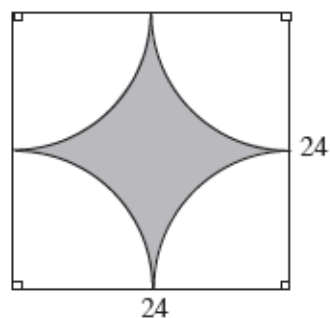
    (a) Find the circumference of the wheel.

    (b) How far does the bicycle go in 100 turns of the wheel?
    Give your answer in m.

10. Find the perimeter and area of each of the shaded regions. Take $\pi = 3.14$ and give your answers correct to 3 significant figures. All measurements are in centimetres (cm).

(a)

(b)

(c)

(d)

(e)

24

24

(f)

6

8

10

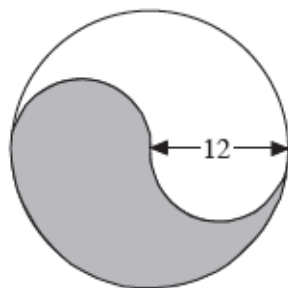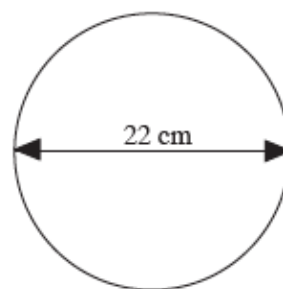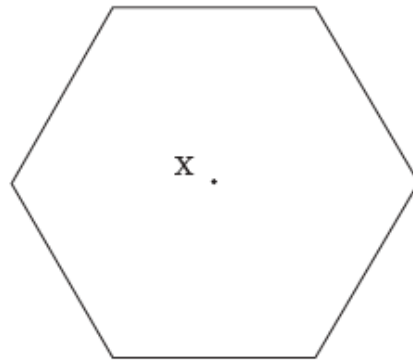(g)

12
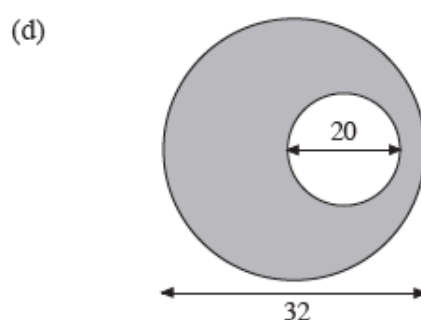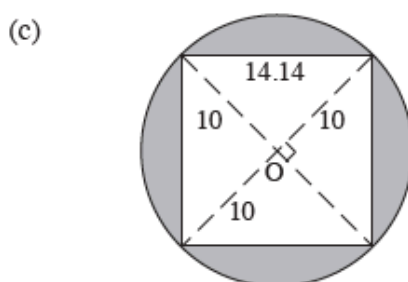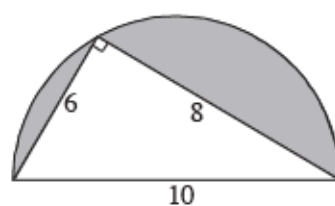
11. A cardboard party plate has a diameter of 22 cm.

Not to scale

22 cm

(a) Calculate the circumference
Take π to be 3.14 or use the π key on your calculator.

(b) (i) What is the radius of the plate?

(ii) Calculate the area of the plate correct to the nearest whole number.

(SEG)

12.   The diagram shows a regular hexagon.
   The point X is the centre of the hexagon.

       (a)   (i)   Measure and write down the length of one side of the hexagon.

              (ii)   Calculate the perimeter of the hexagon.

       (b)   (i)   Draw a circle, centre X, which passes through the six vertices of this
                      hexagon.

              (ii)   Write down the length of the radius of your circle.

       (c)   Use the diagram to explain why the circumference of the circle is greater
              than the perimeter of the hexagon.

       (d)   Calculate the circumference of the circle you have drawn.

                                                                                    (NEAB)

13.   (a)   A circle has a radius of 4 cm. Write down the length of the diameter.

       (b)   On a copy of the circle below,

              (i)   draw a diameter

              (ii)   mark with a cross a point on the circumference

              (iii)   draw a tangent.
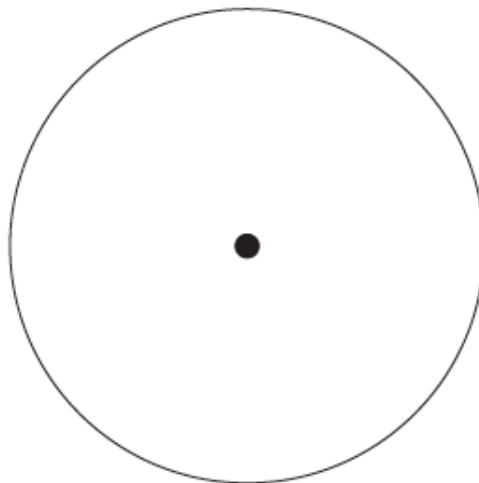
                                                                                    (AQA)
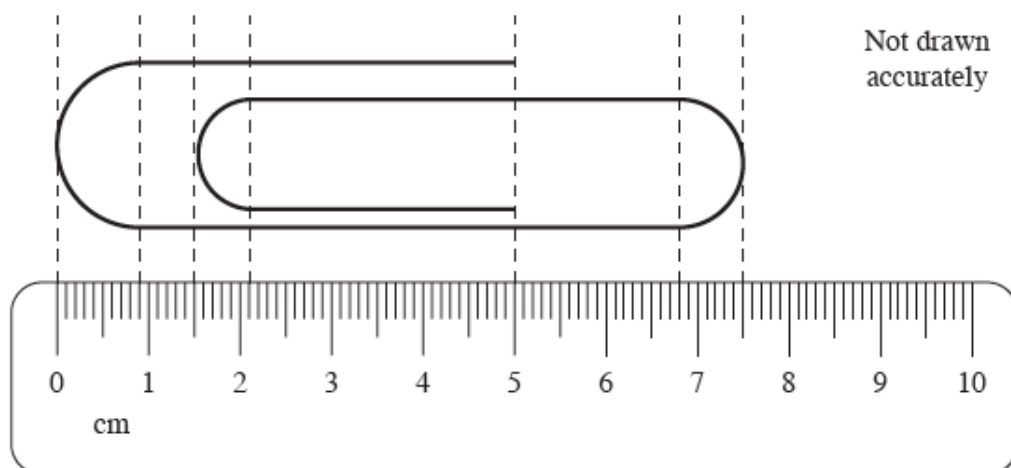
14. A circle fits inside a semicircle of diameter 10 cm as shown.

Not drawn accurately

10 cm
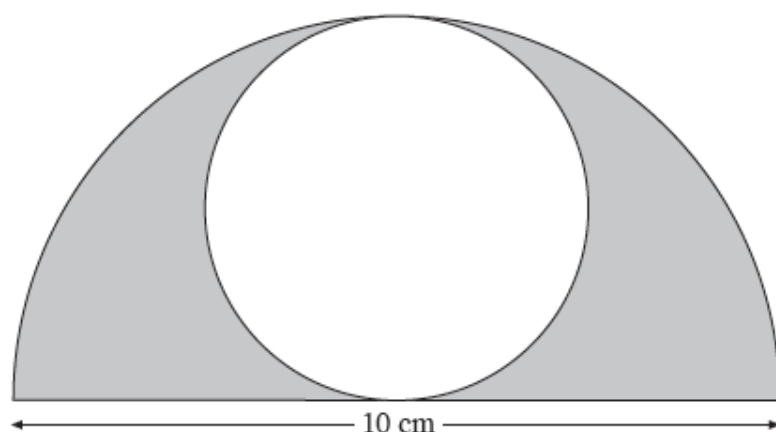
Calculate the shaded area.

15. A giant paper clip is placed alongside a centimetre ruler.
     The curved ends are semicircles.

Not drawn accurately

0   1   2   3   4   5   6   7   8   9   10
cm

Calculate the length of wire used to make the clip.