

- b** The bicycle travels approximately 2.2 m per revolution. Let x be the number of revolutions.

Distance = (number of rev.)(distance per rev.)

$$15 \approx x(2.2)$$

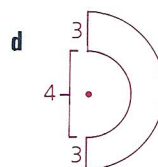
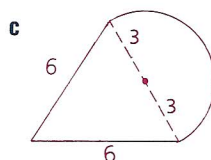
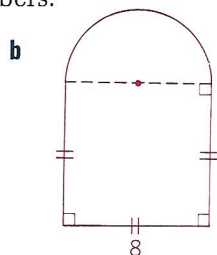
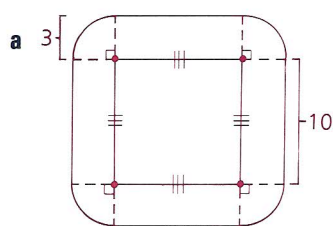
$$6.8 \approx x$$

The wheel will revolve approximately 6.8 times.

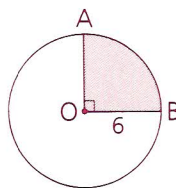
Part Three: Problem Sets

Problem Set A

- Find the circumference of the circle. Then approximate the circumference to the nearest hundredth.
 - A circle whose diameter is 21 mm
 - A circle whose radius is 6 mm
- Find, to the nearest hundredth, the radius of a circle whose circumference is
 - 56π
 - 314
 - 17π
 - 88
- Find the length of each arc of a circle with a radius of 10.
 - A 72° arc
 - A 90° arc
 - A 60° arc
 - A semicircle
- A bicycle has wheels 30 cm in diameter. Find, to the nearest tenth of a centimeter, the distance that the bicycle moves forward during
 - 1 revolution
 - 10 revolutions
 - 1000 revolutions
- Find the complete perimeter of each figure. Leave your answers in terms of π and whole numbers.

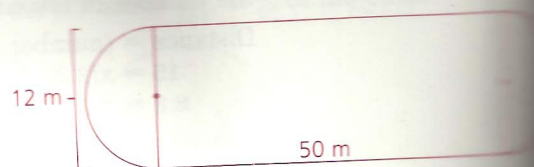


- Find the length of $\widehat{AB}$.
 - Find the perimeter of sector AOB. (The shaded region is a sector.)



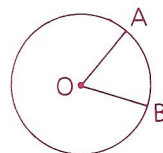
Problem Set A, continued

- 7 Find, to the nearest meter, the length of fencing needed to surround the racetrack.



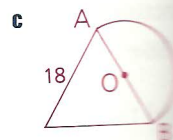
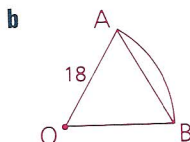
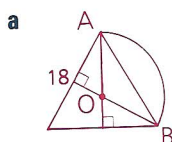
- 8 The radius of $\odot O$ is 10 mm and the length of $\widehat{AB}$ is 4π mm.

- a Find the circumference of $\odot O$.
b Find $m\widehat{AB}$.

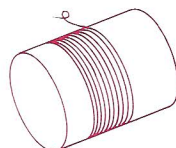


Problem Set B

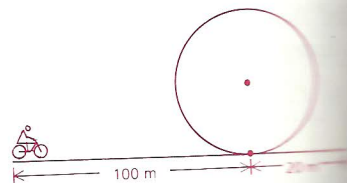
- 9 Given arcs mounted on equilateral triangles as shown, find the length of each arc. In each case $\overline{OA}$ is a radius of $\widehat{AB}$.



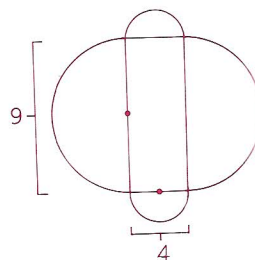
- 10 There are 100 turns of thread on a spool with a diameter of 4 cm. Find the length of the thread to the nearest centimeter.



- 11 Awful Kanaufil plans to ride his cycle on a single-loop track. There is 100 m of straight track before the loop and 20 m after. The loop has a radius of 15 m. To the nearest meter, what is the total length of the track he must ride?



- 12 Find the outer perimeter of the figure, which is composed of semicircles mounted on the sides of a rectangle.



Part Three: Problem Sets

Problem Set A

- 1 Find the areas and circumferences of circles with the following radii.

a 1

b 8

c 15

- 2 Find the radii of circles with the following areas.

a 16π

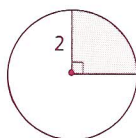
b 169π

- 3 Find the circumference of a circle whose area is 100π sq cm.

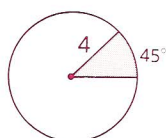
- 4 Find the area of a circle whose circumference is 18π dm.

- 5 Find the area of each shaded sector.

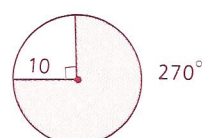
a



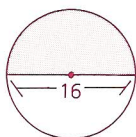
c



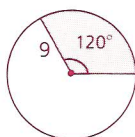
e



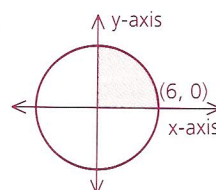
b



d



f

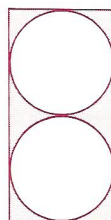


- 6 The diagram shows a rectangular lawn and the circular regions watered by two sprinklers. Each circular region is 3 m in radius. Find, to the nearest square meter,

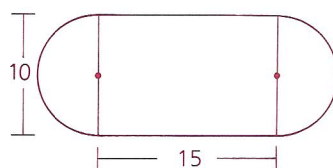
a The total area that is watered

b The area of the whole lawn

c The area of lawn not watered (shaded)



- 7 Find the total area of the region shown.



Problem Set B

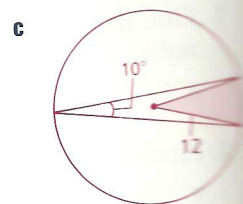
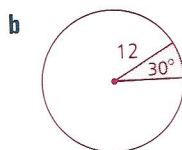
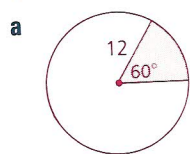
- 8 Find, to the nearest tenth, the radii of circles with the following areas.

a 24π

b 36

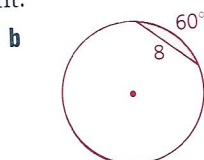
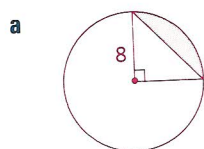
Problem Set B, continued

- 9 Find the area of each sector.

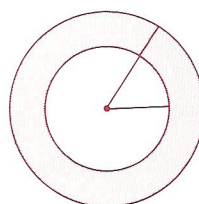


- 10 If the area of a circle is 60π and the area of a sector of the circle is 24π , what is the measure of the sector's arc?

- 11 Find the area of each segment.

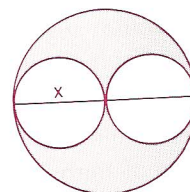


- 12 a Find the area of the shaded figure if the inner radius is 3 and the outer radius is 5. (Such a figure is called an **annulus**.)



- b If the inner circle has a radius r and the outer circle has a radius R , derive the formula for the area of any annulus.

- 13 a What is the area of the shaded region if $x = 6$? If $x = 10$? If $x = 7$?
b What observation can you make about the shaded region's area?



- 14 Find the area of the shaded part of each figure. (Assume regular polygons.)

