

## Lesson 7 Summary

The circumference  $C$  of a circle is proportional to the diameter  $d$ , and we can write this relationship as  $C = \pi d$ . The circumference is also proportional to the radius of the circle, and the constant of proportionality is  $2 \cdot \pi$  because the diameter is twice as long as the radius. However, the **area of a circle** is *not* proportional to the diameter (or the radius).

The area of a circle with radius  $r$  is a little more than 3 times the area of a square with side  $r$  so the area of a circle of radius  $r$  is approximately  $3r^2$ . We saw earlier that the circumference of a circle of radius  $r$  is  $2\pi r$ . If we write  $C$  for the circumference of a circle, this proportional relationship can be written  $C = 2\pi r$ .

The area  $A$  of a circle with radius  $r$  is approximately  $3r^2$ . Unlike the circumference, the area is not proportional to the radius because  $3r^2$  cannot be written in the form  $kr$  for a number  $k$ . We will investigate and refine the relationship between the area and the radius of a circle in future lessons.

## Lesson 7 Glossary Terms

- area of a circle