What is π?

Use What You've Learned
Answers and Explanations

1. The following chart lists the circumference and diameter of several circular objects. Complete the chart using the following directions.
   a. Find the ratio of the circumference to the diameter of each object using division (C ÷ d). Round each answer to two decimal places and record it in the last column of the chart.
   b. Find three more circular objects and record each object in the blank rows at the bottom of the chart. Measure the circumference and diameter of each object you found and record the measurements in the appropriate column. Do not measure the diameter and compute the circumference. If you do not have a tape measure, you may want to use a string to help you measure the circumference.
   c. Find the ratio of the circumference to the diameter using division (C ÷ d) and record the results in the last column.
   d. Compare your results to the results found in the video.

Object	Circumference	Diameter	Ratio of C to d
basketball hoop	1.41 m	0.45 m	3.13
penny	59.85 mm	19.05 mm	3.14
soccer field center circle	57.49 m	18.30 m	3.14

Measurement is never exact and always involves some error. The ratio of circumference to diameter should be a little greater than three for any circular object you measure. Depending on the accuracy of your measurements, your results may vary.

2. Emily owns a circular trampoline that has a diameter of 12 feet. She needs to replace the safety net around the trampoline. How long must the netting be to completely surround the trampoline?

The trampoline has a diameter of 12 feet, so the netting will need to be a little more than 3 times 12, or 36 feet. If you use 3.14 to approximate pi, the answer will be about 38 feet of netting (12 x 3.14 = 37.68).

3. While attending summer camp, Hamish and Braden took a walk around a small circular lake. The distance around the lake was 5.5 km. The next day they swam across the lake. If they swam across the widest part of the lake, how far did they swim?

   The distance around the lake is the circumference. The circumference is equal to pi times the diameter, so 5.5 km = $\pi \cdot d$. If you use 3.14 to approximate pi, then $d \approx 5.5 \div 3.14$, or 1.8 km.

4. College Town Pizza sells two sizes of pizzas, individual and family size. The individual pizza has a diameter of 8 inches and the family size pizza has a diameter of 16 inches. Find the area of each pizza.

   The diameter of the individual pizza is 8 inches, so the radius is 4 inches. To find the area of a circle, multiply pi times the radius squared. If you use 3.14 for pi, the area will be approximately 3.14×4^2, or 50¼ square inches.

   The diameter of the family size pizza is 16 inches, so the radius is 8 inches. If you use 3.14 for pi, the area will be approximately 3.14×8^2, or 201 square inches.

5. A garden sprinkler advertises that it waters a circular region covering 336 to 400 square feet. Anton reseeded a circular portion of his lawn and needs to water it. The diameter of this newly seeded lawn is 20 feet. If the advertised sprinkler is placed in the center of the seeded lawn, will Anton have to move the sprinkler in order to water the entire section of new grass?

   If the diameter of the newly seeded lawn is 20 feet, then the radius is 10 feet. A circle whose radius is 10 feet has an area of approximately 314 square feet (3.14×10^2). Since the sprinkler covers between 336 and 400 square feet, the entire seeded area can be watered without moving the sprinkler.