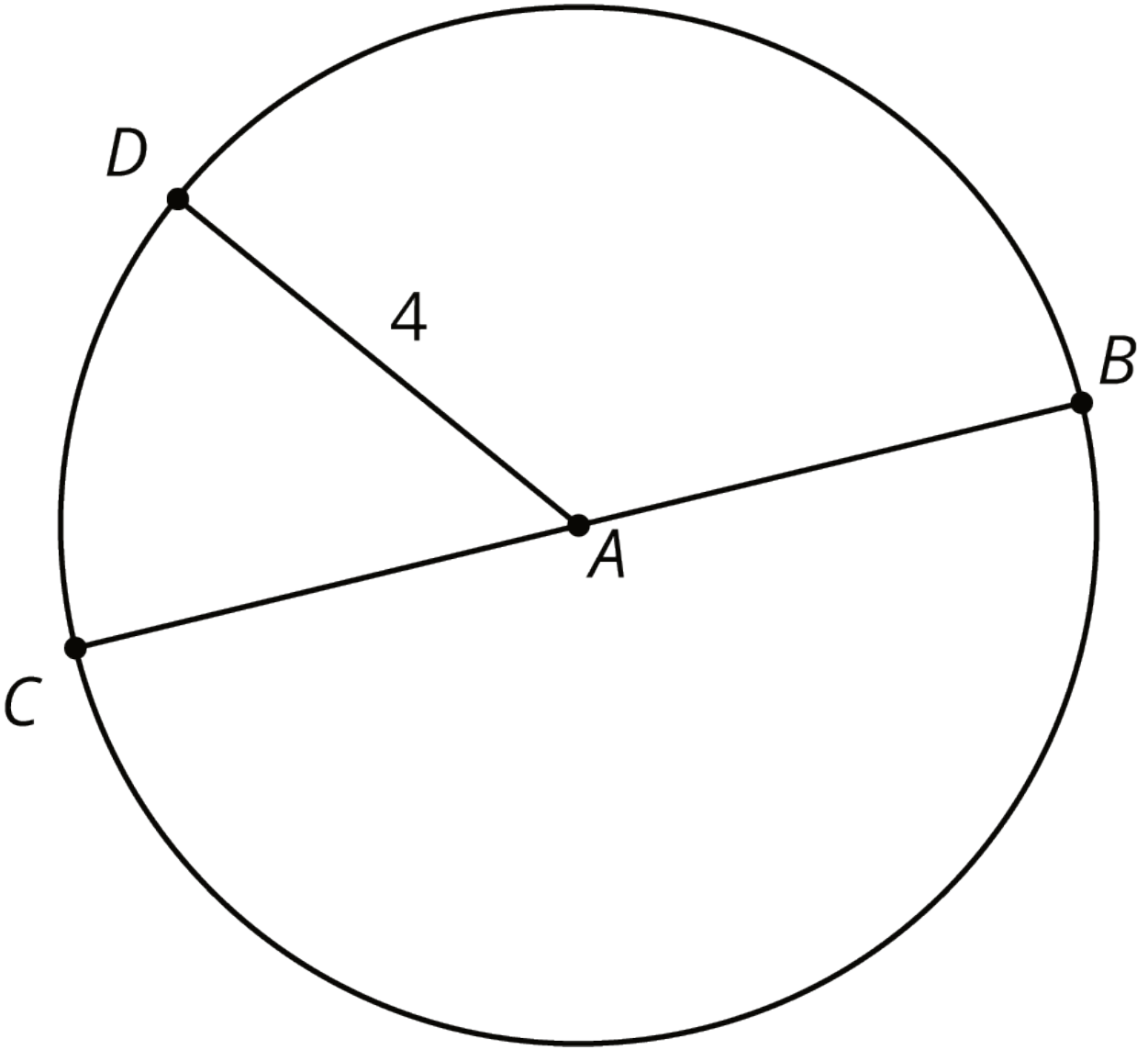
Unit 5 Lesson 13: The Volume of a Cylinder

1 A Circle's Dimensions (Warm up)

Student Task Statement



Here is a circle. Points A, B, C, and D are drawn, as well as Segments AD and BC.

1. What is the area of the circle, in square units? Select all that apply.
   a. 4π
   b. $\pi 8$
   c. 16π
   d. $\pi 4^2$

e. approximately 25

f. approximately 50

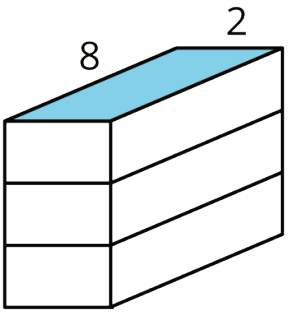
2. If the area of a circle is 49π square units, what is its radius? Explain your reasoning.

2 Circular Volumes

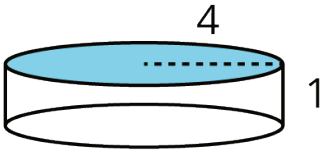
Student Task Statement

What is the volume of each figure, in cubic units? Even if you aren't sure, make a reasonable guess.

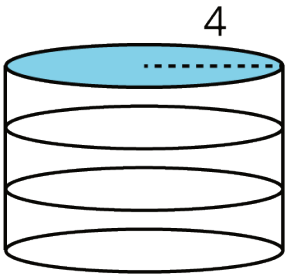
A



B



C



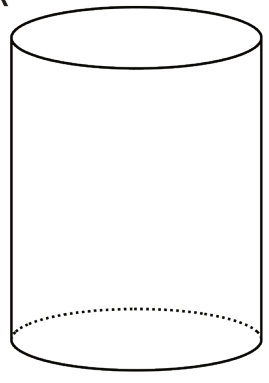
1. Figure A: A rectangular prism whose base has an area of 16 square units and whose height is 3 units.
2. Figure B: A cylinder whose base has an area of 16π square units and whose height is 1 unit.
3. Figure C: A cylinder whose base has an area of 16π square units and whose height is 3 units.

3 A Cylinder's Dimensions (Optional)

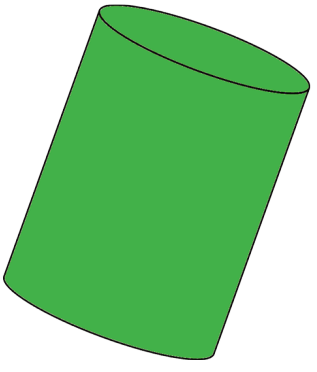
Student Task Statement

1. For cylinders A–D, sketch a radius and the height. Label the radius with an r and the height with an h.

A

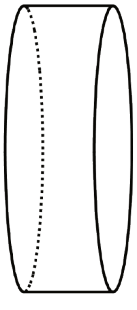


B



C

D



E

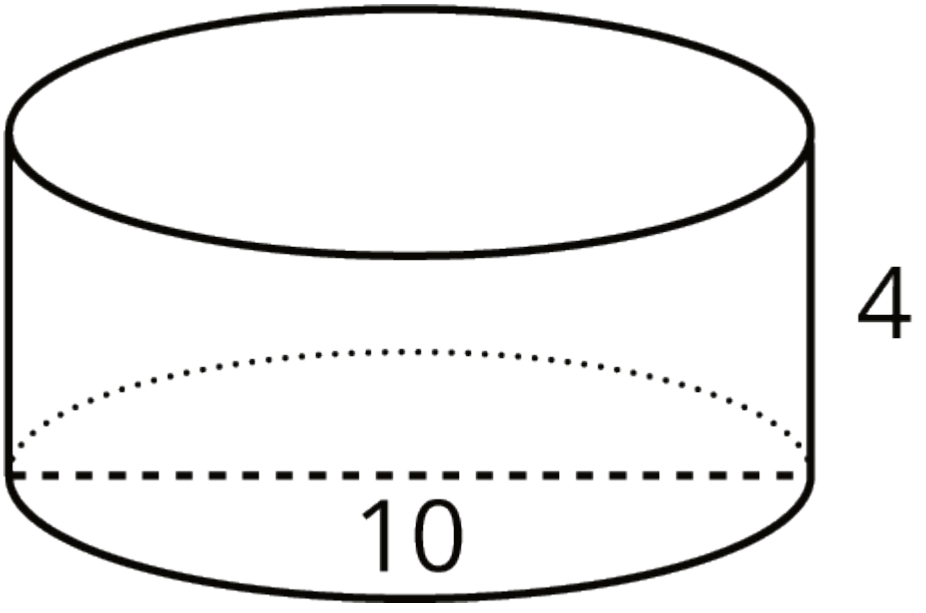
F

2. Earlier you learned how to sketch a cylinder. Sketch cylinders for E and F and label each one's radius and height.

4 A Cylinder's Volume

Student Task Statement

1. Here is a cylinder with height 4 units and diameter 10 units.



   a. Shade the cylinder's base.

   b. What is the area of the cylinder's base? Express your answer in terms of π.

   c. What is the volume of this cylinder? Express your answer in terms of π.

2. A silo is a cylindrical container that is used on farms to hold large amounts of goods, such as grain. On a particular farm, a silo has a height of 18 feet and diameter of 6 feet. Make a sketch of this silo and label its height and radius. How many cubic feet of grain can this silo hold? Use 3.14 as an approximation for π.