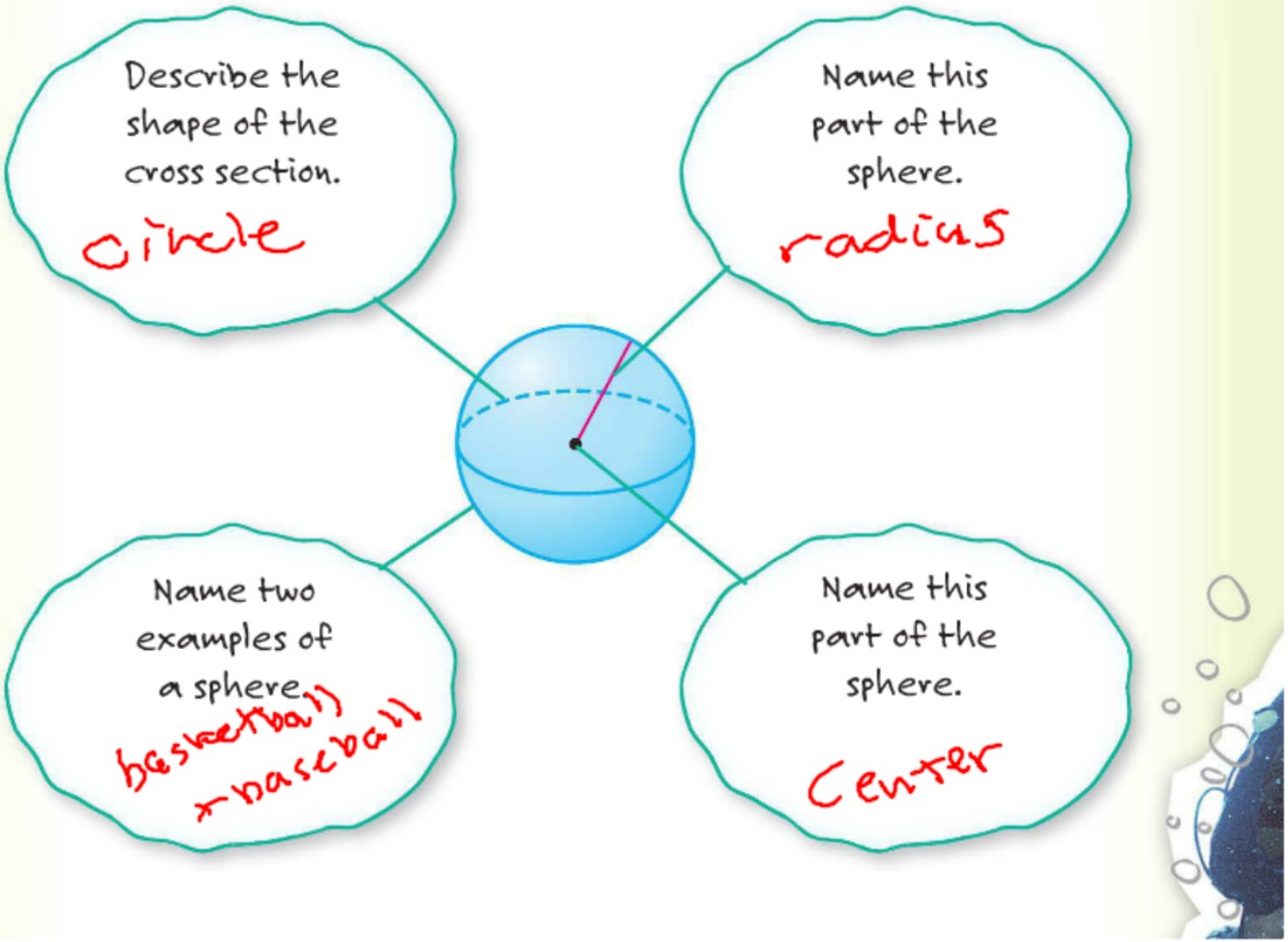
Complete the graphic organizer.



nearest tenth.

10. sphere with a volume of 1,767.1 m^3

7.5 m

$V = \frac{4}{3}\pi r^3$

$1767.1 = \frac{4}{3}\pi r^3$

$\frac{3}{4} \cdot \frac{1767.1}{\pi} = \frac{4}{3}\pi r^3 \cdot \frac{3}{4}$

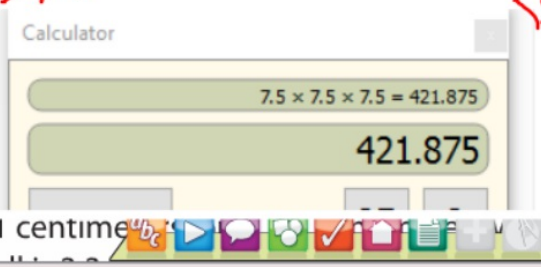
$r^3 = 422$

$8^3 = 512$

$r^3 =$

$7^3 = 343$

good guess...



11. hemisphere with a volume of 2,712.3 in^3

10.9 in.

$\frac{1}{2} r^3 = 647.8$

$r^3 = 1295.7$

$11^3 = 1331$

$r^3 = 1295.7$

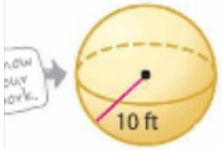
$10^3 = 1000$

in.

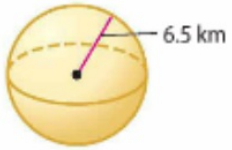
as shown below. The box is 12.1 centime[illegible]e,

Find the volume of each sphere. Round to the nearest tenth. (Example 1)

1. **4,188.8 ft³**



2. **1,150.3 km³**



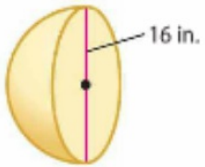
3. Sarah is blowing up spherical balloons for her brother's birthday party. One of the balloons has a radius of 3 inches. Round to the nearest tenth. (Examples 2 and 3)

   a. What is the volume of the balloon? **113.1 in³**

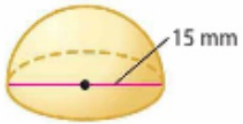
   b. Suppose Sarah can inflate the balloon at a rate of 200 cubic inches per minute. How long will it take her to inflate the ballon? **0.6 min**

Find the volume of each hemisphere. Round to the nearest tenth. (Example 4)

4. **1,072.3 in³**



5. **883.6 mm³**



6. **Building on the Essential Question** *True* or *false*? The volume of a sphere is two-thirds the volume of a cylinder with the same radius r and height of $2r$. Explain your reasoning.

True; sample answer: The volume of the cylinder is $2\pi r^3$ units³. $2\pi r^3 \cdot \frac{2}{3} = \frac{4}{3}\pi r^3$ or the volume of the sphere.

Rate Yourself!

How well do you understa volume of spheres? Circle image that applies.

Independent Practice

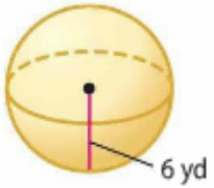
Go online for S

Find the volume of each sphere. Round to the nearest tenth. (Example 1)

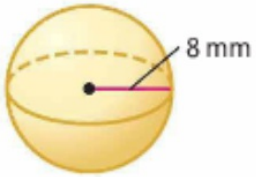
1. **1,563.5 in^3**

Show your work.

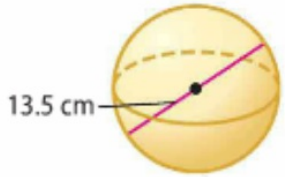
2. **904.8 yd^3**



3. **2,144.7 mm^3**



4. **1,288.2 cm^3**



5. The radius of a basketball is 4.7 inches. What is the volume of the basketball? Round to the nearest tenth. (Example 2) **434.9 in^3**

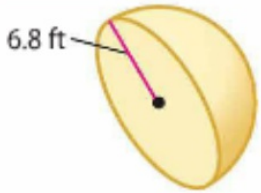
6. Jackie bought a game that contained a ball and 10 jacks. The ball had a radius of 2 inches. What is the volume of the ball? Round to the nearest tenth. (Example 2) **33.5 in^3**

7. A spherical ball has a diameter of 8 inches. The ball has a slow leak in which the air escapes at the rate of 2.5 cubic inches per second. How long it would take the ball to deflate? Round to the nearest tenth. (Example 3)

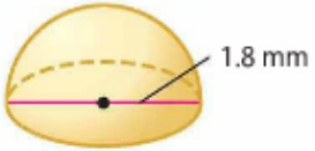
107.2 s

Find the volume of each hemisphere. Round to the nearest tenth. (Example 4)

8. **658.5 ft^3**



9. **1.5 mm^3**



Persevere with Problems **Find the radius of each figure. Round to the nearest tenth.**

10. sphere with a volume of 1,767.1 m^3

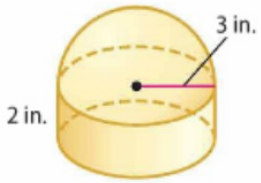
7.5 m

11. hemisphere with a volume of 2,712.3 in^3

10.9 in.

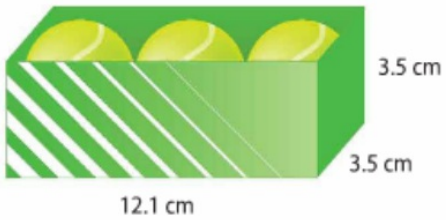
12. Find the volume of the composite solid shown. Round to the nearest tenth.

113.1 in^3



H.O.T. Problems Higher Order Thinking

13. **Persevere with Problems** Three tennis balls are packaged in a box as shown below. The box is 12.1 centimeters long, 3.5 centimeters wide, and 3.5 centimeters tall. Each ball is 3.3 centimeters in diameter. What is the volume of the empty space in the box? **91.8 cm^3**



14. CCSS **Reason Abstractly** A cylinder contains 150.8 cubic units of water. What is the minimum radius of a sphere that will hold the water? Round to the nearest tenth. **3.3 units**

15. CCSS **Reason Inductively** Determine whether the following statement is *true* or *false*. Explain your reasoning.

Doubling a sphere's radius doubles its volume.

false; Sample answer: The radius is cubed when finding the volume of a sphere. When the radius is doubled, the volume is 2^3 or 8 times the original volume.