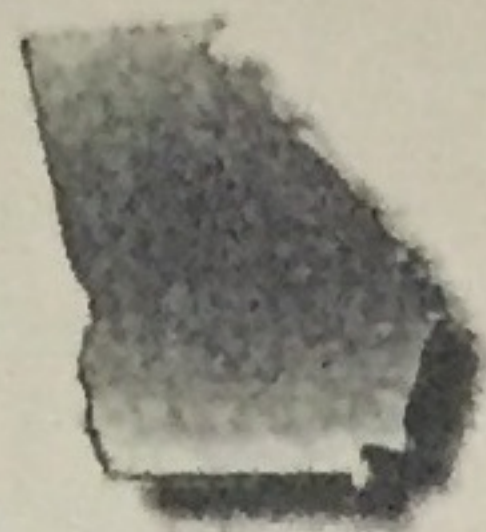


Exercise Set A

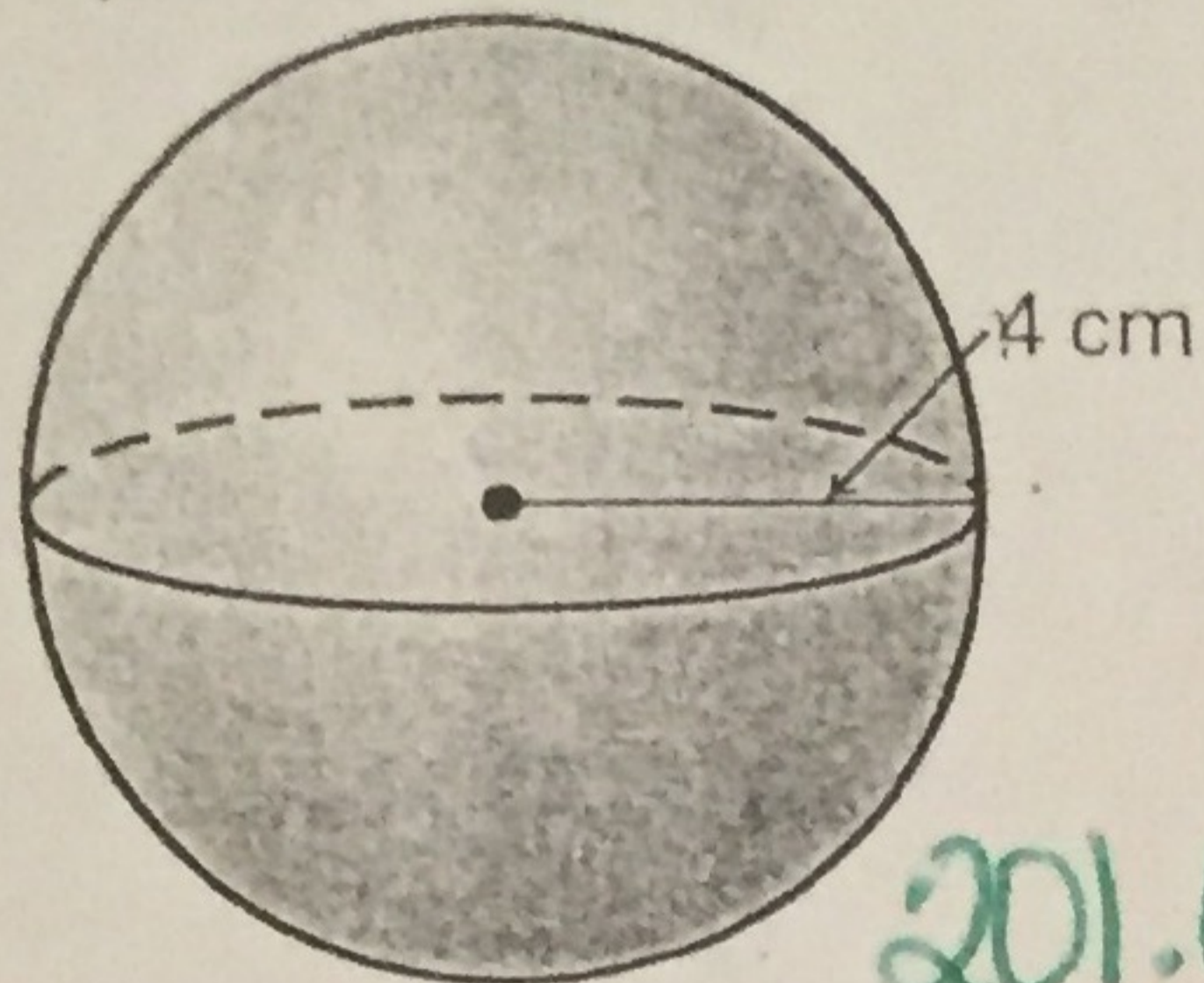


MM2G4a Use and apply surface area and volume of a sphere.

MM2G4b Determine the effect on surface area and volume of changing the radius or diameter of a sphere.

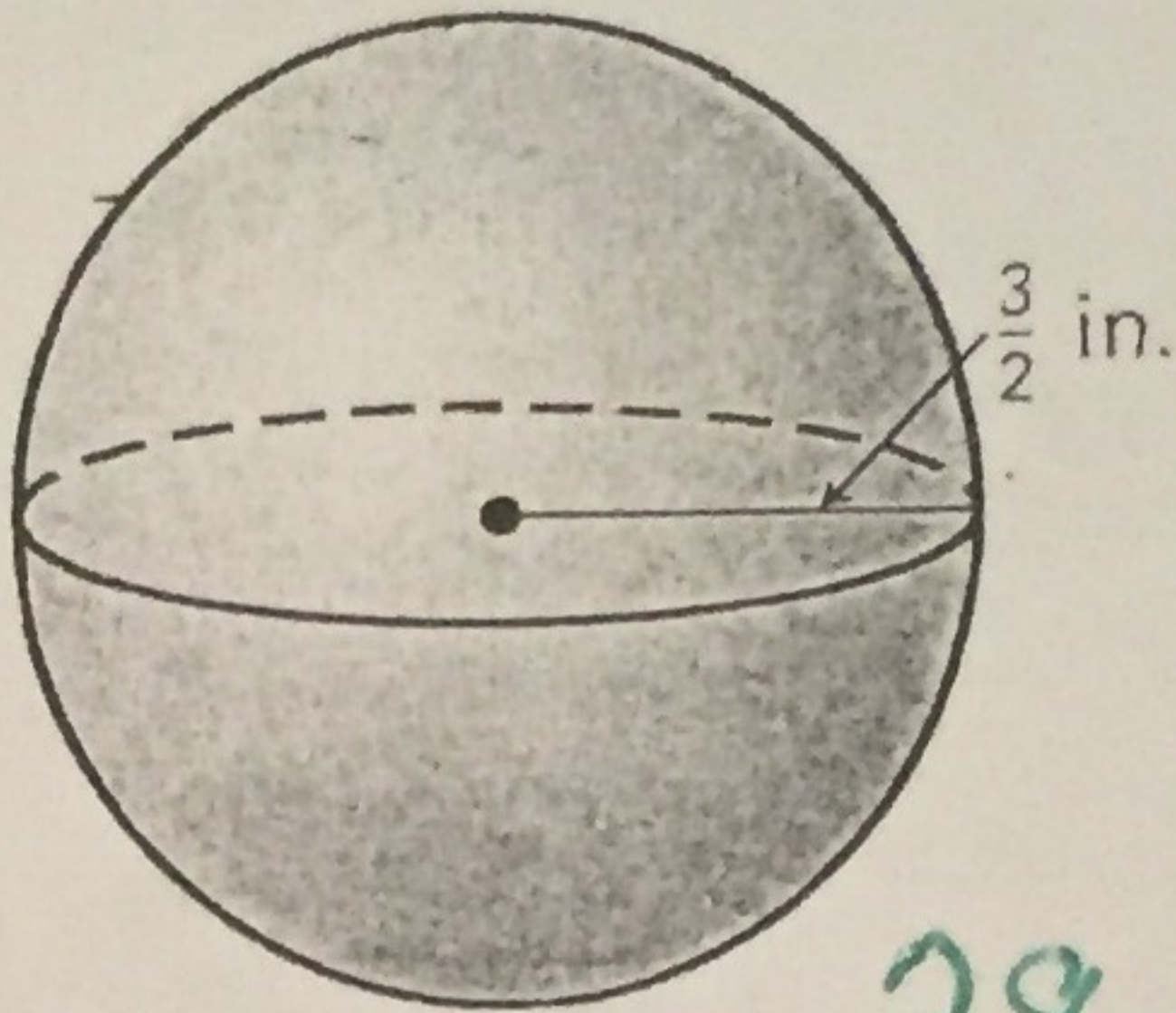
Find the surface area of the sphere. Round your answer to two decimal places.

1.



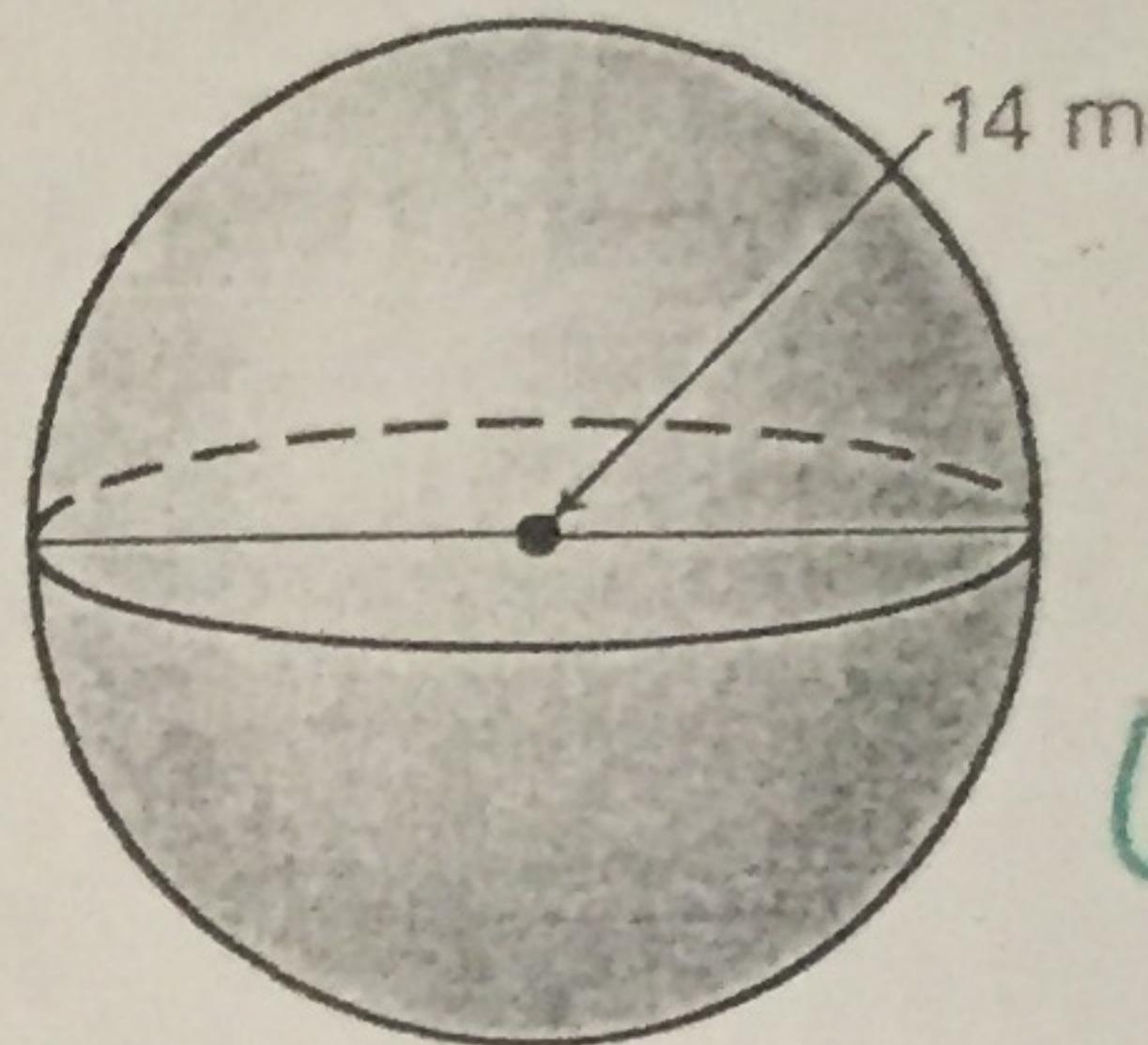
201.06

2.



28.27

3.



615.75

4. Multiple Choice What is the approximate radius of a sphere with a surface area of 40π square feet?

A. 2 ft

B. 3.16 ft

C. 6.32 ft

D. 10 ft

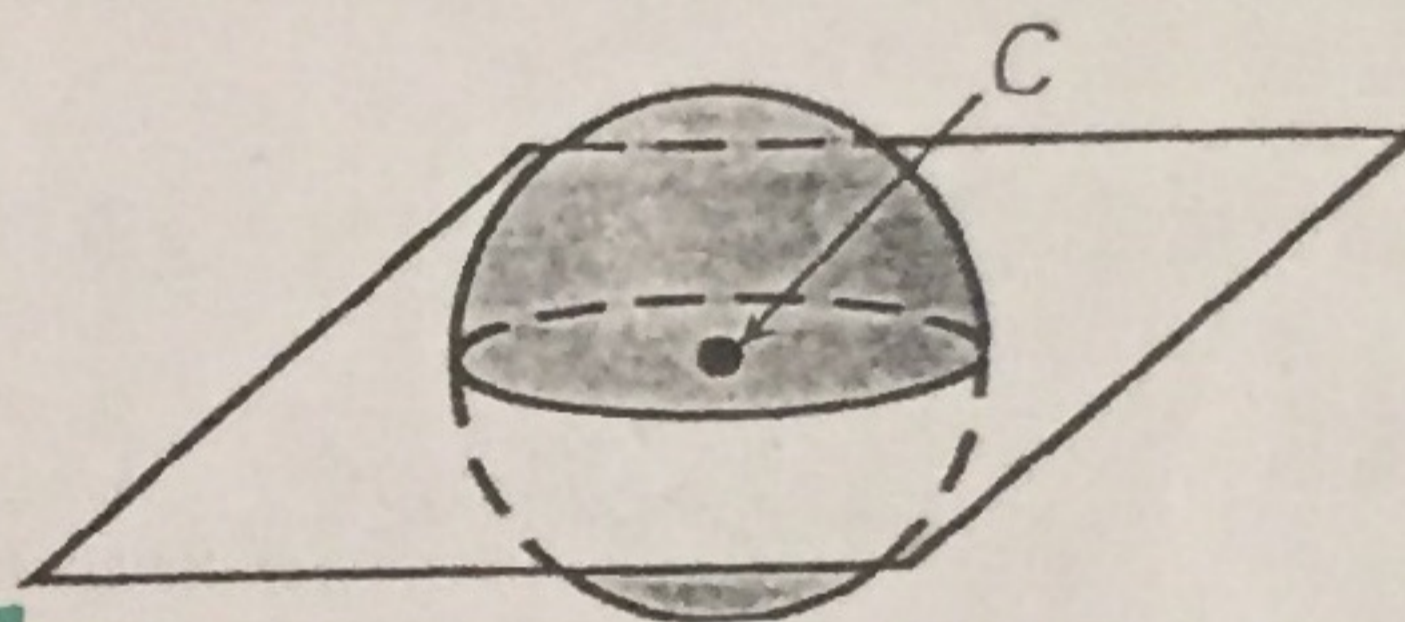
Handwritten work for problem 4:
 $4\pi r^2 = 40\pi$
 $\frac{4r^2}{4} = \frac{40}{4}$
 $r^2 = 10$
 $\sqrt{10} = 3.16$

In Exercises 5–7, use the sphere below. The center of the sphere is C and the circumference of the sphere is 7π centimeters.

5. Find the radius of the sphere. **3.5 or $7/2$**

6. Find the diameter of the sphere. **7**

7. Find the surface area of one hemisphere. Round your answer to two decimal places. **76.97**

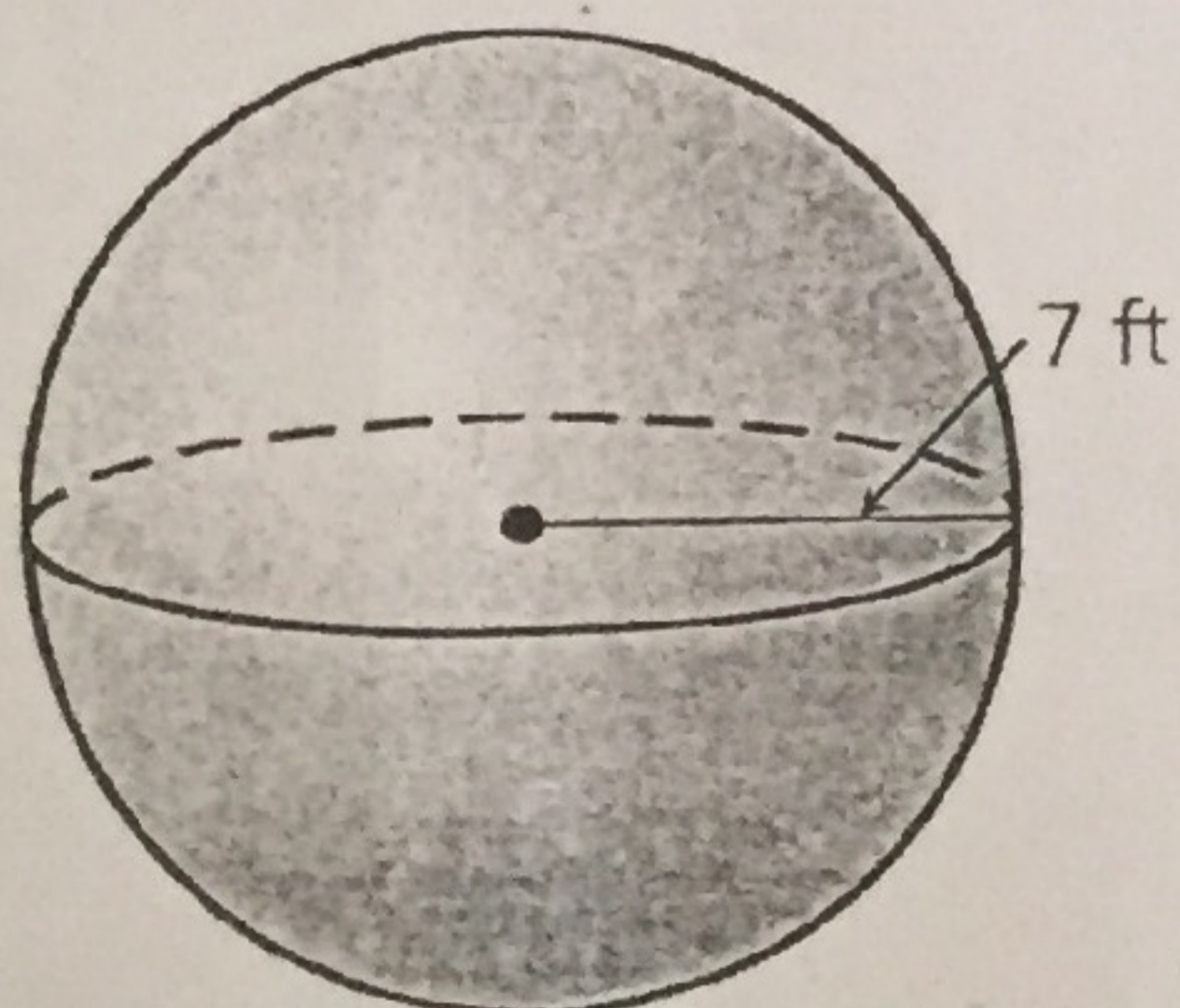


8. Great Circle The circumference of a great circle of a sphere is 24.6π meters. What is the surface area of the sphere? Round your answer to two decimal places. **2.48**

Handwritten work for problem 8:
 $4\pi r^2 = 24.6\pi$
 $\rightarrow r^2 = 6.15$

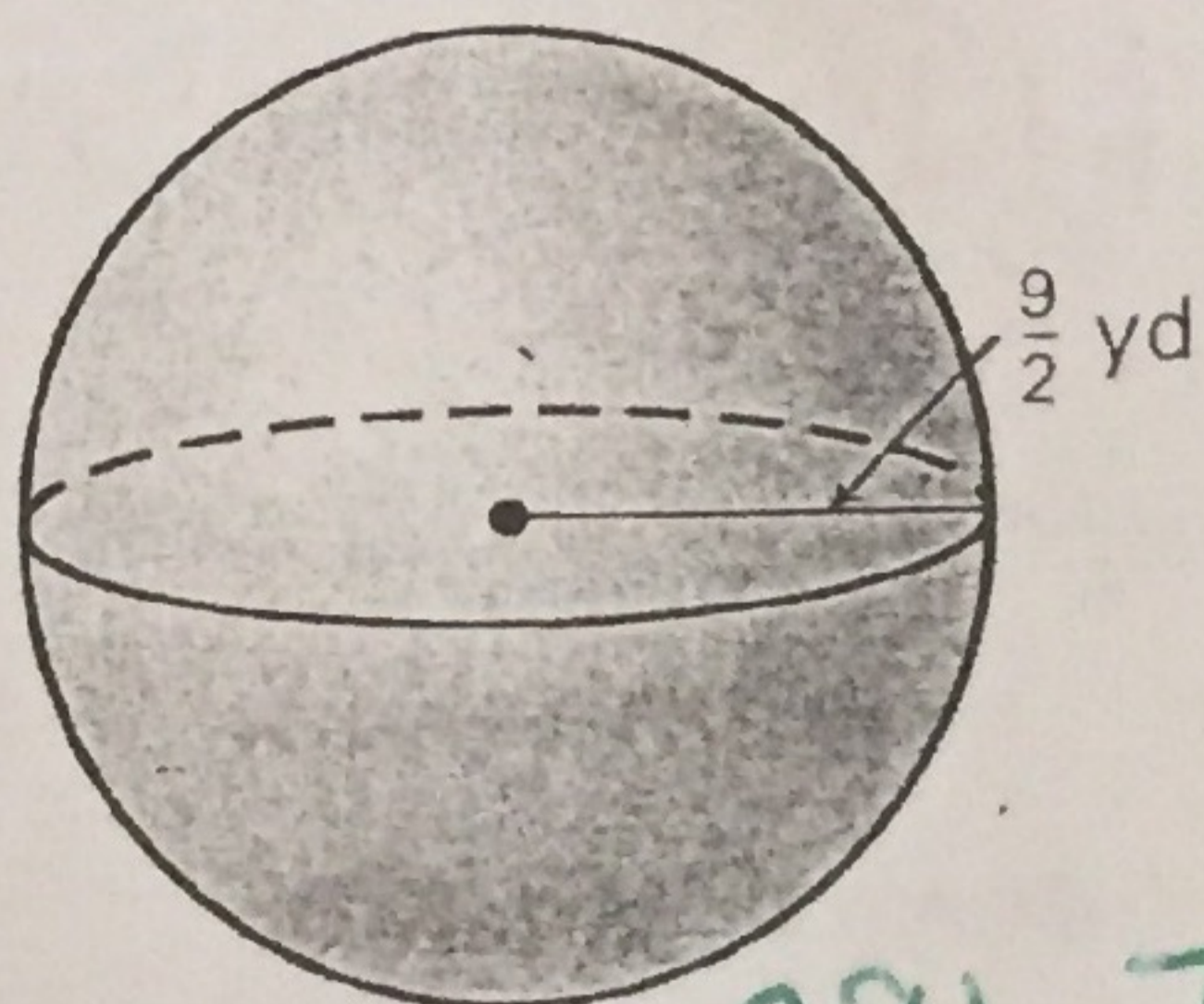
Find the volume of the sphere. Round your answer to two decimal places.

9.



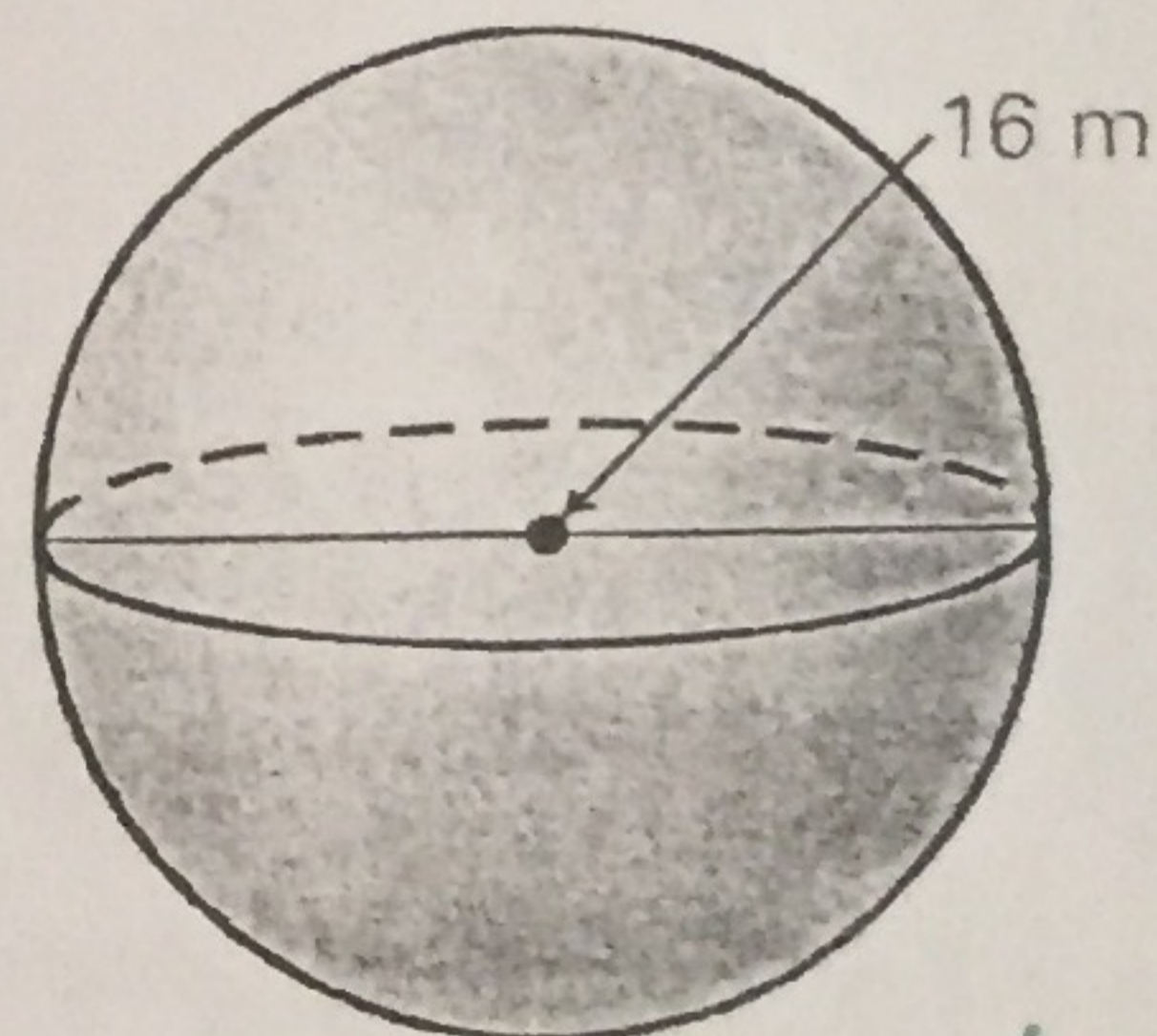
1436.76

10.



381.70

11.



2144.66

Find the radius of the sphere with the given volume V . Round your answer to two decimal places.

12. $V = 64 \text{ in.}^3$

Handwritten work for problem 12:
 $\frac{4\pi r^3}{3} = 64$
 $4\pi r^3 = 192$
 $\pi r^3 = 48$
 $r = 3.91$

13. $V = 150\pi \text{ cm}^3$

4.83

14. $V = 152 \text{ m}^3$

Handwritten work for problem 14:
 $\frac{4\pi r^3}{3} = 152$
 $4\pi r^3 = 456$
 $\pi r^3 = 114$
 $r = 6.02$

Exercise Set A (continued)

15. Multiple Choice What is the approximate radius of a sphere with a volume of 128π cubic centimeters?

A. 2.5 cm

B. 4.58 cm

C. 6.62 cm

D. 8 cm

$$\frac{4 \cdot \pi \cdot r^3}{3} = 128\pi$$

$$4\pi r^3 = 384\pi$$

$$\pi r^3 = 96\pi$$

$$r^3 = 96$$

$$r = 4.58$$

16. Error Analysis Describe and correct the error in finding the volume of a sphere with diameter 24 feet.

$$V = \frac{4}{3}\pi r^2$$

$$= \frac{4}{3}\pi(12)^2$$

$$= 192\pi \approx 603 \text{ ft}^2$$

Should cube not square

X

17. Decreasing Sphere The original radius of a sphere is 6 centimeters. Explain how the surface area and the volume of the sphere change if the radius is halved to 3 centimeters. Round your answers to the nearest whole number.

SA \rightarrow divides by 4
V \rightarrow divides by 8

18. Increasing Sphere The original diameter of a sphere is 8 inches. Explain how the surface area and the volume of the sphere change if the diameter is doubled to 16 inches. Round your answers to the nearest whole number.

SA \rightarrow mult by 4
V \rightarrow mult by 8

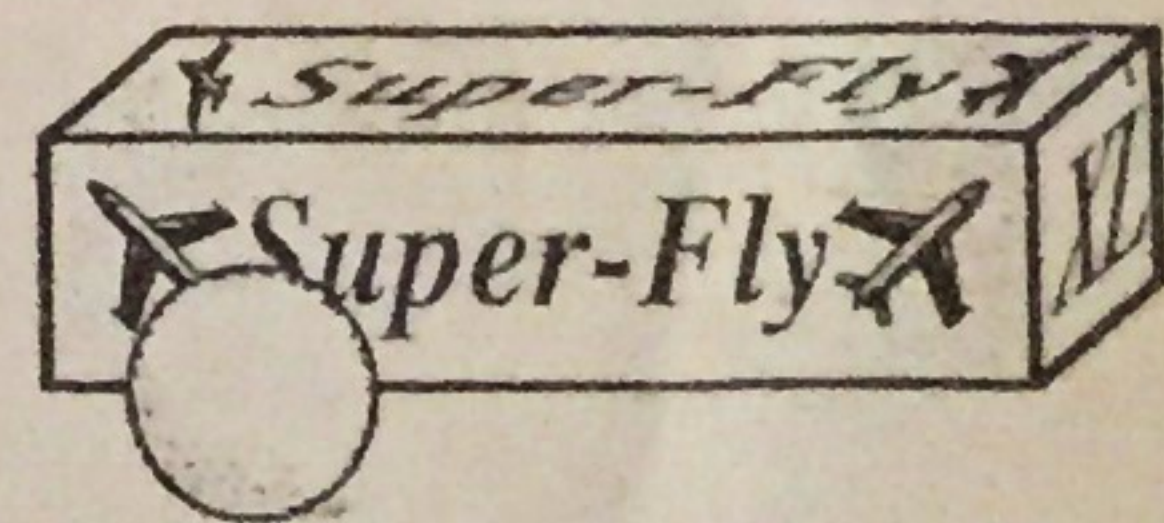
Copy and complete the table below. Leave your answers in terms of π .

	Radius of sphere	Circumference of great circle	Surface area of sphere	Volume of sphere
19.	12 mm	? 24π	? 576π	? 2304π
20.	? 4	8π in.	? 64π	? $\frac{256}{3}\pi$
21.	? $\frac{1}{2}$	7π ? circled	$49\pi \text{ ft}^2$? $343\frac{1}{6}\pi$
22.	? 6	? 12π	? 144π	$288\pi \text{ m}^3$

23. Finding a Diameter The volume of a sphere is 972π cubic centimeters. What is the diameter of the sphere? 18

In Exercises 24–26, use the following information.

Golf Balls A standard golf ball has a diameter of 1.68 inches. Golf balls are often sold in a box of four. Assume that the balls are packed tightly so that they touch the lateral sides and the bases of the box.



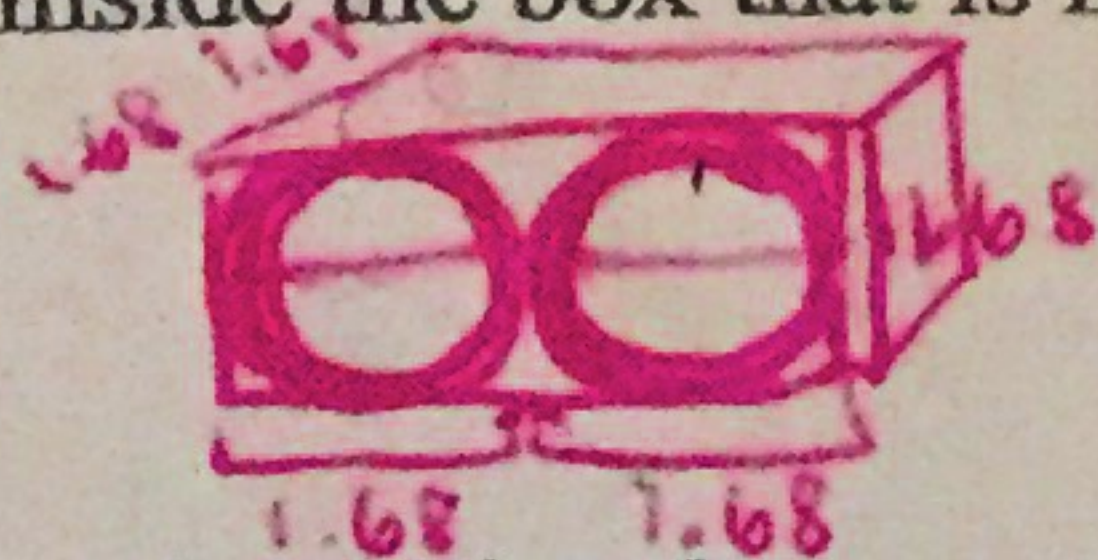
24. What is the surface area of a golf ball?

$$4 \cdot \pi \cdot (.84)^2 = 8.87$$

25. What is the volume of a golf ball?

$$2.48$$

26. What is the amount of volume inside the box that is not taken up by the golf balls?



$$3.36 \times 3.36 \times 1.68 = 18.97$$

$$\begin{array}{r} 18.97 \\ - 9.92 \\ \hline 9.05 \end{array}$$

$$\text{Golf balls} \rightarrow 2.48 \times 4 = 9.92$$