

Volumes - Lesson 4

Volume of a Sphere - Calculator

LI

- Calculate the Volume of a Sphere (and a Hemisphere).

SC

- Use the Sphere Formula.

Volume of a Sphere

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

(r is radius of sphere)

Remember, r^3 means $r \times r \times r$

$$V = 4 \times \pi \times r \times r \times r \div 3$$

Example 1

Calculate the volume of a sphere of radius 4 cm.

$$V = 4 \times \pi \times r \times r \times r \div 3$$

$$V = 4 \times \pi \times 4 \times 4 \times 4 \div 3$$

$$V = 268.1 \text{ cm}^3$$

Example 2

Calculate the volume of a sphere of diameter 10 cm.

(diameter = 10 cm \Rightarrow radius = 5 cm)

$$V = 4 \times \pi \times r \times r \times r \div 3$$

$$V = 4 \times \pi \times 5 \times 5 \times 5 \div 3$$

$$V = 523.6 \text{ cm}^3$$

Example 3

Calculate the volume of a **hemisphere** of radius 8 cm.

$$V_s = 4 \times \pi \times r \times r \times r \div 3$$

$$V_s = 4 \times \pi \times 8 \times 8 \times 8 \div 3$$

$$V_s = 2144.66\dots \text{ cm}^3$$

← Don't round here !!!!!!!

$$V_{hs} = 2144.66\dots \div 2$$

$$V_{hs} = 1072.3 \text{ cm}^3$$

Find the volumes of these **spheres** with :

- 1) radius = 9 cm
- 2) diameter = 12 mm
- 3) radius = 7 . 8 m
- 4) diameter = 9 . 5 km
- 5) radius = 11 . 7 mm
- 6) diameter = 43 cm
- 7) radius = 120 m

Find the volumes of these **hemispheres** with :

- 8) radius = 13 cm
- 9) diameter = 76 mm
- 10) radius = 5 . 5 m
- 11) diameter = 3 . 7 km
- 12) radius = 33 . 3 mm
- 13) diameter = 65 cm
- 14) radius = 245 m

Answers

Find the volumes of these spheres with :	Find the volumes of these hemispheres with :
1) radius = 9 cm 3053.6 cm^3	8) radius = 13 cm 4601.4 cm^3
2) diameter = 12 mm 904.8 mm^3	9) diameter = 76 mm 114923.6 mm^3
3) radius = 7.8 m 1987.8 m^3	10) radius = 5.5 m 348.5 m^3
4) diameter = 9.5 km 448.9 km^3	11) diameter = 3.7 km 13.3 km^3
5) radius = 11.7 mm 6708.8 mm^3	12) radius = 33.3 mm 77337.7 mm^3
6) diameter = 43 cm 41629.8 cm^3	13) diameter = 65 cm 71896.7 cm^3
7) radius = 120 m 7238229.5 m^3	14) radius = 245 m 30800436.2 m^3

Answers

- | | |
|---------------------------------|-----------------------------------|
| 1) 3 053 . 6 cm ³ | 8) 4 601 . 4 cm ³ |
| 2) 904 . 8 mm ³ | 9) 114 923 . 6 mm ³ |
| 3) 1 987 . 8 m ³ | 10) 348 . 5 m ³ |
| 4) 448 . 9 km ³ | 11) 13 . 3 km ³ |
| 5) 6 708 . 8 mm ³ | 12) 77 337 . 7 mm ³ |
| 6) 41 629 . 8 cm ³ | 13) 71 896 . 7 cm ³ |
| 7) 7 238 229 . 5 m ³ | 14) 30 800 436 . 2 m ³ |