

Important Sphere Formulas PDF



Formulas Examples with Units

List of 30 Important Sphere Formulas

1) Circumference of Sphere Formulas

1.1) Circumference of Sphere Formula

Formula

$$C = 2 \cdot \pi \cdot r$$

Example with Units

$$62.8319\text{ m} = 2 \cdot 3.1416 \cdot 10\text{ m}$$

Evaluate Formula

1.2) Circumference of Sphere given Diameter Formula

Formula

$$C = \pi \cdot D$$

Example with Units

$$62.8319\text{ m} = 3.1416 \cdot 20\text{ m}$$

Evaluate Formula

1.3) Circumference of Sphere given Surface Area Formula

Formula

$$C = \sqrt{\pi \cdot SA}$$

Example with Units

$$63.9067\text{ m} = \sqrt{3.1416 \cdot 1300\text{ m}^2}$$

Evaluate Formula

1.4) Circumference of Sphere given Surface to Volume Ratio Formula

Formula

$$C = \frac{6 \cdot \pi}{R_{A/V}}$$

Example with Units

$$62.8319\text{ m} = \frac{6 \cdot 3.1416}{0.3\text{ m}^{-1}}$$

Evaluate Formula

1.5) Circumference of Sphere given Volume Formula

Formula

$$C = 2 \cdot \pi \cdot \left(\frac{3 \cdot V}{4 \cdot \pi} \right)^{\frac{1}{3}}$$

Example with Units

$$62.8879\text{ m} = 2 \cdot 3.1416 \cdot \left(\frac{3 \cdot 4200\text{ m}^3}{4 \cdot 3.1416} \right)^{\frac{1}{3}}$$

Evaluate Formula

2) Diameter of Sphere Formulas

2.1) Diameter of Sphere Formula

Formula

$$D = 2 \cdot r$$

Example with Units

$$20\text{ m} = 2 \cdot 10\text{ m}$$

Evaluate Formula



2.2) Diameter of Sphere given Circumference Formula

Formula

$$D = \frac{C}{\pi}$$

Example with Units

$$19.0986_{\text{m}} = \frac{60_{\text{m}}}{3.1416}$$

Evaluate Formula 

2.3) Diameter of Sphere given Surface Area Formula

Formula

$$D = \sqrt{\frac{SA}{\pi}}$$

Example with Units

$$20.3421_{\text{m}} = \sqrt{\frac{1300_{\text{m}^2}}{3.1416}}$$

Evaluate Formula 

2.4) Diameter of Sphere given Surface to Volume Ratio Formula

Formula

$$D = \frac{6}{R_{A/V}}$$

Example with Units

$$20_{\text{m}} = \frac{6}{0.3_{\text{m}^{-1}}}$$

Evaluate Formula 

2.5) Diameter of Sphere given Volume Formula

Formula

$$D = 2 \cdot \left(\frac{3 \cdot V}{4 \cdot \pi} \right)^{\frac{1}{3}}$$

Example with Units

$$20.0178_{\text{m}} = 2 \cdot \left(\frac{3 \cdot 4200_{\text{m}^3}}{4 \cdot 3.1416} \right)^{\frac{1}{3}}$$

Evaluate Formula 

3) Radius of Sphere Formulas

3.1) Radius of Sphere given Circumference Formula

Formula

$$r = \frac{C}{2 \cdot \pi}$$

Example with Units

$$9.5493_{\text{m}} = \frac{60_{\text{m}}}{2 \cdot 3.1416}$$

Evaluate Formula 

3.2) Radius of Sphere given Diameter Formula

Formula

$$r = \frac{D}{2}$$

Example with Units

$$10_{\text{m}} = \frac{20_{\text{m}}}{2}$$

Evaluate Formula 

3.3) Radius of Sphere given Surface Area Formula

Formula

$$r = \frac{1}{2} \cdot \sqrt{\frac{SA}{\pi}}$$

Example with Units

$$10.1711_{\text{m}} = \frac{1}{2} \cdot \sqrt{\frac{1300_{\text{m}^2}}{3.1416}}$$

Evaluate Formula 



3.4) Radius of Sphere given Surface to Volume Ratio Formula ↺

Formula

$$r = \frac{3}{R_{A/V}}$$

Example with Units

$$10\text{ m} = \frac{3}{0.3\text{ m}^{-1}}$$

Evaluate Formula ↺

3.5) Radius of Sphere given Volume Formula ↺

Formula

$$r = \left(\frac{3 \cdot V}{4 \cdot \pi} \right)^{\frac{1}{3}}$$

Example with Units

$$10.0089\text{ m} = \left(\frac{3 \cdot 4200\text{ m}^3}{4 \cdot 3.1416} \right)^{\frac{1}{3}}$$

Evaluate Formula ↺

4) Surface Area of Sphere Formulas ↺

4.1) Surface Area of Sphere Formula ↺

Formula

$$SA = 4 \cdot \pi \cdot r^2$$

Example with Units

$$1256.6371\text{ m}^2 = 4 \cdot 3.1416 \cdot 10\text{ m}^2$$

Evaluate Formula ↺

4.2) Surface Area of Sphere given Circumference Formula ↺

Formula

$$SA = \frac{C^2}{\pi}$$

Example with Units

$$1145.9156\text{ m}^2 = \frac{60\text{ m}^2}{3.1416}$$

Evaluate Formula ↺

4.3) Surface Area of Sphere given Diameter Formula ↺

Formula

$$SA = 4 \cdot \pi \cdot \left(\frac{D}{2} \right)^2$$

Example with Units

$$1256.6371\text{ m}^2 = 4 \cdot 3.1416 \cdot \left(\frac{20\text{ m}}{2} \right)^2$$

Evaluate Formula ↺

4.4) Surface Area of Sphere given Surface to Volume Ratio Formula ↺

Formula

$$SA = 36 \cdot \frac{\pi}{R_{A/V}^2}$$

Example with Units

$$1256.6371\text{ m}^2 = 36 \cdot \frac{3.1416}{0.3\text{ m}^{-1}^2}$$

Evaluate Formula ↺

4.5) Surface Area of Sphere given Volume Formula ↺

Formula

$$SA = 4 \cdot \pi \cdot \left(\frac{3 \cdot V}{4 \cdot \pi} \right)^{\frac{2}{3}}$$

Example with Units

$$1258.878\text{ m}^2 = 4 \cdot 3.1416 \cdot \left(\frac{3 \cdot 4200\text{ m}^3}{4 \cdot 3.1416} \right)^{\frac{2}{3}}$$

Evaluate Formula ↺



5) Surface to Volume Ratio of Sphere Formulas

5.1) Surface to Volume Ratio of Sphere Formula

Formula

$$R_{A/V} = \frac{3}{r}$$

Example with Units

$$0.3\text{ m}^{-1} = \frac{3}{10\text{ m}}$$

Evaluate Formula 

5.2) Surface to Volume Ratio of Sphere given Circumference Formula

Formula

$$R_{A/V} = \frac{6 \cdot \pi}{C}$$

Example with Units

$$0.3142\text{ m}^{-1} = \frac{6 \cdot 3.1416}{60\text{ m}}$$

Evaluate Formula 

5.3) Surface to Volume Ratio of Sphere given Diameter Formula

Formula

$$R_{A/V} = \frac{6}{D}$$

Example with Units

$$0.3\text{ m}^{-1} = \frac{6}{20\text{ m}}$$

Evaluate Formula 

5.4) Surface to Volume Ratio of Sphere given Surface Area Formula

Formula

$$R_{A/V} = 3 \cdot \sqrt{\frac{4 \cdot \pi}{SA}}$$

Example with Units

$$0.295\text{ m}^{-1} = 3 \cdot \sqrt{\frac{4 \cdot 3.1416}{1300\text{ m}^2}}$$

Evaluate Formula 

5.5) Surface to Volume Ratio of Sphere given Volume Formula

Formula

$$R_{A/V} = \frac{3}{\left(\frac{3 \cdot V}{4 \cdot \pi}\right)^{\frac{1}{3}}}$$

Example with Units

$$0.2997\text{ m}^{-1} = \frac{3}{\left(\frac{3 \cdot 4200\text{ m}^3}{4 \cdot 3.1416}\right)^{\frac{1}{3}}}$$

Evaluate Formula 

6) Volume of Sphere Formulas

6.1) Volume of Sphere Formula

Formula

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

Example with Units

$$4188.7902\text{ m}^3 = \frac{4}{3} \cdot 3.1416 \cdot 10\text{ m}^3$$

Evaluate Formula 

6.2) Volume of Sphere given Circumference Formula

Formula

$$V = \frac{4 \cdot \pi}{3} \cdot \left(\frac{C}{2 \cdot \pi}\right)^3$$

Example with Units

$$3647.5626\text{ m}^3 = \frac{4 \cdot 3.1416}{3} \cdot \left(\frac{60\text{ m}}{2 \cdot 3.1416}\right)^3$$

Evaluate Formula 



6.3) Volume of Sphere given Diameter Formula

Formula

$$V = \frac{4}{3} \cdot \pi \cdot \left(\frac{D}{2} \right)^3$$

Example with Units

$$4188.7902 \text{ m}^3 = \frac{4}{3} \cdot 3.1416 \cdot \left(\frac{20 \text{ m}}{2} \right)^3$$

Evaluate Formula 

6.4) Volume of Sphere given Surface Area Formula

Formula

$$V = \frac{4}{3} \cdot \pi \cdot \left(\frac{SA}{4 \cdot \pi} \right)^{\frac{3}{2}}$$

Example with Units

$$4407.4647 \text{ m}^3 = \frac{4}{3} \cdot 3.1416 \cdot \left(\frac{1300 \text{ m}^2}{4 \cdot 3.1416} \right)^{\frac{3}{2}}$$

Evaluate Formula 

6.5) Volume of Sphere given Surface to Volume Ratio Formula

Formula

$$V = \frac{4}{3} \cdot \pi \cdot \left(\frac{3}{R_{A/V}} \right)^3$$

Example with Units

$$4188.7902 \text{ m}^3 = \frac{4}{3} \cdot 3.1416 \cdot \left(\frac{3}{0.3 \text{ m}^{-1}} \right)^3$$

Evaluate Formula 



Variables used in list of Sphere Formulas above

- **C** Circumference of Sphere (Meter)
- **D** Diameter of Sphere (Meter)
- **r** Radius of Sphere (Meter)
- **R_{AV}** Surface to Volume Ratio of Sphere (1 per Meter)
- **SA** Surface Area of Sphere (Square Meter)
- **V** Volume of Sphere (Cubic Meter)

Constants, Functions, Measurements used in list of Sphere Formulas above

- **constant(s):** π ,
3.14159265358979323846264338327950288
Archimedes' constant
- **Functions:** **sqrt**, sqrt(Number)
A square root function is a function that takes a non-negative number as an input and returns the square root of the given input number.
- **Measurement: Length** in Meter (m)
Length Unit Conversion 
- **Measurement: Volume** in Cubic Meter (m³)
Volume Unit Conversion 
- **Measurement: Area** in Square Meter (m²)
Area Unit Conversion 
- **Measurement: Reciprocal Length** in 1 per Meter (m⁻¹)
Reciprocal Length Unit Conversion 



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7/8/2024 | 7:16:49 AM UTC

