calculatoratoz.com

unitsconverters.com

Important Formulas of Regular Square Pyramid

Calculators! Examples! Conversions!

Bookmark **calculatoratoz.com**, **unitsconverters.com**

Widest Coverage of Calculators and Growing - **30,000+ Calculators!**
Calculate With a Different Unit for Each Variable - **In built Unit Conversion!**
Widest Collection of Measurements and Units - **250+ Measurements!**

Feel free to SHARE this document with your friends!

Please leave your feedback here...

List of 20 Important Formulas of Regular Square Pyramid

Important Formulas of Regular Square Pyramid

1) Base Angle of Square Pyramid

Open Calculator

fx $$\angle_{\text{Base}} = \arccos\left(\frac{\left(\frac{l_{e(\text{Base})}}{2}\right)^2 + h_{\text{slant}}^2 - h^2}{l_{e(\text{Base})} \cdot h_{\text{slant}}}\right)$$

ex $$69.51268^\circ = \arccos\left(\frac{\left(\frac{10\text{m}}{2}\right)^2 + (16\text{m})^2 - (15\text{m})^2}{10\text{m} \cdot 16\text{m}}\right)$$

2) Base Area of Square Pyramid

Open Calculator

fx $$A_{\text{Base}} = l_{e(\text{Base})}^2$$

ex $$100\text{m}^2 = (10\text{m})^2$$

3) Edge Length of Base of Square Pyramid given Lateral Edge Length

Open Calculator

fx $$l_{e(\text{Base})} = \sqrt{2 \cdot \left(l_{e(\text{Lateral})}^2 - h^2\right)}$$

ex $$11.31371\text{m} = \sqrt{2 \cdot \left((17\text{m})^2 - (15\text{m})^2\right)}$$

4) Edge Length of Base of Square Pyramid given Slant Height

Open Calculator

fx $$l_{e(\text{Base})} = 2 \cdot \sqrt{h_{\text{slant}}^2 - h^2}$$

ex $$11.13553\text{m} = 2 \cdot \sqrt{(16\text{m})^2 - (15\text{m})^2}$$

5) Height of Square Pyramid given Base Angle

Open Calculator

fx $$h = \sqrt{\frac{l_{e(Base)}^2}{4} + h_{slant}^2 - \left(l_{e(Base)} \cdot h_{slant} \cdot \cos(\angle_{Base})\right)}$$

ex $$15.0425\text{m} = \sqrt{\frac{(10\text{m})^2}{4} + (16\text{m})^2 - (10\text{m} \cdot 16\text{m} \cdot \cos(70^\circ))}$$

6) Height of Square Pyramid given Lateral Edge Length

Open Calculator

fx $$h = \sqrt{l_{e(Lateral)}^2 - \frac{l_{e(Base)}^2}{2}}$$

ex $$15.45962\text{m} = \sqrt{(17\text{m})^2 - \frac{(10\text{m})^2}{2}}$$

7) Height of Square Pyramid given Volume

Open Calculator

fx $$h = \frac{3 \cdot V}{l_{e(Base)}^2}$$

ex $$15\text{m} = \frac{3 \cdot 500\text{m}^3}{(10\text{m})^2}$$

8) Lateral Edge Length of Square Pyramid

Open Calculator

fx $$l_{e(Lateral)} = \sqrt{\frac{l_{e(Base)}^2}{2} + h^2}$$

ex $$16.58312\text{m} = \sqrt{\frac{(10\text{m})^2}{2} + (15\text{m})^2}$$

9) Lateral Edge Length of Square Pyramid given Base Angle

Open Calculator

fx $$l_{e(Lateral)} = \sqrt{\frac{3 \cdot l_{e(Base)}^2}{4} + h_{slant}^2 - \left(l_{e(Base)} \cdot h_{slant} \cdot \cos(\angle_{Base})\right)}$$

ex $$16.62158\text{m} = \sqrt{\frac{3 \cdot (10\text{m})^2}{4} + (16\text{m})^2 - (10\text{m} \cdot 16\text{m} \cdot \cos(70^\circ))}$$

10) Lateral Edge Length of Square Pyramid given Volume and Height

Open Calculator

fx $$l_{e(Lateral)} = \sqrt{h^2 + \left(\frac{3}{2} \cdot \frac{V}{h}\right)}$$

ex $$16.58312\text{m} = \sqrt{(15\text{m})^2 + \left(\frac{3}{2} \cdot \frac{500\text{m}^3}{15\text{m}}\right)}$$

11) Lateral Surface Area of Square Pyramid

Open Calculator

fx $$LSA = 2 \cdot l_{e(Base)} \cdot \sqrt{\frac{l_{e(Base)}^2}{4} + h^2}$$

ex $$316.2278\text{m}^2 = 2 \cdot 10\text{m} \cdot \sqrt{\frac{(10\text{m})^2}{4} + (15\text{m})^2}$$

12) Lateral Surface Area of Square Pyramid given Slant Height

Open Calculator

fx $$LSA = 2 \cdot l_{e(Base)} \cdot h_{slant}$$

ex $$320\text{m}^2 = 2 \cdot 10\text{m} \cdot 16\text{m}$$

13) Slant Height of Square Pyramid

Open Calculator

fx $$h_{slant} = \sqrt{\frac{l_{e(Base)}^2}{4} + h^2}$$

ex $$15.81139\text{m} = \sqrt{\frac{(10\text{m})^2}{4} + (15\text{m})^2}$$

14) Slant Height of Square Pyramid given Total Surface Area

Open Calculator

fx $$h_{slant} = \sqrt{\frac{l_{e(Base)}^2}{4} + \frac{\left(\frac{TSA - l_{e(Base)}^2}{l_{e(Base)}}\right)^2 - l_{e(Base)}^2}{4}}$$

ex $$16\text{m} = \sqrt{\frac{(10\text{m})^2}{4} + \frac{\left(\frac{420\text{m}^2 - (10\text{m})^2}{10\text{m}}\right)^2 - (10\text{m})^2}{4}}$$

15) Surface to Volume Ratio of Square Pyramid

Open Calculator

fx $$R_{A/V} = \frac{l_{e(Base)}^2 + \left(l_{e(Base)} \cdot \sqrt{\left(4 \cdot h^2\right) + l_{e(Base)}^2}\right)}{\frac{1}{3} \cdot l_{e(Base)}^2 \cdot h}$$

ex $$0.832456\text{m}^{-1} = \frac{(10\text{m})^2 + \left(10\text{m} \cdot \sqrt{\left(4 \cdot (15\text{m})^2\right) + (10\text{m})^2}\right)}{\frac{1}{3} \cdot (10\text{m})^2 \cdot 15\text{m}}$$

16) Surface to Volume Ratio of Square Pyramid given Lateral Edge Length and Height

fx Open Calculator

$$R_{A/V} = \frac{\left(2 \cdot \left(l_{e(Lateral)}^2 - h^2\right)\right) + \left(\sqrt{2 \cdot \left(l_{e(Lateral)}^2 - h^2\right)} \cdot \sqrt{2 \cdot \left(l_{e(Lateral)}^2 + h^2\right)}\right)}{\frac{1}{3} \cdot h \cdot \left(2 \cdot \left(l_{e(Lateral)}^2 - h^2\right)\right)}$$

ex $$0.766789\text{m}^{-1} = \frac{\left(2 \cdot \left((17\text{m})^2 - (15\text{m})^2\right)\right) + \left(\sqrt{2 \cdot \left((17\text{m})^2 - (15\text{m})^2\right)} \cdot \sqrt{2 \cdot \left((17\text{m})^2 + (15\text{m})^2\right)}\right)}{\frac{1}{3} \cdot 15\text{m} \cdot \left(2 \cdot \left((17\text{m})^2 - (15\text{m})^2\right)\right)}$$

17) Total Surface Area of Square Pyramid

Open Calculator

fx $$TSA = l_{e(Base)}^2 + \left(l_{e(Base)} \cdot \sqrt{\left(4 \cdot h^2\right) + l_{e(Base)}^2}\right)$$

ex $$416.2278\text{m}^2 = (10\text{m})^2 + \left(10\text{m} \cdot \sqrt{\left(4 \cdot (15\text{m})^2\right) + (10\text{m})^2}\right)$$

© calculatoratoz.com. A softusvista inc. venture!

18) Total Surface Area of Square Pyramid given Slant Height

Open Calculator

fx $$TSA = \left(2 \cdot l_{e(Base)} \cdot h_{slant}\right) + l_{e(Base)}^2$$

ex $$420\text{m}^2 = \left(2 \cdot 10\text{m} \cdot 16\text{m}\right) + \left(10\text{m}\right)^2$$

19) Volume of Square Pyramid

Open Calculator

fx $$V = \frac{l_{e(Base)}^2 \cdot h}{3}$$

ex $$500\text{m}^3 = \frac{\left(10\text{m}\right)^2 \cdot 15\text{m}}{3}$$

20) Volume of Square Pyramid given Slant Height

Open Calculator

fx $$V = \frac{1}{3} \cdot l_{e(Base)}^2 \cdot \sqrt{h_{slant}^2 - \frac{l_{e(Base)}^2}{4}}$$

ex $$506.6228\text{m}^3 = \frac{1}{3} \cdot \left(10\text{m}\right)^2 \cdot \sqrt{\left(16\text{m}\right)^2 - \frac{\left(10\text{m}\right)^2}{4}}$$

© calculatoratoz.com. A softusvista inc. venture!

Variables Used

- $\angle_{Base}$ Base Angle of Square Pyramid *(Degree)*
- A_{Base} Base Area of Square Pyramid *(Square Meter)*
- **h** Height of Square Pyramid *(Meter)*
- h_{slant} Slant Height of Square Pyramid *(Meter)*
- $l_{e(Base)}$ Edge Length of Base of Square Pyramid *(Meter)*
- $l_{e(Lateral)}$ Lateral Edge Length of Square Pyramid *(Meter)*
- **LSA** Lateral Surface Area of Square Pyramid *(Square Meter)*
- $R_{A/V}$ Surface to Volume Ratio of Square Pyramid *(1 per Meter)*
- **TSA** Total Surface Area of Square Pyramid *(Square Meter)*
- **V** Volume of Square Pyramid *(Cubic Meter)*

© calculatoratoz.com. A softusvista inc. venture!

Constants, Functions, Measurements used

- Function: **arccos**, arccos(Number)
  Arccosine function, is the inverse function of the cosine function.It is the function that takes a ratio as an input and returns the angle whose cosine is equal to that ratio.
- Function: **cos**, cos(Angle)
  Cosine of an angle is the ratio of the side adjacent to the angle to the hypotenuse of the triangle.
- Function: **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 (m^3)
  Volume Unit Conversion
- Measurement: **Area** in Square Meter (m^2)
  Area Unit Conversion
- Measurement: **Angle** in Degree (°)
  Angle Unit Conversion
- Measurement: **Reciprocal Length** in 1 per Meter (m^{-1})
  Reciprocal Length Unit Conversion

Check other formula lists

- **Equilateral Square Pyramid Formulas**
- **Regular Square Pyramid Formulas**
- **Right Square Pyramid Formulas**

Feel free to SHARE this document with your friends!

PDF Available in

English Spanish French German Russian Italian Portuguese Polish Dutch

6/24/2024 | 6:11:15 AM UTC

Please leave your feedback here...