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Important Formulas of Octagon

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List of 31 Important Formulas of Octagon

Important Formulas of Octagon

Area of Octagon

1) Area of Octagon

Open Calculator

fx $$A = 2 \cdot \left(1 + \sqrt{2}\right) \cdot l_e^2$$

ex $$482.8427\text{m}^2 = 2 \cdot \left(1 + \sqrt{2}\right) \cdot (10\text{m})^2$$

2) Area of Octagon given Circumradius

Open Calculator

fx $$A = 2 \cdot \sqrt{2} \cdot r_c^2$$

ex $$478.0042\text{m}^2 = 2 \cdot \sqrt{2} \cdot (13\text{m})^2$$

3) Area of Octagon given Edge Length and Inradius

Open Calculator

fx $$A = 4 \cdot l_e \cdot r_i$$

ex $$480\text{m}^2 = 4 \cdot 10\text{m} \cdot 12\text{m}$$

4) Area of Octagon given Height

Open Calculator

fx $$A = 2 \cdot \left(\sqrt{2} - 1\right) \cdot h^2$$

ex $$477.174\text{m}^2 = 2 \cdot \left(\sqrt{2} - 1\right) \cdot (24\text{m})^2$$

5) Area of Octagon given Perimeter

Open Calculator

fx $$A = \left(1 + \sqrt{2}\right) \cdot \frac{P^2}{32}$$

ex $$482.8427\text{m}^2 = \left(1 + \sqrt{2}\right) \cdot \frac{(80\text{m})^2}{32}$$

Diagonal of Octagon

6) Long Diagonal of Octagon

Open Calculator

fx $$d_{Long} = \sqrt{4 + \left(2 \cdot \sqrt{2}\right)} \cdot l_e$$

ex $$26.13126\text{m} = \sqrt{4 + \left(2 \cdot \sqrt{2}\right)} \cdot 10\text{m}$$

7) Long Diagonal of Octagon given Circumradius

Open Calculator

fx $$d_{Long} = 2 \cdot r_c$$

ex $$26\text{m} = 2 \cdot 13\text{m}$$

8) Medium Diagonal of Octagon

Open Calculator

$$d_{Medium} = \left(1 + \sqrt{2}\right) \cdot l_e$$

$$24.14214\text{m} = \left(1 + \sqrt{2}\right) \cdot 10\text{m}$$

9) Medium Diagonal of Octagon given Inradius

Open Calculator

$$d_{Medium} = 2 \cdot r_i$$

$$24\text{m} = 2 \cdot 12\text{m}$$

10) Short Diagonal of Octagon

Open Calculator

$$d_{Short} = \sqrt{2 + \sqrt{2}} \cdot l_e$$

$$18.47759\text{m} = \sqrt{2 + \sqrt{2}} \cdot 10\text{m}$$

11) Short Diagonal of Octagon given Area

Open Calculator

$$d_{Short} = \sqrt{\frac{A}{\sqrt{2}}}$$

$$18.42312\text{m} = \sqrt{\frac{480\text{m}^2}{\sqrt{2}}}$$

Edge Length of Octagon

12) Edge Length of Octagon given Area

Open Calculator

fx $$l_e = \sqrt{\left(\sqrt{2}-1\right)\cdot\left(\frac{A}{2}\right)}$$

ex $$9.970519\text{m} = \sqrt{\left(\sqrt{2}-1\right)\cdot\left(\frac{480\text{m}^2}{2}\right)}$$

13) Edge Length of Octagon given Circumradius

Open Calculator

fx $$l_e = \left(\sqrt{2-\sqrt{2}}\right)\cdot r_c$$

ex $$9.949769\text{m} = \left(\sqrt{2-\sqrt{2}}\right)\cdot 13\text{m}$$

14) Edge Length of Octagon given Height

Open Calculator

fx $$l_e = \left(\sqrt{2}-1\right)\cdot h$$

ex $$9.941125\text{m} = \left(\sqrt{2}-1\right)\cdot 24\text{m}$$

15) Edge Length of Octagon given Long Diagonal

Open Calculator

fx $$l_e = \left(\frac{\sqrt{2-\sqrt{2}}}{2}\right) \cdot d_{Long}$$

ex $$9.949769\text{m} = \left(\frac{\sqrt{2-\sqrt{2}}}{2}\right) \cdot 26\text{m}$$

Height of Octagon

16) Height of Octagon

Open Calculator

fx $$h = \left(1+\sqrt{2}\right) \cdot l_e$$

ex $$24.14214\text{m} = \left(1+\sqrt{2}\right) \cdot 10\text{m}$$

17) Height of Octagon given Area

Open Calculator

fx $$h = \sqrt{\left(\frac{1+\sqrt{2}}{2}\right) \cdot A}$$

ex $$24.07096\text{m} = \sqrt{\left(\frac{1+\sqrt{2}}{2}\right) \cdot 480\text{m}^2}$$

18) Height of Octagon given Medium Diagonal

Open Calculator

fx $h = d_{Medium} \cdot 1$

ex $24m = 24m \cdot 1$

19) Height of Octagon given Perimeter

Open Calculator

fx $h = \left(1 + \sqrt{2}\right) \cdot \frac{P}{8}$

ex $24.14214m = \left(1 + \sqrt{2}\right) \cdot \frac{80m}{8}$

Perimeter of Octagon

20) Perimeter of Octagon

Open Calculator

fx $P = 8 \cdot l_e$

ex $80m = 8 \cdot 10m$

21) Perimeter of Octagon given Circumradius

Open Calculator

fx $P = \frac{16 \cdot r_c}{\sqrt{4 + \left(2 \cdot \sqrt{2}\right)}}$

ex $79.59815m = \frac{16 \cdot 13m}{\sqrt{4 + \left(2 \cdot \sqrt{2}\right)}}$

22) Perimeter of Octagon given Inradius

Open Calculator

fx $$P = \frac{16 \cdot r_i}{1+\sqrt{2}}$$

ex $$79.529\text{m} = \frac{16 \cdot 12\text{m}}{1+\sqrt{2}}$$

Radius of Octagon

23) Circumradius of Octagon

Open Calculator

fx $$r_c = \sqrt{1+\left(\frac{1}{\sqrt{2}}\right)} \cdot l_e$$

ex $$13.06563\text{m} = \sqrt{1+\left(\frac{1}{\sqrt{2}}\right)} \cdot 10\text{m}$$

24) Circumradius of Octagon given Height

Open Calculator

fx $$r_c = \sqrt{1-\left(\frac{1}{\sqrt{2}}\right)} \cdot h$$

ex $$12.98871\text{m} = \sqrt{1-\left(\frac{1}{\sqrt{2}}\right)} \cdot 24\text{m}$$

25) Inradius of Octagon

Open Calculator

fx $$r_i = \left(\frac{1+\sqrt{2}}{2}\right) \cdot l_e$$

ex $$12.07107\text{m} = \left(\frac{1+\sqrt{2}}{2}\right) \cdot 10\text{m}$$

26) Inradius of Octagon given Height

Open Calculator

fx $$r_i = \frac{h}{2}$$

ex $$12\text{m} = \frac{24\text{m}}{2}$$

27) Inradius of Octagon given Width

Open Calculator

fx $$r_i = \frac{w}{2}$$

ex $$12\text{m} = \frac{24\text{m}}{2}$$

Width of Octagon

28) Width of Octagon

Open Calculator

fx $$w = \left(\sqrt{2}+1\right) \cdot l_e$$

ex $$24.14214\text{m} = \left(\sqrt{2}+1\right) \cdot 10\text{m}$$

29) Width of Octagon given Circumradius

Open Calculator

fx $$w = \left(\sqrt{2}+1\right) \cdot \left(\sqrt{2-\sqrt{2}}\right) \cdot r_c$$

ex $$24.02087\text{m} = \left(\sqrt{2}+1\right) \cdot \left(\sqrt{2-\sqrt{2}}\right) \cdot 13\text{m}$$

30) Width of Octagon given Medium Diagonal

Open Calculator

fx $$w = 1 \cdot d_{\text{Medium}}$$

ex $$24\text{m} = 1 \cdot 24\text{m}$$

31) Width of Octagon given Perimeter

Open Calculator

fx $$w = \left(\sqrt{2}+1\right) \cdot \frac{P}{8}$$

ex $$24.14214\text{m} = \left(\sqrt{2}+1\right) \cdot \frac{80\text{m}}{8}$$

Variables Used

- **A** Area of Octagon *(Square Meter)*
- d_{Long} Long Diagonal of Octagon *(Meter)*
- d_{Medium} Medium Diagonal of Octagon *(Meter)*
- d_{Short} Short Diagonal of Octagon *(Meter)*
- **h** Height of Octagon *(Meter)*
- l_e Edge Length of Octagon *(Meter)*
- **P** Perimeter of Octagon *(Meter)*
- r_c Circumradius of Octagon *(Meter)*
- r_i Inradius of Octagon *(Meter)*
- **w** Width of Octagon *(Meter)*

Constants, Functions, Measurements used

- Function: **sqrt**, sqrt(Number)
  Square root function
- Measurement: **Length** in Meter (m)
  Length Unit Conversion
- Measurement: **Area** in Square Meter (m²)
  Area Unit Conversion

Check other formula lists

- Annulus Formulas
- Antiparallelogram Formulas
- Arrow Hexagon Formulas
- Astroid Formulas
- Bulge Formulas
- Cardioid Formulas
- Circular Arc Quadrangle Formulas
- Concave Pentagon Formulas
- Concave Quadrilateral Formulas
- Concave Regular Hexagon Formulas
- Concave Regular Pentagon Formulas
- Crossed Rectangle Formulas
- Cut Rectangle Formulas
- Cyclic Quadrilateral Formulas
- Cycloid Formulas
- Decagon Formulas
- Dodecagon Formulas
- Double Cycloid Formulas
- Fourstar Formulas
- Frame Formulas
- Golden Rectangle Formulas
- Grid Formulas
- H Shape Formulas
- Half Yin-Yang Formulas
- Heart Shape Formulas
- Hendecagon Formulas
- Heptagon Formulas
- Hexadecagon Formulas
- Hexagon Formulas
- Hexagram Formulas
- House Shape Formulas
- Hyperbola Formulas
- Hypocycloid Formulas
- Isosceles Trapezoid Formulas
- Koch Curve Formulas
- L Shape Formulas
- Line Formulas
- Lune Formulas
- N-gon Formulas
- Nonagon Formulas
- Octagon Formulas
- Octagram Formulas
- Open Frame Formulas
- Parallelogram Formulas
- Pentagon Formulas
- Pentagram Formulas
- Polygram Formulas
- Quadrilateral Formulas
- Quarter Circle Formulas
- Rectangle Formulas

- Rectangular Hexagon Formulas
- Regular Polygon Formulas
- Reuleaux Triangle Formulas
- Rhombus Formulas
- Right Trapezoid Formulas
- Round Corner Formulas
- Salinon Formulas
- Semicircle Formulas
- Sharp Kink Formulas
- Square Formulas
- Star of Lakshmi Formulas
- Stretched Hexagon Formulas
- T Shape Formulas
- Tangential Quadrilateral Formulas
- Trapezoid Formulas
- Tricorn Formulas
- Tri-equilateral Trapezoid Formulas
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