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Important Formulas of Hexadecagon

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List of 26 Important Formulas of Hexadecagon

Important Formulas of Hexadecagon

Area of Hexadecagon

1) Area of Hexadecagon

Open Calculator

fx $$A = 4 \cdot S^2 \cdot \cot\left(\frac{\pi}{16}\right)$$

ex $$502.7339\text{m}^2 = 4 \cdot (5\text{m})^2 \cdot \cot\left(\frac{\pi}{16}\right)$$

2) Area of Hexadecagon given Height

Open Calculator

fx $$A = 4 \cdot h^2 \cdot \tan\left(\frac{\pi}{16}\right)$$

ex $$497.2809\text{m}^2 = 4 \cdot (25\text{m})^2 \cdot \tan\left(\frac{\pi}{16}\right)$$

3) Area of Hexadecagon given Perimeter

Open Calculator

fx $$A = 4 \cdot \left(\frac{P}{16}\right)^2 \cdot \cot\left(\frac{\pi}{16}\right)$$

ex $$502.7339\text{m}^2 = 4 \cdot \left(\frac{80\text{m}}{16}\right)^2 \cdot \cot\left(\frac{\pi}{16}\right)$$

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Diagonal of Hexadecagon

4) Diagonal of Hexadecagon across Eight Sides

Open Calculator

fx $$d_8 = \frac{S}{\sin\left(\frac{\pi}{16}\right)}$$

ex $$25.62915\text{m} = \frac{5\text{m}}{\sin\left(\frac{\pi}{16}\right)}$$

5) Diagonal of Hexadecagon across Five Sides

Open Calculator

fx $$d_5 = \frac{\sin\left(\frac{5\cdot\pi}{16}\right)}{\sin\left(\frac{\pi}{16}\right)} \cdot S$$

ex $$21.30986\text{m} = \frac{\sin\left(\frac{5\cdot\pi}{16}\right)}{\sin\left(\frac{\pi}{16}\right)} \cdot 5\text{m}$$

6) Diagonal of Hexadecagon across Four Sides

Open Calculator

fx $$d_4 = \frac{S}{\sqrt{2}\cdot\sin\left(\frac{\pi}{16}\right)}$$

ex $$18.12255\text{m} = \frac{5\text{m}}{\sqrt{2}\cdot\sin\left(\frac{\pi}{16}\right)}$$

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7) Diagonal of Hexadecagon across Seven Sides

Open Calculator

fx $$d_7 = \frac{\sin\left(\frac{7\cdot\pi}{16}\right)}{\sin\left(\frac{\pi}{16}\right)} \cdot S$$

ex $$25.1367\text{m} = \frac{\sin\left(\frac{7\cdot\pi}{16}\right)}{\sin\left(\frac{\pi}{16}\right)} \cdot 5\text{m}$$

8) Diagonal of Hexadecagon across Six Sides

Open Calculator

fx $$d_6 = \frac{\sin\left(\frac{3\cdot\pi}{8}\right)}{\sin\left(\frac{\pi}{16}\right)} \cdot S$$

ex $$23.67825\text{m} = \frac{\sin\left(\frac{3\cdot\pi}{8}\right)}{\sin\left(\frac{\pi}{16}\right)} \cdot 5\text{m}$$

9) Diagonal of Hexadecagon across Three Sides

Open Calculator

fx $$d_3 = \frac{\sin\left(\frac{3\cdot\pi}{16}\right)}{\sin\left(\frac{\pi}{16}\right)} \cdot S$$

ex $$14.2388\text{m} = \frac{\sin\left(\frac{3\cdot\pi}{16}\right)}{\sin\left(\frac{\pi}{16}\right)} \cdot 5\text{m}$$

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10) Diagonal of Hexadecagon across Two Sides

Open Calculator

fx $$d_2 = \frac{\sin\left(\frac{\pi}{8}\right)}{\sin\left(\frac{\pi}{16}\right)} \cdot S$$

ex $$9.807853\text{m} = \frac{\sin\left(\frac{\pi}{8}\right)}{\sin\left(\frac{\pi}{16}\right)} \cdot 5\text{m}$$

Height of Hexadecagon

11) Height of Hexadecagon

Open Calculator

fx $$h = \frac{\sin\left(\frac{7 \cdot \pi}{16}\right)}{\sin\left(\frac{\pi}{16}\right)} \cdot S$$

ex $$25.1367\text{m} = \frac{\sin\left(\frac{7 \cdot \pi}{16}\right)}{\sin\left(\frac{\pi}{16}\right)} \cdot 5\text{m}$$

12) Height of Hexadecagon given Area

Open Calculator

fx $$h = \sqrt{\frac{A}{4 \cdot \tan\left(\frac{\pi}{16}\right)}}$$

ex $$25.06826\text{m} = \sqrt{\frac{500\text{m}^2}{4 \cdot \tan\left(\frac{\pi}{16}\right)}}$$

13) Height of Hexadecagon given Diagonal across Seven Sides

Open Calculator

fx $$h = \frac{d_7}{1}$$

ex $$25\text{m} = \frac{25\text{m}}{1}$$

14) Height of Hexadecagon given Inradius

Open Calculator

fx $$h = 2 \cdot r_i$$

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

15) Height of Hexadecagon given Perimeter

Open Calculator

fx $$h = \frac{\sin\left(\frac{7 \cdot \pi}{16}\right)}{\sin\left(\frac{\pi}{16}\right)} \cdot \frac{P}{16}$$

ex $$25.1367\text{m} = \frac{\sin\left(\frac{7 \cdot \pi}{16}\right)}{\sin\left(\frac{\pi}{16}\right)} \cdot \frac{80\text{m}}{16}$$

Perimeter of Hexadecagon

16) Perimeter of Hexadecagon

Open Calculator

fx $$P = 16 \cdot S$$

ex $$80\text{m} = 16 \cdot 5\text{m}$$

17) Perimeter of Hexadecagon given Area

Open Calculator

fx $$P = 16 \cdot \sqrt{\frac{A}{4 \cdot \cot\left(\frac{\pi}{16}\right)}}$$

ex $$79.78218\text{m} = 16 \cdot \sqrt{\frac{500\text{m}^2}{4 \cdot \cot\left(\frac{\pi}{16}\right)}}$$

18) Perimeter of Hexadecagon given Height

Open Calculator

fx $$P = 16 \cdot h \cdot \frac{\sin\left(\frac{\pi}{16}\right)}{\sin\left(\frac{7 \cdot \pi}{16}\right)}$$

ex $$79.56495\text{m} = 16 \cdot 25\text{m} \cdot \frac{\sin\left(\frac{\pi}{16}\right)}{\sin\left(\frac{7 \cdot \pi}{16}\right)}$$

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Radius of Hexadecagon

19) Circumradius of Hexadecagon

Open Calculator

$$r_c = \sqrt{\frac{4 + \left(2 \cdot \sqrt{2}\right) + \sqrt{20 + \left(14 \cdot \sqrt{2}\right)}}{2}} \cdot S$$

ex $$12.81458\text{m} = \sqrt{\frac{4 + \left(2 \cdot \sqrt{2}\right) + \sqrt{20 + \left(14 \cdot \sqrt{2}\right)}}{2}} \cdot 5\text{m}$$

20) Inradius of Hexadecagon

Open Calculator

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

ex $$12.56835\text{m} = \left(\frac{1 + \sqrt{2} + \sqrt{2 \cdot \left(2 + \sqrt{2}\right)}}{2}\right) \cdot 5\text{m}$$

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21) Inradius of Hexadecagon given Height

Open Calculator

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

ex $$12.5\text{m} = \frac{25\text{m}}{2}$$

Side of Hexadecagon

22) Side of Hexadecagon given Area

Open Calculator

fx $$S = \sqrt{\frac{A}{4 \cdot \cot\left(\frac{\pi}{16}\right)}}$$

ex $$4.986386\text{m} = \sqrt{\frac{500\text{m}^2}{4 \cdot \cot\left(\frac{\pi}{16}\right)}}$$

23) Side of Hexadecagon given Circumradius

Open Calculator

fx $$S = \frac{r_c}{\sqrt{\frac{4+\left(2 \cdot \sqrt{2}\right)+\sqrt{20+\left(14 \cdot \sqrt{2}\right)}}{2}}}$$

ex $$5.072348\text{m} = \frac{13\text{m}}{\sqrt{\frac{4+\left(2 \cdot \sqrt{2}\right)+\sqrt{20+\left(14 \cdot \sqrt{2}\right)}}{2}}}$$

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24) Side of Hexadecagon given Height

Open Calculator

fx $$S = h \cdot \frac{\sin\left(\frac{\pi}{16}\right)}{\sin\left(\frac{7 \cdot \pi}{16}\right)}$$

ex $$4.972809\text{m} = 25\text{m} \cdot \frac{\sin\left(\frac{\pi}{16}\right)}{\sin\left(\frac{7 \cdot \pi}{16}\right)}$$

25) Side of Hexadecagon given Inradius

Open Calculator

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

ex $$4.773897\text{m} = \frac{2 \cdot 12\text{m}}{1 + \sqrt{2} + \sqrt{2 \cdot \left(2 + \sqrt{2}\right)}}$$

26) Side of Hexadecagon given Perimeter

Open Calculator

fx $$S = \frac{P}{16}$$

ex $$5\text{m} = \frac{80\text{m}}{16}$$

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Variables Used

- **A** Area of Hexadecagon *(Square Meter)*
- d_2 Diagonal across Two Sides of Hexadecagon *(Meter)*
- d_3 Diagonal across Three Sides of Hexadecagon *(Meter)*
- d_4 Diagonal across Four Sides of Hexadecagon *(Meter)*
- d_5 Diagonal across Five Sides of Hexadecagon *(Meter)*
- d_6 Diagonal across Six Sides of Hexadecagon *(Meter)*
- d_7 Diagonal across Seven Sides of Hexadecagon *(Meter)*
- d_8 Diagonal across Eight Sides of Hexadecagon *(Meter)*
- **h** Height of Hexadecagon *(Meter)*
- **P** Perimeter of Hexadecagon *(Meter)*
- r_c Circumradius of Hexadecagon *(Meter)*
- r_i Inradius of Hexadecagon *(Meter)*
- **S** Side of Hexadecagon *(Meter)*

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Constants, Functions, Measurements used

- Constant: **pi**, 3.14159265358979323846264338327950288
  Archimedes' constant
- Function: **cot**, cot(Angle)
  Trigonometric cotangent function
- Function: **sin**, sin(Angle)
  Trigonometric sine function
- Function: **sqrt**, sqrt(Number)
  Square root function
- Function: **tan**, tan(Angle)
  Trigonometric tangent function
- Measurement: **Length** in Meter (m)
  Length Unit Conversion
- Measurement: **Area** in Square Meter (m²)
  Area Unit Conversion

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- 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
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- Isosceles Trapezoid Formulas
- Koch Curve Formulas
- L Shape Formulas
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- Nonagon Formulas
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- Pentagon Formulas
- Pentagram Formulas
- Polygram Formulas
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- Quarter Circle Formulas
- Rectangle Formulas

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- 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
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