Important Formulas of Rhombus PDF

Formulas
Examples
with Units

List of 28
Important Formulas of Rhombus

1) Angles of Rhombus Formulas

1.1) Acute Angle of Rhombus given both Diagonals Formula

Evaluate Formula

Formula

$$\angle_{Acute} = asin\left(\frac{2 \cdot d_{Long} \cdot d_{Short}}{d_{Long}^2 + d_{Short}^2}\right)$$

Example with Units

$$47.925° = asin\left(\frac{2 \cdot 18\,m \cdot 8\,m}{18\,m^2 + 8\,m^2}\right)$$

1.2) Acute Angle of Rhombus given Long Diagonal Formula

Evaluate Formula

Formula

$$\angle_{Acute} = acos\left(\frac{d_{Long}^2}{2 \cdot S^2} - 1\right)$$

Example with Units

$$51.6839° = acos\left(\frac{18\,m^2}{2 \cdot 10\,m^2} - 1\right)$$

1.3) Acute Angle of Rhombus given Short Diagonal Formula

Evaluate Formula

Formula

$$\angle_{Acute} = acos\left(1 - \frac{d_{Short}^2}{2 \cdot S^2}\right)$$

Example with Units

$$47.1564° = acos\left(1 - \frac{8\,m^2}{2 \cdot 10\,m^2}\right)$$

1.4) Obtuse Angle of Rhombus given both Diagonals Formula

Evaluate Formula

Formula

$$\angle_{Obtuse} = 2 \cdot acos\left(\frac{d_{Short}}{\sqrt{d_{Long}^2 + d_{Short}^2}}\right)$$

Example with Units

$$132.075° = 2 \cdot acos\left(\frac{8\,m}{\sqrt{18\,m^2 + 8\,m^2}}\right)$$

2) Area of Rhombus Formulas

2.1) Area of Rhombus Formula

Evaluate Formula

Formula

$$A = S^2 \cdot \sin\left(\angle_{Acute}\right)$$

Example with Units

$$70.7107\,m^2 = 10\,m^2 \cdot \sin\left(45°\right)$$

2.2) Area of Rhombus given Both Diagonals Formula

Evaluate Formula

Formula

$$A = \frac{d_{Long} \cdot d_{Short}}{2}$$

Example with Units

$$72\,\text{m}^2 = \frac{18\,\text{m} \cdot 8\,\text{m}}{2}$$

2.3) Area of Rhombus given Height Formula

Evaluate Formula

Formula

$$A = S \cdot h$$

Example with Units

$$70\,\text{m}^2 = 10\,\text{m} \cdot 7\,\text{m}$$

2.4) Area of Rhombus given Inradius Formula

Evaluate Formula

Formula

$$A = 2 \cdot S \cdot r_i$$

Example with Units

$$60\,\text{m}^2 = 2 \cdot 10\,\text{m} \cdot 3\,\text{m}$$

3) Diagonal of Rhombus Formulas

3.1) Long Diagonal of Rhombus Formula

Evaluate Formula

Formula

$$d_{Long} = 2 \cdot S \cdot \cos\left(\frac{\angle_{Acute}}{2}\right)$$

Example with Units

$$18.4776\,\text{m} = 2 \cdot 10\,\text{m} \cdot \cos\left(\frac{45°}{2}\right)$$

3.2) Long Diagonal of Rhombus given Area and Short Diagonal Formula

Evaluate Formula

Formula

$$d_{Long} = \frac{2 \cdot A}{d_{Short}}$$

Example with Units

$$17.5\,\text{m} = \frac{2 \cdot 70\,\text{m}^2}{8\,\text{m}}$$

3.3) Long Diagonal of Rhombus given Short Diagonal and Acute Angle Formula

Evaluate Formula

Formula

$$d_{Long} = \frac{d_{Short}}{\tan\left(\frac{\angle_{Acute}}{2}\right)}$$

Example with Units

$$19.3137\,\text{m} = \frac{8\,\text{m}}{\tan\left(\frac{45°}{2}\right)}$$

3.4) Long Diagonal of Rhombus given Short Diagonal and Side Formula

Evaluate Formula

Formula

$$d_{Long} = \sqrt{4 \cdot S^2 - d_{Short}^2}$$

Example with Units

$$18.3303\,\text{m} = \sqrt{4 \cdot 10\,\text{m}^2 - 8\,\text{m}^2}$$

3.5) Short Diagonal of Rhombus Formula

Evaluate Formula

Formula

$$d_{Short} = 2 \cdot S \cdot \sin\left(\frac{\angle_{Acute}}{2}\right)$$

Example with Units

$$7.6537\,\text{m} = 2 \cdot 10\,\text{m} \cdot \sin\left(\frac{45°}{2}\right)$$

3.6) Short Diagonal of Rhombus given Area and Long Diagonal Formula

Evaluate Formula

Formula

$$d_{Short} = \frac{2 \cdot A}{d_{Long}}$$

Example with Units

$$7.7778\,\text{m} = \frac{2 \cdot 70\,\text{m}^2}{18\,\text{m}}$$

3.7) Short Diagonal of Rhombus given Long Diagonal and Acute Angle Formula

Evaluate Formula

Formula

$$d_{Short} = d_{Long} \cdot \tan\left(\frac{\angle_{Acute}}{2}\right)$$

Example with Units

$$7.4558\,\text{m} = 18\,\text{m} \cdot \tan\left(\frac{45°}{2}\right)$$

3.8) Short Diagonal of Rhombus given Long Diagonal and Side Formula

Evaluate Formula

Formula

$$d_{Short} = \sqrt{4 \cdot S^2 - d_{Long}^2}$$

Example with Units

$$8.7178\,\text{m} = \sqrt{4 \cdot 10\,\text{m}^2 - 18\,\text{m}^2}$$

4) Height of Rhombus Formulas

4.1) Height of Rhombus Formula

Evaluate Formula

Formula

$$h = S \cdot \sin\left(\angle_{Acute}\right)$$

Example with Units

$$7.0711\,\text{m} = 10\,\text{m} \cdot \sin\left(45°\right)$$

4.2) Height of Rhombus given Area Formula

Evaluate Formula

Formula

$$h = \frac{A}{S}$$

Example with Units

$$7\,\text{m} = \frac{70\,\text{m}^2}{10\,\text{m}}$$

4.3) Height of Rhombus given Inradius Formula

Evaluate Formula

Formula

$$h = 2 \cdot r_i$$

Example with Units

$$6\,\text{m} = 2 \cdot 3\,\text{m}$$

5) Inradius of Rhombus Formulas

5.1) Inradius of Rhombus Formula

Evaluate Formula

Formula

$$r_i = \frac{S \cdot \sin\left(\angle_{Acute}\right)}{2}$$

Example with Units

$$3.5355\,\text{m} = \frac{10\,\text{m} \cdot \sin\left(45°\right)}{2}$$

5.2) Inradius of Rhombus given Area and Side Formula

Evaluate Formula

Formula

$$r_i = \frac{A}{2 \cdot S}$$

Example with Units

$$3.5\,\text{m} = \frac{70\,\text{m}^2}{2 \cdot 10\,\text{m}}$$

5.3) Inradius of Rhombus given both Diagonals Formula

Evaluate Formula

Formula

$$r_i = \frac{d_{Long} \cdot d_{Short}}{2 \cdot \sqrt{d_{Long}^2 + d_{Short}^2}}$$

Example with Units

$$3.6552\,\text{m} = \frac{18\,\text{m} \cdot 8\,\text{m}}{2 \cdot \sqrt{18\,\text{m}^2 + 8\,\text{m}^2}}$$

5.4) Inradius of Rhombus given Height Formula

Evaluate Formula

Formula

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

Example with Units

$$3.5\,\text{m} = \frac{7\,\text{m}}{2}$$

5.5) Inradius of Rhombus given Long Diagonal and Side Formula

Evaluate Formula

Formula

$$r_i = \frac{d_{Long} \cdot \sqrt{S^2 - \frac{d_{Long}^2}{4}}}{2 \cdot S}$$

Example with Units

$$3.923\,\text{m} = \frac{18\,\text{m} \cdot \sqrt{10\,\text{m}^2 - \frac{18\,\text{m}^2}{4}}}{2 \cdot 10\,\text{m}}$$

5.6) Inradius of Rhombus given Short Diagonal and Side Formula

Evaluate Formula

Formula

$$r_i = \frac{d_{Short} \cdot \sqrt{S^2 - \frac{d_{Short}^2}{4}}}{2 \cdot S}$$

Example with Units

$$3.6661\,\text{m} = \frac{8\,\text{m} \cdot \sqrt{10\,\text{m}^2 - \frac{8\,\text{m}^2}{4}}}{2 \cdot 10\,\text{m}}$$

6) Perimeter of Rhombus Formulas

6.1) Perimeter of Rhombus Formula

Evaluate Formula

Formula

$$P = 4 \cdot S$$

Example with Units

$$40\,\text{m} = 4 \cdot 10\,\text{m}$$

6.2) Perimeter of Rhombus given Short Diagonal and Long Diagonal Formula

Evaluate Formula

Formula

$$P = 2 \cdot \sqrt{d_{Long}^2 + d_{Short}^2}$$

Example with Units

$$39.3954\,\text{m} = 2 \cdot \sqrt{18\,\text{m}^2 + 8\,\text{m}^2}$$

7) Side of Rhombus Formulas

7.1) Side of Rhombus given Short Diagonal and Long Diagonal Formula

Evaluate Formula

Formula

$$S = \frac{\sqrt{d_{Long}^2 + d_{Short}^2}}{2}$$

Example with Units

$$9.8489\,\text{m} = \frac{\sqrt{18\,\text{m}^2 + 8\,\text{m}^2}}{2}$$

Variables used in list of Important Formulas of Rhombus above

- $\angle_{Acute}$ Acute Angle of Rhombus *(Degree)*
- $\angle_{Obtuse}$ Obtuse Angle of Rhombus *(Degree)*
- **A** Area of Rhombus *(Square Meter)*
- d_{Long} Long Diagonal of Rhombus *(Meter)*
- d_{Short} Short Diagonal of Rhombus *(Meter)*
- **h** Height of Rhombus *(Meter)*
- **P** Perimeter of Rhombus *(Meter)*
- r_i Inradius of Rhombus *(Meter)*
- **S** Side of Rhombus *(Meter)*

Constants, Functions, Measurements used in list of Important Formulas of Rhombus above

- Functions: **acos**, acos(Number)
  The inverse cosine 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.
- Functions: **asin**, asin(Number)
  The inverse sine function, is a trigonometric function that takes a ratio of two sides of a right triangle and outputs the angle opposite the side with the given ratio.
- Functions: **cos**, cos(Angle)
  Cosine of an angle is the ratio of the side adjacent to the angle to the hypotenuse of the triangle.
- Functions: **sin**, sin(Angle)
  Sine is a trigonometric function that describes the ratio of the length of the opposite side of a right triangle to the length of the hypotenuse.
- 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.
- Functions: **tan**, tan(Angle)
  The tangent of an angle is a trigonometric ratio of the length of the side opposite an angle to the length of the side adjacent to an angle in a right triangle.
- Measurement: **Length** in Meter (m)
  Length Unit Conversion
- Measurement: **Area** in Square Meter (m²)
  Area Unit Conversion
- Measurement: **Angle** in Degree (°)
  Angle Unit Conversion

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