

Important Quadrilateral Formulas PDF



Formulas Examples with Units

List of 20 Important Quadrilateral Formulas

1) Sum of Perpendiculars drawn on Diagonal of Quadrilateral Formula

Formula

$$l_{\perp(\text{Sum})} = 2 \cdot \frac{A}{d_1}$$

Example with Units

$$10.9091\text{m} = 2 \cdot \frac{60\text{m}^2}{11\text{m}}$$

Evaluate Formula

2) Angles of Quadrilateral Formulas

2.1) Angle A of Quadrilateral Formula

Formula

$$\angle A = \pi - \angle C$$

Example with Units

$$95^\circ = 3.1416 - 85^\circ$$

Evaluate Formula

2.2) Angle B of Quadrilateral Formula

Formula

$$\angle B = \pi - \angle D$$

Example with Units

$$70^\circ = 3.1416 - 110^\circ$$

Evaluate Formula

2.3) Angle C of Quadrilateral Formula

Formula

$$\angle C = \pi - \angle A$$

Example with Units

$$85^\circ = 3.1416 - 95^\circ$$

Evaluate Formula

2.4) Angle D of Quadrilateral given other Three Angles Formula

Formula

$$\angle D = (2 \cdot \pi) - (\angle A + \angle B + \angle C)$$

Example with Units

$$110^\circ = (2 \cdot 3.1416) - (95^\circ + 70^\circ + 85^\circ)$$

Evaluate Formula

3) Area of Quadrilateral Formulas

3.1) Area of Quadrilateral Formula

Formula

$$A = \frac{1}{2} \cdot d_1 \cdot l_{\perp(\text{Sum})}$$

Example with Units

$$66\text{m}^2 = \frac{1}{2} \cdot 11\text{m} \cdot 12\text{m}$$

Evaluate Formula



3.2) Area of Quadrilateral given Angles and Sides Formula

Formula

$$A = \frac{(S_a \cdot S_d \cdot \sin(\angle A)) + (S_b \cdot S_c \cdot \sin(\angle C))}{2}$$

Evaluate Formula 

Example with Units

$$60.7679 \text{ m}^2 = \frac{(10 \text{ m} \cdot 5 \text{ m} \cdot \sin(95^\circ)) + (9 \text{ m} \cdot 8 \text{ m} \cdot \sin(85^\circ))}{2}$$

3.3) Area of Quadrilateral given Diagonals and Angle between Diagonals Formula

Formula

$$A = \frac{d_1 \cdot d_2}{2} \cdot \sin(\angle_{\text{Diagonals}})$$

Example with Units

$$63.7511 \text{ m}^2 = \frac{11 \text{ m} \cdot 12 \text{ m}}{2} \cdot \sin(105^\circ)$$

Evaluate Formula 

3.4) Area of Quadrilateral given Diagonals and Sides Formula

Formula

$$A = \frac{\sqrt{(4 \cdot d_1^2 \cdot d_2^2) - (S_a^2 + S_c^2 - S_b^2 - S_d^2)^2}}{4}$$

Evaluate Formula 

Example with Units

$$64.3875 \text{ m}^2 = \frac{\sqrt{(4 \cdot 11 \text{ m}^2 \cdot 12 \text{ m}^2) - (10 \text{ m}^2 + 8 \text{ m}^2 - 9 \text{ m}^2 - 5 \text{ m}^2)^2}}{4}$$

4) Diagonals of Quadrilateral Formulas

4.1) Diagonal 1 of Quadrilateral Formula

Formula

$$d_1 = \sqrt{S_a^2 + S_b^2 - (2 \cdot S_a \cdot S_b \cdot \cos(\angle B))}$$

Evaluate Formula 

Example with Units

$$10.9287 \text{ m} = \sqrt{10 \text{ m}^2 + 9 \text{ m}^2 - (2 \cdot 10 \text{ m} \cdot 9 \text{ m} \cdot \cos(70^\circ))}$$

4.2) Diagonal 1 of Quadrilateral given Area and Heights of Columns Formula

Formula

$$d_1 = 2 \cdot \frac{A}{h_1 + h_2}$$

Example with Units

$$10 \text{ m} = 2 \cdot \frac{60 \text{ m}^2}{4 \text{ m} + 8 \text{ m}}$$

Evaluate Formula 



4.3) Diagonal 2 of Quadrilateral Formula

Formula

$$d_2 = \sqrt{S_b^2 + S_c^2 - (2 \cdot S_b \cdot S_c \cdot \cos(\angle C))}$$

Evaluate Formula 

Example with Units

$$11.5087\text{m} = \sqrt{9\text{m}^2 + 8\text{m}^2 - (2 \cdot 9\text{m} \cdot 8\text{m} \cdot \cos(85^\circ))}$$

5) Perimeter and Semiperimeter of Quadrilateral Formulas

5.1) Perimeter of Quadrilateral Formula

Formula

$$P = S_a + S_b + S_c + S_d$$

Example with Units

$$32\text{m} = 10\text{m} + 9\text{m} + 8\text{m} + 5\text{m}$$

Evaluate Formula 

5.2) Perimeter of Quadrilateral given Semiperimeter Formula

Formula

$$P = 2 \cdot s$$

Example with Units

$$32\text{m} = 2 \cdot 16\text{m}$$

Evaluate Formula 

5.3) Semiperimeter of Quadrilateral Formula

Formula

$$s = \frac{P}{2}$$

Example with Units

$$16\text{m} = \frac{32\text{m}}{2}$$

Evaluate Formula 

5.4) Semiperimeter of Quadrilateral given Sides Formula

Formula

$$s = \frac{S_a + S_b + S_c + S_d}{2}$$

Example with Units

$$16\text{m} = \frac{10\text{m} + 9\text{m} + 8\text{m} + 5\text{m}}{2}$$

Evaluate Formula 

6) Sides of Quadrilateral Formulas

6.1) Side A of Quadrilateral Formula

Formula

$$S_a = P - (S_b + S_c + S_d)$$

Example with Units

$$10\text{m} = 32\text{m} - (9\text{m} + 8\text{m} + 5\text{m})$$

Evaluate Formula 

6.2) Side B of Quadrilateral Formula

Formula

$$S_b = P - (S_a + S_c + S_d)$$

Example with Units

$$9\text{m} = 32\text{m} - (10\text{m} + 8\text{m} + 5\text{m})$$

Evaluate Formula 



6.3) Side C of Quadrilateral Formula

Formula

$$S_c = P - (S_a + S_b + S_d)$$

Example with Units

$$8\text{ m} = 32\text{ m} - (10\text{ m} + 9\text{ m} + 5\text{ m})$$

Evaluate Formula 

6.4) Side D of Quadrilateral Formula

Formula

$$S_d = P - (S_a + S_b + S_c)$$

Example with Units

$$5\text{ m} = 32\text{ m} - (10\text{ m} + 9\text{ m} + 8\text{ m})$$




Evaluate Formula 



Variables used in list of Quadrilateral Formulas above

- \angle **Diagonals** Angle between Diagonals of Quadrilateral (Degree)
- \angle **A** Angle A of Quadrilateral (Degree)
- \angle **B** Angle B of Quadrilateral (Degree)
- \angle **C** Angle C of Quadrilateral (Degree)
- \angle **D** Angle D of Quadrilateral (Degree)
- **A** Area of Quadrilateral (Square Meter)
- **d₁** Diagonal 1 of Quadrilateral (Meter)
- **d₂** Diagonal 2 of Quadrilateral (Meter)
- **h₁** Height of Column 1 of Quadrilateral (Meter)
- **h₂** Height of Column 2 of Quadrilateral (Meter)
- **I_⊥(Sum)** Sum of Length of Perpendiculars of Quadrilateral (Meter)
- **P** Perimeter of Quadrilateral (Meter)
- **s** Semiperimeter of Quadrilateral (Meter)
- **S_a** Side A of Quadrilateral (Meter)
- **S_b** Side B of Quadrilateral (Meter)
- **S_c** Side C of Quadrilateral (Meter)
- **S_d** Side D of Quadrilateral (Meter)


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

- **constant(s):** π , 3.14159265358979323846264338327950288
Archimedes' constant
- **Functions:** **cos**, $\cos(\text{Angle})$
Cosine of an angle is the ratio of the side adjacent to the angle to the hypotenuse of the triangle.
- **Functions:** **sin**, $\sin(\text{Angle})$
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**, $\text{sqrt}(\text{Number})$
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:** **Area** in Square Meter (m²)
Area Unit Conversion 
- **Measurement:** **Angle** in Degree (°)
Angle Unit Conversion 





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