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Important Formulas of Rectangle

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List of 32 Important Formulas of Rectangle

Important Formulas of Rectangle

Angles of Rectangle

1) Acute Angle between Diagonals of Rectangle

$$\text{fx } \angle_{d(\text{Acute})} = 2 \cdot a \tan\left(\frac{b}{l}\right)$$

[Open Calculator !\[\]\(de95854c7ee024cfadc48187bbb781b2_img.jpg\)](#)

$$\text{ex } 73.7398^\circ = 2 \cdot a \tan\left(\frac{6\text{m}}{8\text{m}}\right)$$

2) Angle between Diagonal and Breadth of Rectangle

$$\text{fx } \angle_{db} = a \tan\left(\frac{l}{b}\right)$$

[Open Calculator !\[\]\(6a9b39b98eb945faa14c645ec99e4eaa_img.jpg\)](#)

$$\text{ex } 53.1301^\circ = a \tan\left(\frac{8\text{m}}{6\text{m}}\right)$$

3) Angle between Diagonal and Length of Rectangle

$$\text{fx } \angle_{dl} = a \tan\left(\frac{b}{l}\right)$$

[Open Calculator !\[\]\(f1c5da15572e3e09d343161be98f508d_img.jpg\)](#)

$$\text{ex } 36.8699^\circ = a \tan\left(\frac{6\text{m}}{8\text{m}}\right)$$



4) Obtuse Angle between Diagonals of Rectangle

[Open Calculator !\[\]\(4729e517bc6a7cd81c8025b9646574fb_img.jpg\)](#)

$$\text{fx } \angle_{\text{d(Obtuse)}} = 2 \cdot a \tan\left(\frac{1}{b}\right)$$

$$\text{ex } 106.2602^\circ = 2 \cdot a \tan\left(\frac{8\text{m}}{6\text{m}}\right)$$

Area of Rectangle

5) Area of Rectangle

[Open Calculator !\[\]\(3e2231b1ad3ca8da8658228c00dd08e0_img.jpg\)](#)

$$\text{fx } A = l \cdot b$$

$$\text{ex } 48\text{m}^2 = 8\text{m} \cdot 6\text{m}$$

6) Area of Rectangle given Breadth and Diagonal

[Open Calculator !\[\]\(0d5ec72f61334709c3fc9450209b754f_img.jpg\)](#)

$$\text{fx } A = b \cdot \sqrt{d^2 - b^2}$$

$$\text{ex } 48\text{m}^2 = (6\text{m}) \cdot \sqrt{(10\text{m})^2 - (6\text{m})^2}$$

7) Area of Rectangle given Length and Diagonal

[Open Calculator !\[\]\(b64b40baaee5acddc1eab8538ba84754_img.jpg\)](#)

$$\text{fx } A = l \cdot \sqrt{d^2 - l^2}$$

$$\text{ex } 48\text{m}^2 = (8\text{m}) \cdot \sqrt{(10\text{m})^2 - (8\text{m})^2}$$



8) Area of Rectangle given Perimeter and Breadth

$$\text{fx } A = \frac{(P \cdot b) - (2 \cdot b^2)}{2}$$

[Open Calculator !\[\]\(e78f798d4ea5c530c9db49e7d26e6b95_img.jpg\)](#)

$$\text{ex } 48\text{m}^2 = \frac{(28\text{m} \cdot (6\text{m})) - (2 \cdot (6\text{m})^2)}{2}$$

9) Area of Rectangle given Perimeter and Diagonal

$$\text{fx } A = \frac{\left(\frac{P}{2}\right)^2 - d^2}{2}$$

[Open Calculator !\[\]\(05be7c7a8995decd503647c99211f7c2_img.jpg\)](#)

$$\text{ex } 48\text{m}^2 = \frac{\left(\frac{28\text{m}}{2}\right)^2 - (10\text{m})^2}{2}$$

10) Area of Rectangle given Perimeter and Length

$$\text{fx } A = \frac{(P \cdot l) - (2 \cdot l^2)}{2}$$

[Open Calculator !\[\]\(fe3aebe81acea8d45108cd2768939da7_img.jpg\)](#)

$$\text{ex } 48\text{m}^2 = \frac{(28\text{m} \cdot (8\text{m})) - (2 \cdot (8\text{m})^2)}{2}$$



Circumcircle of Rectangle

11) Circumradius of Rectangle

$$\text{fx } r_c = \frac{\sqrt{l^2 + b^2}}{2}$$

[Open Calculator !\[\]\(74d4806277d7e73349d8e8c0897931e9_img.jpg\)](#)

$$\text{ex } 5\text{m} = \frac{\sqrt{(8\text{m})^2 + (6\text{m})^2}}{2}$$

12) Circumradius of Rectangle given Diagonal

$$\text{fx } r_c = \frac{d}{2}$$

[Open Calculator !\[\]\(8bba887393ca45b761e5cb49e755e762_img.jpg\)](#)

$$\text{ex } 5\text{m} = \frac{10\text{m}}{2}$$

13) Circumradius of Rectangle given Diameter of Circumcircle

$$\text{fx } r_c = \frac{D_c}{2}$$

[Open Calculator !\[\]\(0fb13ad0bfa3d86868cdd3883e5665b3_img.jpg\)](#)

$$\text{ex } 5\text{m} = \frac{10\text{m}}{2}$$



14) Circumradius of Rectangle given Perimeter and Breadth

fx

$$r_c = \frac{\sqrt{P^2 - (4 \cdot P \cdot b) + (8 \cdot b^2)}}{4}$$

Open Calculator 

ex

$$5m = \frac{\sqrt{(28m)^2 - (4 \cdot (28m) \cdot (6m)) + (8 \cdot (6m)^2)}}{4}$$

15) Circumradius of Rectangle given Perimeter and Length

fx

$$r_c = \frac{\sqrt{P^2 - (4 \cdot P \cdot l) + (8 \cdot l^2)}}{4}$$

Open Calculator 

ex

$$5m = \frac{\sqrt{(28m)^2 - (4 \cdot (28m) \cdot (8m)) + (8 \cdot (8m)^2)}}{4}$$

16) Diameter of Circumcircle of Rectangle

fx

$$D_c = \sqrt{l^2 + b^2}$$

Open Calculator 

ex

$$10m = \sqrt{(8m)^2 + (6m)^2}$$

17) Diameter of Circumcircle of Rectangle given Circumradius

fx

$$D_c = 2 \cdot r_c$$

Open Calculator 

ex

$$10m = 2 \cdot 5m$$



Diagonal of Rectangle

18) Diagonal of Rectangle

$$\text{fx } d = \sqrt{l^2 + b^2}$$

[Open Calculator !\[\]\(83f22ed94ec5517769dd76d702c6bfd8_img.jpg\)](#)

$$\text{ex } 10\text{m} = \sqrt{(8\text{m})^2 + (6\text{m})^2}$$

19) Diagonal of Rectangle given Area and Breadth

$$\text{fx } d = \sqrt{\left(\frac{A}{b}\right)^2 + b^2}$$

[Open Calculator !\[\]\(3cb60d42b10e53f9522bb0b392c1c4cd_img.jpg\)](#)

$$\text{ex } 10\text{m} = \sqrt{\left(\frac{48\text{m}^2}{6\text{m}}\right)^2 + (6\text{m})^2}$$

20) Diagonal of Rectangle given Area and Length

$$\text{fx } d = \sqrt{\left(\frac{A}{l}\right)^2 + l^2}$$

[Open Calculator !\[\]\(0d7ca0919e6c47bbd874bfa0189fe22e_img.jpg\)](#)

$$\text{ex } 10\text{m} = \sqrt{\left(\frac{48\text{m}^2}{8\text{m}}\right)^2 + (8\text{m})^2}$$



Perimeter of Rectangle

21) Perimeter of Rectangle

$$\text{fx } P = 2 \cdot (l + b)$$

[Open Calculator !\[\]\(96cc62f861fdd6e50510c0224a756dff_img.jpg\)](#)

$$\text{ex } 28\text{m} = 2 \cdot (8\text{m} + 6\text{m})$$

22) Perimeter of Rectangle given Area and Breadth

$$\text{fx } P = 2 \cdot \left(\left(\frac{A}{b} \right) + b \right)$$

[Open Calculator !\[\]\(f95dab70c751fda7d824b8b03650f7aa_img.jpg\)](#)

$$\text{ex } 28\text{m} = 2 \cdot \left(\left(\frac{48\text{m}^2}{6\text{m}} \right) + 6\text{m} \right)$$

23) Perimeter of Rectangle given Area and Diagonal

$$\text{fx } P = 2 \cdot \sqrt{d^2 + (2 \cdot A)}$$

[Open Calculator !\[\]\(e9474ce1d70442456f8fe9c393ea149c_img.jpg\)](#)

$$\text{ex } 28\text{m} = 2 \cdot \sqrt{(10\text{m})^2 + (2 \cdot 48\text{m}^2)}$$

24) Perimeter of Rectangle given Area and Length

$$\text{fx } P = \frac{2 \cdot (A + l^2)}{l}$$

[Open Calculator !\[\]\(9db214d549b9aeebe72aa11d3a5c4b1a_img.jpg\)](#)

$$\text{ex } 28\text{m} = \frac{2 \cdot (48\text{m}^2 + (8\text{m})^2)}{8\text{m}}$$



25) Perimeter of Rectangle given Diagonal and Breadth

$$\text{fx } P = 2 \cdot \left(\sqrt{d^2 - b^2} + b \right)$$

[Open Calculator !\[\]\(71ceb62b681518c82e95d615e7265d66_img.jpg\)](#)

$$\text{ex } 28\text{m} = 2 \cdot \left(\sqrt{(10\text{m})^2 - (6\text{m})^2} + (6\text{m}) \right)$$

26) Perimeter of Rectangle given Diagonal and Length

$$\text{fx } P = 2 \cdot \left(l + \sqrt{d^2 - l^2} \right)$$

[Open Calculator !\[\]\(fc3a57079704ef1b99671c8cafae23be_img.jpg\)](#)

$$\text{ex } 28\text{m} = 2 \cdot \left((8\text{m}) + \sqrt{(10\text{m})^2 - (8\text{m})^2} \right)$$

Sides of Rectangle 27) Breadth of Rectangle given Area

$$\text{fx } b = \frac{A}{l}$$

[Open Calculator !\[\]\(d3d0bc9cbc0b5499f7bfafd3278057f7_img.jpg\)](#)

$$\text{ex } 6\text{m} = \frac{48\text{m}^2}{8\text{m}}$$



28) Breadth of Rectangle given Diagonal

$$\text{fx } b = \sqrt{d^2 - l^2}$$

[Open Calculator !\[\]\(8b57f0e15e7dda24cf9977561475f640_img.jpg\)](#)

$$\text{ex } 6\text{m} = \sqrt{(10\text{m})^2 - (8\text{m})^2}$$

29) Breadth of Rectangle given Perimeter

$$\text{fx } b = \frac{P - (2 \cdot l)}{2}$$

[Open Calculator !\[\]\(ceb7cef9f9d693d102dfe501130037c6_img.jpg\)](#)

$$\text{ex } 6\text{m} = \frac{28\text{m} - (2 \cdot 8\text{m})}{2}$$

30) Length of Rectangle given Area and Breadth

$$\text{fx } l = \frac{A}{b}$$

[Open Calculator !\[\]\(5a09a9dfd2f1e923eccb8c24714edf51_img.jpg\)](#)

$$\text{ex } 8\text{m} = \frac{48\text{m}^2}{6\text{m}}$$



31) Length of Rectangle given Area and Diagonal [Open Calculator](#) 

$$\text{fx } l = \sqrt{\frac{d^2 + \sqrt{d^4 - (4 \cdot A^2)}}{2}}$$

$$\text{ex } 8\text{m} = \sqrt{\frac{(10\text{m})^2 + \sqrt{(10\text{m})^4 - (4 \cdot (48\text{m}^2)^2)}}{2}}$$

32) Length of Rectangle given Area and Perimeter [Open Calculator](#) 

$$\text{fx } l = \frac{\frac{P}{2} + \sqrt{\left(\frac{P^2}{4}\right) - (4 \cdot A)}}{2}$$

$$\text{ex } 8\text{m} = \frac{\frac{28\text{m}}{2} + \sqrt{\left(\frac{(28\text{m})^2}{4}\right) - (4 \cdot 48\text{m}^2)}}{2}$$



Variables Used

- $\angle_d(\text{Acute})$ Acute Angle between Diagonals of Rectangle (Degree)
- $\angle_d(\text{Obtuse})$ Obtuse Angle between Diagonals of Rectangle (Degree)
- $\angle_{db}$ Angle between Diagonal and Breadth of Rectangle (Degree)
- $\angle_{dl}$ Angle between Diagonal and Length of Rectangle (Degree)
- **A** Area of Rectangle (Square Meter)
- **b** Breadth of Rectangle (Meter)
- **d** Diagonal of Rectangle (Meter)
- **D_c** Diameter of Circumcircle of Rectangle (Meter)
- **l** Length of Rectangle (Meter)
- **P** Perimeter of Rectangle (Meter)
- **r_c** Circumradius of Rectangle (Meter)



Constants, Functions, Measurements used

- **Function:** **atan**, atan(Number)
Inverse trigonometric tangent 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 
- **Measurement:** **Angle** in Degree (°)
Angle Unit Conversion 



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