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Parallelogram Formulas

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List of 31 Parallelogram Formulas

Parallelogram

Angles of Parallelogram

1) Acute Angle of Parallelogram

$$\text{fx } \angle_{\text{Acute}} = \pi - \angle_{\text{Obtuse}}$$

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

$$\text{ex } 45^\circ = \pi - 135^\circ$$

2) Obtuse Angle of Parallelogram

$$\text{fx } \angle_{\text{Obtuse}} = \pi - \angle_{\text{Acute}}$$

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

$$\text{ex } 135^\circ = \pi - 45^\circ$$

Area of Parallelogram

3) Area of Parallelogram

$$\text{fx } A = e_{\text{Long}} \cdot e_{\text{Short}} \cdot \sin(\angle_{\text{Acute}})$$

[Open Calculator !\[\]\(235bfe13ebf007ce2eea9e689707fac7_img.jpg\)](#)

$$\text{ex } 59.39697\text{m}^2 = 12\text{m} \cdot 7\text{m} \cdot \sin(45^\circ)$$


4) Area of Parallelogram given Area of Long Diagonal Triangle

$$\text{fx } A = 2 \cdot A_{\text{l(Triangle)}}$$

[Open Calculator !\[\]\(291e070cef6c4d5e78fefe4696ef53be_img.jpg\)](#)

$$\text{ex } 60\text{m}^2 = 2 \cdot 30\text{m}^2$$



5) Area of Parallelogram given Diagonals and Acute Angle between Diagonals 

$$\text{fx } A = \frac{1}{2} \cdot d_{\text{Long}} \cdot d_{\text{Short}} \cdot \sin(\angle_{\text{d(Acute)}})$$

[Open Calculator !\[\]\(cbe80b694ebd74fcfe136a095b608235_img.jpg\)](#)


$$\text{ex } 62.0496\text{m}^2 = \frac{1}{2} \cdot 18\text{m} \cdot 9\text{m} \cdot \sin(50^\circ)$$

6) Area of Parallelogram given Diagonals and Obtuse Angle between Diagonals 

$$\text{fx } A = \frac{1}{2} \cdot d_{\text{Long}} \cdot d_{\text{Short}} \cdot \sin(\angle_{\text{d(Obtuse)}})$$

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

$$\text{ex } 62.0496\text{m}^2 = \frac{1}{2} \cdot 18\text{m} \cdot 9\text{m} \cdot \sin(130^\circ)$$

7) Area of Parallelogram given Heights and Acute Angle 

$$\text{fx } A = \frac{h_{\text{Long}} \cdot h_{\text{Short}}}{\sin(\angle_{\text{Acute}})}$$

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

$$\text{ex } 56.56854\text{m}^2 = \frac{5\text{m} \cdot 8\text{m}}{\sin(45^\circ)}$$


8) Area of Parallelogram given Heights and Obtuse Angle 

$$\text{fx } A = \frac{h_{\text{Long}} \cdot h_{\text{Short}}}{\sin(\angle_{\text{Obtuse}})}$$

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

$$\text{ex } 56.56854\text{m}^2 = \frac{5\text{m} \cdot 8\text{m}}{\sin(135^\circ)}$$



9) Area of Parallelogram given Long Edge and Height to Long Edge 

$$fx \quad A = e_{\text{Long}} \cdot h_{\text{Long}}$$

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


$$ex \quad 60\text{m}^2 = 12\text{m} \cdot 5\text{m}$$

10) Area of Parallelogram given Short Edge and Height to Short Edge 

$$fx \quad A = e_{\text{Short}} \cdot h_{\text{Short}}$$

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


$$ex \quad 56\text{m}^2 = 7\text{m} \cdot 8\text{m}$$

11) Area of Parallelogram given Sides and Obtuse Angle between Sides 

$$fx \quad A = e_{\text{Long}} \cdot e_{\text{Short}} \cdot \sin(\angle_{\text{Obtuse}})$$

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

$$ex \quad 59.39697\text{m}^2 = 12\text{m} \cdot 7\text{m} \cdot \sin(135^\circ)$$

Diagonal of Parallelogram Long Diagonal of Parallelogram 12) Long Diagonal of Parallelogram 

$$fx \quad d_{\text{Long}} = \sqrt{(2 \cdot e_{\text{Long}}^2) + (2 \cdot e_{\text{Short}}^2) - d_{\text{Short}}^2}$$

[Open Calculator !\[\]\(cbd8541a32dfc32f356f5c6c994b0a21_img.jpg\)](#)

$$ex \quad 17.46425\text{m} = \sqrt{(2 \cdot (12\text{m})^2) + (2 \cdot (7\text{m})^2) - (9\text{m})^2}$$



13) Long Diagonal of Parallelogram given Area, Short Diagonal and Acute Angle between Diagonals

$$fx \quad d_{\text{Long}} = \frac{2 \cdot A}{d_{\text{Short}} \cdot \sin(\angle_{d(\text{Acute})})}$$

[Open Calculator !\[\]\(e2376d476d06eb31946dc01a69a4403a_img.jpg\)](#)

$$ex \quad 17.40543m = \frac{2 \cdot 60m^2}{9m \cdot \sin(50^\circ)}$$

14) Long Diagonal of Parallelogram given Sides and Acute Angle between Sides

$$fx \quad d_{\text{Long}} = \sqrt{e_{\text{Long}}^2 + e_{\text{Short}}^2 + (2 \cdot e_{\text{Long}} \cdot e_{\text{Short}} \cdot \cos(\angle_{\text{Acute}}))}$$

[Open Calculator !\[\]\(0b5e7e25e8775f7e7e80906ada4f0021_img.jpg\)](#)

$$ex \quad 17.65769m = \sqrt{(12m)^2 + (7m)^2 + (2 \cdot (12m) \cdot (7m) \cdot \cos(45^\circ))}$$

15) Long Diagonal of Parallelogram given Sides and Obtuse Angle between sides

$$fx \quad d_{\text{Long}} = \sqrt{e_{\text{Long}}^2 + e_{\text{Short}}^2 - (2 \cdot e_{\text{Long}} \cdot e_{\text{Short}} \cdot \cos(\angle_{\text{Obtuse}}))}$$

[Open Calculator !\[\]\(bd3b31712ad9bab5a241210fa6925cdd_img.jpg\)](#)

$$ex \quad 17.65769m = \sqrt{(12m)^2 + (7m)^2 - (2 \cdot (12m) \cdot (7m) \cdot \cos(135^\circ))}$$



Short Diagonal of Parallelogram

16) Short Diagonal of Parallelogram

$$\text{fx } d_{\text{Short}} = \sqrt{(2 \cdot e_{\text{Long}}^2) + (2 \cdot e_{\text{Short}}^2) - d_{\text{Long}}^2}$$

[Open Calculator !\[\]\(950a62bbddad88d64435fd35607dfc42_img.jpg\)](#)

$$\text{ex } 7.874008\text{m} = \sqrt{(2 \cdot (12\text{m})^2) + (2 \cdot (7\text{m})^2) - (18\text{m})^2}$$

17) Short Diagonal of Parallelogram given Area, Long Diagonal and Obtuse Angle between Diagonals

$$\text{fx } d_{\text{Short}} = \frac{2 \cdot A}{d_{\text{Long}} \cdot \sin(\angle_{\text{d(Obtuse)}})}$$

[Open Calculator !\[\]\(73002692dd5e7a64e60946be3158e719_img.jpg\)](#)

$$\text{ex } 8.702715\text{m} = \frac{2 \cdot 60\text{m}^2}{18\text{m} \cdot \sin(130^\circ)}$$

18) Short Diagonal of Parallelogram given Sides and Acute Angle between Sides

fx
[Open Calculator !\[\]\(104fbf564e2e5a8fbd84f31656d114c7_img.jpg\)](#)

$$d_{\text{Short}} = \sqrt{e_{\text{Long}}^2 + e_{\text{Short}}^2 - (2 \cdot e_{\text{Long}} \cdot e_{\text{Short}} \cdot \cos(\angle_{\text{Acute}}))}$$

$$\text{ex } 8.614294\text{m} = \sqrt{(12\text{m})^2 + (7\text{m})^2 - (2 \cdot (12\text{m}) \cdot (7\text{m}) \cdot \cos(45^\circ))}$$



19) Short Diagonal of Parallelogram given Sides and Obtuse Angle between Sides

fx

Open Calculator 

$$d_{\text{Short}} = \sqrt{e_{\text{Long}}^2 + e_{\text{Short}}^2 + (2 \cdot e_{\text{Long}} \cdot e_{\text{Short}} \cdot \cos(\angle_{\text{Obtuse}}))}$$

ex

$$8.614294\text{m} = \sqrt{(12\text{m})^2 + (7\text{m})^2 + (2 \cdot (12\text{m}) \cdot (7\text{m}) \cdot \cos(135^\circ))}$$

Perimeter of Parallelogram

20) Perimeter of Parallelogram

$$P = (2 \cdot e_{\text{Long}}) + (2 \cdot e_{\text{Short}})$$

Open Calculator 

$$\text{ex } 38\text{m} = (2 \cdot 12\text{m}) + (2 \cdot 7\text{m})$$

21) Perimeter of Parallelogram given Diagonals and Long Edge

fx

Open Calculator 

$$P = 2 \cdot \left(e_{\text{Long}} + \sqrt{\left(\frac{d_{\text{Long}}^2 + d_{\text{Short}}^2}{2} \right) - e_{\text{Long}}^2} \right)$$

ex

$$39.29706\text{m} = 2 \cdot \left((12\text{m}) + \sqrt{\left(\frac{(18\text{m})^2 + (9\text{m})^2}{2} \right) - (12\text{m})^2} \right)$$

Side of Parallelogram



Long Edge of Parallelogram

22) Long Edge of Parallelogram

$$\text{fx } e_{\text{Long}} = \frac{A}{h_{\text{Long}}}$$

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

$$\text{ex } 12\text{m} = \frac{60\text{m}^2}{5\text{m}}$$

23) Long Edge of Parallelogram given Diagonals and Acute Angle between Diagonals

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

$$e_{\text{Long}} = \frac{1}{2} \cdot \sqrt{d_{\text{Long}}^2 + d_{\text{Short}}^2 + (2 \cdot d_{\text{Long}} \cdot d_{\text{Short}} \cdot \cos(\angle_{\text{d(Acute)}}))}$$

$$\text{ex } 12.38208\text{m} = \frac{1}{2} \cdot \sqrt{(18\text{m})^2 + (9\text{m})^2 + (2 \cdot (18\text{m}) \cdot (9\text{m}) \cdot \cos(50^\circ))}$$


24) Long Edge of Parallelogram given Diagonals and Obtuse Angle between Diagonals

fx
[Open Calculator !\[\]\(e3f255517d37bb309a3a931ec4849e6a_img.jpg\)](#)

$$e_{\text{Long}} = \frac{1}{2} \cdot \sqrt{d_{\text{Long}}^2 + d_{\text{Short}}^2 - (2 \cdot d_{\text{Long}} \cdot d_{\text{Short}} \cdot \cos(\angle_{\text{d(Obtuse)}}))}$$

$$\text{ex } 12.38208\text{m} = \frac{1}{2} \cdot \sqrt{(18\text{m})^2 + (9\text{m})^2 - (2 \cdot (18\text{m}) \cdot (9\text{m}) \cdot \cos(130^\circ))}$$



25) Long Edge of Parallelogram given Diagonals and Short Edge Open Calculator 

$$fx \quad e_{\text{Long}} = \sqrt{\frac{d_{\text{Long}}^2 + d_{\text{Short}}^2 - (2 \cdot e_{\text{Short}}^2)}{2}}$$

$$ex \quad 12.38951\text{m} = \sqrt{\frac{(18\text{m})^2 + (9\text{m})^2 - (2 \cdot (7\text{m})^2)}{2}}$$

26) Long Edge of Parallelogram given Height to Short Edge and Acute Angle between Sides Open Calculator 

$$fx \quad e_{\text{Long}} = \frac{h_{\text{Short}}}{\sin(\angle_{\text{Acute}})}$$

$$ex \quad 11.31371\text{m} = \frac{8\text{m}}{\sin(45^\circ)}$$

Short Edge of Parallelogram 27) Short Edge of Parallelogram Open Calculator 

$$fx \quad e_{\text{Short}} = \frac{A}{h_{\text{Short}}}$$

$$ex \quad 7.5\text{m} = \frac{60\text{m}^2}{8\text{m}}$$



28) Short Edge of Parallelogram given Diagonals and Acute Angle between Diagonals

fx

Open Calculator 

$$e_{\text{Short}} = \frac{1}{2} \cdot \sqrt{d_{\text{Long}}^2 + d_{\text{Short}}^2 - (2 \cdot d_{\text{Long}} \cdot d_{\text{Short}} \cdot \cos(\angle_{d(\text{Acute})}))}$$

ex

$$7.013145\text{m} = \frac{1}{2} \cdot \sqrt{(18\text{m})^2 + (9\text{m})^2 - (2 \cdot (18\text{m}) \cdot (9\text{m}) \cdot \cos(50^\circ))}$$

29) Short Edge of Parallelogram given Diagonals and Long Edge

fx

Open Calculator 

$$e_{\text{Short}} = \sqrt{\frac{d_{\text{Long}}^2 + d_{\text{Short}}^2 - (2 \cdot e_{\text{Long}}^2)}{2}}$$

ex

$$7.648529\text{m} = \sqrt{\frac{(18\text{m})^2 + (9\text{m})^2 - (2 \cdot (12\text{m})^2)}{2}}$$

30) Short Edge of Parallelogram given Diagonals and Obtuse Angle between Diagonals

fx

Open Calculator 

$$e_{\text{Short}} = \frac{1}{2} \cdot \sqrt{d_{\text{Long}}^2 + d_{\text{Short}}^2 + (2 \cdot d_{\text{Long}} \cdot d_{\text{Short}} \cdot \cos(\angle_{d(\text{Obtuse})}))}$$

ex

$$7.013145\text{m} = \frac{1}{2} \cdot \sqrt{(18\text{m})^2 + (9\text{m})^2 + (2 \cdot (18\text{m}) \cdot (9\text{m}) \cdot \cos(130^\circ))}$$



31) Short Edge of Parallelogram given Height to Long Edge and Acute Angle between Sides

$$\text{fx } e_{\text{Short}} = \frac{h_{\text{Long}}}{\sin(\angle_{\text{Acute}})}$$

[Open Calculator !\[\]\(cbe80b694ebd74fcfe136a095b608235_img.jpg\)](#)

$$\text{ex } 7.071068\text{m} = \frac{5\text{m}}{\sin(45^\circ)}$$






Variables Used

- \angle_{Acute} Acute Angle of Parallelogram (Degree)
- $\angle_{\text{d(Acute)}}$ Acute Angle between Diagonals of Parallelogram (Degree)
- $\angle_{\text{d(Obtuse)}}$ Obtuse Angle between Diagonals of Parallelogram (Degree)
- \angle_{Obtuse} Obtuse Angle of Parallelogram (Degree)
- **A** Area of Parallelogram (Square Meter)
- **A_{l(Triangle)}** Area of Long Diagonal Triangle of Parallelogram (Square Meter)
- **d_{Long}** Long Diagonal of Parallelogram (Meter)
- **d_{Short}** Short Diagonal of Parallelogram (Meter)
- **e_{Long}** Long Edge of Parallelogram (Meter)
- **e_{Short}** Short Edge of Parallelogram (Meter)
- **h_{Long}** Height to Long Edge of Parallelogram (Meter)
- **h_{Short}** Height to Short Edge of Parallelogram (Meter)
- **P** Perimeter of Parallelogram (Meter)



Constants, Functions, Measurements used













- **Constant:** π , 3.14159265358979323846264338327950288
Archimedes' constant
- **Function:** **cos**, $\cos(\text{Angle})$
Trigonometric cosine function
- **Function:** **sin**, $\sin(\text{Angle})$
Trigonometric sine function
- **Function:** **sqrt**, $\text{sqrt}(\text{Number})$
Square root function
- **Measurement:** **Length** in Meter (m)
Length Unit Conversion 
- **Measurement:** **Area** in Square Meter (m^2)
Area Unit Conversion 
- **Measurement:** **Angle** in Degree ($^\circ$)
Angle Unit Conversion 



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