Important Grid Formulas PDF

Formulas
Examples
with Units

List of 12
Important Grid Formulas

1) Area and Perimeter of Grid Formulas

1.1) Area of Grid Formula

Evaluate Formula

Formula

$$A = \left(l_{Rectangle} \cdot w_{Rectangle} \right) - \left(N_l \cdot N_w \cdot l_{e(Hole)}^{\,2} \right)$$

Example with Units

$$804\,\text{m}^2 = \left(33\,\text{m} \cdot 28\,\text{m} \right) - \left(6 \cdot 5 \cdot 2\,\text{m}^2 \right)$$

1.2) Perimeter of Grid Formula

Evaluate Formula

Formula

$$P = \left(2 \cdot \left(l_{Rectangle} + w_{Rectangle} \right) \right) + \left(4 \cdot N_l \cdot N_w \cdot l_{e(Hole)} \right)$$

Example with Units

$$362\,\text{m} = \left(2 \cdot \left(33\,\text{m} + 28\,\text{m} \right) \right) + \left(4 \cdot 6 \cdot 5 \cdot 2\,\text{m} \right)$$

2) Bar Thickness of Grid Formulas

2.1) Bar Thickness of Grid given Rectangle Length and Edge Length of Hole Formula

Evaluate Formula

Formula

$$t_{Bar} = \frac{l_{Rectangle} - \left(N_l \cdot l_{e(Hole)} \right)}{N_l + 1}$$

Example with Units

$$3\,\text{m} = \frac{33\,\text{m} - \left(6 \cdot 2\,\text{m} \right)}{6 + 1}$$

2.2) Bar Thickness of Grid given Rectangle Width and Edge Length of Hole Formula

Evaluate Formula

Formula

$$t_{Bar} = \frac{w_{Rectangle} - \left(N_w \cdot l_{e(Hole)} \right)}{N_w + 1}$$

Example with Units

$$3\,\text{m} = \frac{28\,\text{m} - \left(5 \cdot 2\,\text{m} \right)}{5 + 1}$$

3) Edge Length of Grid Hole Formulas

3.1) Edge Length of Hole in Grid given Rectangle Length and Number of Holes in Length Formula

Evaluate Formula

Formula

$$l_{e(Hole)} = \frac{l_{Rectangle} - \left(\left(N_l + 1 \right) \cdot t_{Bar} \right)}{N_l}$$

Example with Units

$$2\,\text{m} = \frac{33\,\text{m} - \left(\left(6 + 1 \right) \cdot 3\,\text{m} \right)}{6}$$

3.2) Edge Length of Hole in Grid given Rectangle Width and Number of Holes in Width Formula

Evaluate Formula

Formula

$$l_{e(Hole)} = \frac{w_{Rectangle} - \left(\left(N_w + 1 \right) \cdot t_{Bar} \right)}{N_w}$$

Example with Units

$$2\,\text{m} = \frac{28\,\text{m} - \left(\left(5 + 1 \right) \cdot 3\,\text{m} \right)}{5}$$

4) Number of Holes in Grid Formulas

4.1) Number of Holes in Length of Grid Formula

Evaluate Formula

Formula

$$N_l = \frac{l_{Rectangle} - t_{Bar}}{l_{e(Hole)} + t_{Bar}}$$

Example with Units

$$6 = \frac{33\,\text{m} - 3\,\text{m}}{2\,\text{m} + 3\,\text{m}}$$

4.2) Number of Holes in Width of Grid Formula

Evaluate Formula

Formula

$$N_w = \frac{w_{Rectangle} - t_{Bar}}{l_{e(Hole)} + t_{Bar}}$$

Example with Units

$$5 = \frac{28\,\text{m} - 3\,\text{m}}{2\,\text{m} + 3\,\text{m}}$$

5) Rectangle Measures of Grid Formulas

5.1) Rectangle Length of Grid Formula

Evaluate Formula

Formula

$$l_{Rectangle} = \left(N_l \cdot l_{e(Hole)} \right) + \left(\left(N_l + 1 \right) \cdot t_{Bar} \right)$$

Example with Units

$$33\,\text{m} = \left(6 \cdot 2\,\text{m} \right) + \left(\left(6 + 1 \right) \cdot 3\,\text{m} \right)$$

5.2) Rectangle Length of Grid given Perimeter and Width of Rectangle Formula

Evaluate Formula

Formula

$$l_{Rectangle} = \frac{P - \left(2 \cdot w_{Rectangle}\right) - \left(4 \cdot N_l \cdot N_w \cdot l_{e(Hole)}\right)}{2}$$

Example with Units

$$32\,\text{m} = \frac{360\,\text{m} - \left(2 \cdot 28\,\text{m}\right) - \left(4 \cdot 6 \cdot 5 \cdot 2\,\text{m}\right)}{2}$$

5.3) Rectangle Width of Grid Formula

Evaluate Formula

Formula

$$w_{Rectangle} = \left(N_w \cdot l_{e(Hole)}\right) + \left(\left(N_w + 1\right) \cdot t_{Bar}\right)$$

Example with Units

$$28\,\text{m} = \left(5 \cdot 2\,\text{m}\right) + \left(\left(5 + 1\right) \cdot 3\,\text{m}\right)$$

5.4) Rectangle Width of Grid given Perimeter and Length of Rectangle Formula

Evaluate Formula

Formula

$$w_{Rectangle} = \frac{P - \left(2 \cdot l_{Rectangle}\right) - \left(4 \cdot N_l \cdot N_w \cdot l_{e(Hole)}\right)}{2}$$

Example with Units

$$27\,\text{m} = \frac{360\,\text{m} - \left(2 \cdot 33\,\text{m}\right) - \left(4 \cdot 6 \cdot 5 \cdot 2\,\text{m}\right)}{2}$$

Variables used in list of Grid Formulas above

- **A** Area of Grid *(Square Meter)*
- $l_{e(Hole)}$ Edge Length of Grid Hole *(Meter)*
- $l_{Rectangle}$ Length of Grid Rectangle *(Meter)*
- N_l Number of Holes in Length of Grid
- N_w Number of Holes in Width of Grid
- **P** Perimeter of Grid *(Meter)*
- t_{Bar} Bar Thickness of Grid *(Meter)*
- $w_{Rectangle}$ Width of Grid Rectangle *(Meter)*

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

- Measurement: **Length** in Meter (m)
  Length Unit Conversion
- Measurement: **Area** in Square Meter (m²)
  Area Unit Conversion

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