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Important Formulas of Pentagram

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List of 23 Important Formulas of Pentagram

Important Formulas of Pentagram

Area of Pentagram

1) Area of Pentagram

Open Calculator

$$fx \quad A = \sqrt{5 \cdot \left(5 - \left(2 \cdot \sqrt{5}\right)\right) \cdot \frac{l_{e(\text{Pentagon})}^2}{2}}$$

$$ex \quad 81.22992 \text{m}^2 = \sqrt{5 \cdot \left(5 - \left(2 \cdot \sqrt{5}\right)\right) \cdot \frac{(10\text{m})^2}{2}}$$

2) Area of Pentagram given Chord Length

Open Calculator

$$fx \quad A = \frac{\sqrt{5 \cdot \left(5 - \left(2 \cdot \sqrt{5}\right)\right)}}{2} \cdot \left(\frac{l_c}{[\text{phi}]}\right)^2$$

$$ex \quad 79.4293 \text{m}^2 = \frac{\sqrt{5 \cdot \left(5 - \left(2 \cdot \sqrt{5}\right)\right)}}{2} \cdot \left(\frac{16\text{m}}{[\text{phi}]}\right)^2$$

3) Area of Pentagram given Long Chord Slice 🔗

fx   **Open Calculator** 🔗

$$A = \frac{\sqrt{5 \cdot \left(5 - \left(2 \cdot \sqrt{5}\right)\right)}}{2} \cdot \left(l_{\text{Long Chord Slice}} \cdot [\text{phi}]\right)^2$$

ex $76.55857 \text{m}^2 = \frac{\sqrt{5 \cdot \left(5 - \left(2 \cdot \sqrt{5}\right)\right)}}{2} \cdot \left(6\text{m} \cdot [\text{phi}]\right)^2$

Chord Slice of Pentagram 🔗

4) Long Chord Slice of Pentagram 🔗

fx $l_{\text{Long Chord Slice}} = \dfrac{l_{e(\text{Pentagon})}}{[\text{phi}]}$ **Open Calculator** 🔗

ex $6.18034\text{m} = \dfrac{10\text{m}}{[\text{phi}]}$

5) Long Chord Slice of Pentagram given Area 🔗

fx

$$l_{\text{Long Chord Slice}} = \frac{1}{[\text{phi}]} \cdot \sqrt{\frac{2 \cdot A}{\sqrt{5 \cdot \left(5 - \left(2 \cdot \sqrt{5}\right)\right)}}}$$

ex $6.133372m = \dfrac{1}{[\text{phi}]} \cdot \sqrt{\dfrac{2 \cdot 80m^2}{\sqrt{5 \cdot \left(5 - \left(2 \cdot \sqrt{5}\right)\right)}}}$

6) Long Chord Slice of Pentagram given Chord Length 🔗

fx $l_{\text{Long Chord Slice}} = l_c - l_{e(\text{Pentagon})}$

ex $6m = 16m - 10m$

7) Long Chord Slice of Pentagram given Perimeter 🔗

fx $l_{\text{Long Chord Slice}} = \dfrac{P}{10}$

ex $6m = \dfrac{60m}{10}$

8) Short Chord Slice of Pentagram 🔗

Open Calculator 🔗

$$fx \quad l_{\text{Short Chord Slice}} = \frac{l_{e(\text{Pentagon})}}{[\text{phi}]^2}$$

$$ex \quad 3.81966m = \frac{10m}{[\text{phi}]^2}$$

9) Short Chord Slice of Pentagram given Area 🔗

fx

Open Calculator 🔗

$$l_{\text{Short Chord Slice}} = \sqrt{\frac{2 \cdot A}{\sqrt{5 \cdot \left(5 - 2 \cdot \sqrt{5}\right)}} \cdot \frac{1}{[\text{phi}]^2}}$$

$$ex \quad 3.790633m = \sqrt{\frac{2 \cdot 80m^2}{\sqrt{5 \cdot \left(5 - 2 \cdot \sqrt{5}\right)}} \cdot \frac{1}{[\text{phi}]^2}}$$

10) Short Chord Slice of Pentagram given Chord Length 🔗

Open Calculator 🔗

$$fx \quad l_{\text{Short Chord Slice}} = \frac{l_c}{[\text{phi}]^3}$$

$$ex \quad 3.777088m = \frac{16m}{[\text{phi}]^3}$$

11) Short Chord Slice of Pentagram given Perimeter ⤢

Open Calculator ⤢

$$fx \quad l_{\text{Short Chord Slice}} = \frac{P}{10 \cdot [\text{phi}]}$$

$$ex \quad 3.708204m = \frac{60m}{10 \cdot [\text{phi}]}$$

Edges of Pentagram ⤢

12) Chord Length of Pentagram ⤢

Open Calculator ⤢

$$fx \quad l_c = [\text{phi}] \cdot l_{e(\text{Pentagon})}$$

$$ex \quad 16.18034m = [\text{phi}] \cdot 10m$$

13) Chord Length of Pentagram given Area ⤢

Open Calculator ⤢

$$fx \quad l_c = \frac{[\text{phi}] + 1}{[\text{phi}]} \cdot \sqrt{\frac{2 \cdot A}{\sqrt{5 \cdot \left(5 - \left(2 \cdot \sqrt{5}\right)\right)}}}$$

$$ex \quad 16.05738m = \frac{[\text{phi}] + 1}{[\text{phi}]} \cdot \sqrt{\frac{2 \cdot 80m^2}{\sqrt{5 \cdot \left(5 - \left(2 \cdot \sqrt{5}\right)\right)}}}$$

14) Chord Length of Pentagram given Long Chord Slice

fx $l_c = l_{e(Pentagon)} + l_{Long\ Chord\ Slice}$

Open Calculator

ex $16m = 10m + 6m$

15) Chord Length of Pentagram given Long Chord Slice and Short Chord Slice

fx $l_c = (2 \cdot l_{Long\ Chord\ Slice}) + l_{Short\ Chord\ Slice}$

Open Calculator

ex $16m = (2 \cdot 6m) + 4m$

16) Chord Length of Pentagram given Perimeter

fx $l_c = \dfrac{P}{10} \cdot (1 + [phi])$

Open Calculator

ex $15.7082m = \dfrac{60m}{10} \cdot (1 + [phi])$

17) Pentagonal Edge Length of Pentagram

fx $l_{e(Pentagon)} = l_{Long\ Chord\ Slice} + l_{Short\ Chord\ Slice}$

Open Calculator

ex $10m = 6m + 4m$

18) Pentagonal Edge Length of Pentagram given Area 📤

Open Calculator 📤

$$fx \quad l_{e(Pentagon)} = \sqrt{\frac{2 \cdot A}{\sqrt{5 \cdot \left(5 - \left(2 \cdot \sqrt{5}\right)\right)}}}$$

$$ex \quad 9.924005m = \sqrt{\frac{2 \cdot 80m^2}{\sqrt{5 \cdot \left(5 - \left(2 \cdot \sqrt{5}\right)\right)}}}$$

19) Pentagonal Edge Length of Pentagram given Chord Length 📤

Open Calculator 📤

$$fx \quad l_{e(Pentagon)} = \frac{l_c}{[phi]}$$

$$ex \quad 9.888544m = \frac{16m}{[phi]}$$

20) Pentagonal Edge Length of Pentagram given Perimeter 📤

Open Calculator 📤

$$fx \quad l_{e(Pentagon)} = \frac{P \cdot [phi]}{10}$$

$$ex \quad 9.708204m = \frac{60m \cdot [phi]}{10}$$

Perimeter of Pentagram 🔗

21) Perimeter of Pentagram 🔗

fx $P = 10 \cdot l_{\text{Long Chord Slice}}$

Open Calculator 🔗

ex $60m = 10 \cdot 6m$

22) Perimeter of Pentagram given Area 🔗

fx $P = \dfrac{10}{[\text{phi}]} \cdot \sqrt{\dfrac{2 \cdot A}{\sqrt{5 \cdot \left(5 - \left(2 \cdot \sqrt{5}\right)\right)}}}$

Open Calculator 🔗

ex $61.33372m = \dfrac{10}{[\text{phi}]} \cdot \sqrt{\dfrac{2 \cdot 80m^2}{\sqrt{5 \cdot \left(5 - \left(2 \cdot \sqrt{5}\right)\right)}}}$

23) Perimeter of Pentagram given Pentagonal Edge Length 🔗

fx $P = \dfrac{10 \cdot l_{e(\text{Pentagon})}}{[\text{phi}]}$

Open Calculator 🔗

ex $61.8034m = \dfrac{10 \cdot 10m}{[\text{phi}]}$

Variables Used

- **A** Area of Pentagram *(Square Meter)*
- **l_c** Chord Length of Pentagram *(Meter)*
- **$l_{e(Pentagon)}$** Pentagonal Edge Length of Pentagram *(Meter)*
- **$l_{Long\ Chord\ Slice}$** Long Chord Slice of Pentagram *(Meter)*
- **$l_{Short\ Chord\ Slice}$** Short Chord Slice of Pentagram *(Meter)*
- **P** Perimeter of Pentagram *(Meter)*

Constants, Functions, Measurements used

- Constant: **[phi]**, 1.6180339887498948482045868343656381
  Golden ratio

- Function: **sqrt**, sqrt(Number)
  Square root function

- Measurement: **Length** in Meter (m)
  Length Unit Conversion 🔗

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

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