

Power Triangle Angle Calculator

Estimate power factor, reactive-power magnitude, and power-triangle angle from known kW and kVA values, with leading or lagging sign left to external review.

Generated October 10, 2026

<https://www.elecatrix.com/power-energy-cost/power-triangle-angle-calculator/>

Inputs

Input	Value	Unit
Real power	120	kW
Apparent power	150	kVA

Results

Result	Value	Unit
Real power used	120	kW
Apparent power used	150	kVA
Power factor	0.8	PF
Power factor	80	%
Reactive power magnitude	90	kVAR
Power-triangle angle	36.8699	deg

Calculation details

Detail	Value	Unit
Calculation basis	Power factor equals real power divided by apparent power. Reactive power and the power-triangle angle use the right-triangle relationship.	
Boundary	Magnitude-only power-triangle arithmetic. It does not determine leading versus lagging sign, harmonics, distortion power factor, utility penalties, capacitor sizing, or equipment approval.	

Formulas

$$PF=\frac{P_{\text{kW}}}{S_{\text{kVA}}}$$

$$PF_{\%}=PF \times 100$$

$$Q_{\text{kVAR}}=\sqrt{S_{\text{kVA}}^2-P_{\text{kW}}^2}$$

Power Triangle Angle Calculator

Estimate power factor, reactive-power magnitude, and power-triangle angle from known kW and kVA values, with leading or lagging sign left to external review.

Generated October 10, 2026

<https://www.elecatrix.com/power-energy-cost/power-triangle-angle-calculator/>

$\theta = \cos^{-1}(\text{PF})$

Warnings and limitations

This is magnitude-only power-triangle arithmetic. It does not identify leading or lagging behavior, harmonics, distortion power factor, utility penalties, capacitor sizing, or equipment approval.