Roof Pitch, Rafter Length and Roof Area

Roof pitch in degrees and as rise per run, rafter length including overhang, and the sloping roof area of a duo-pitch (gable) roof from span, rise and length.

Method: Right-triangle roof geometry

Input parameters

Unit system: SI

Parameter	Value	Unit
Span between wall plates	10.000	m
Rise to the ridge	2.0000	m
Eaves overhang (horizontal)	0.50000	m
Length of the building along the ridge	20.000	m

Calculated results

Parameter	Value	Unit
Pitch	21.801	°
Rise per run	40.000	%
Rafter length including overhang	5.9237	m
Roof area (both slopes)	236.95	m²

Formula and method

$$\theta = \arctan\frac{R}{S/2}, \quad L_r = \sqrt{(S/2)^2 + R^2} + \frac{o}{\cos\theta}, \quad A = 2L_r L$$

Variables

S	Span between wall plates	m
R	Rise to the ridge	m
O	Eaves overhang (horizontal)	m
L	Length of the building along the ridge	m
θ	Pitch	rad
$R/(S/2)$	Rise per run	-
L_r	Rafter length including overhang	m
A	Roof area (both slopes)	m²

Method and standards

Right triangles.

Assumptions and limits

- Symmetric duo-pitch roof.

References

- Right-triangle roof geometry

Report details

Report reference	FCC-ZHA1-6VR0 (the same inputs always give the same reference)
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Calculator	Roof Pitch, Rafter Length and Roof Area
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Release checks	3 reference cases of this calculator, computed independently, are checked on every release

Results are for engineering estimation. Verify critical designs against the referenced standards and your own data.

This calculator online

https://calc.firecad.com/civil/quantities/roof-pitch-rafter

Open this case on calc.firecad.com →

Reopens the calculator with the inputs of this report.