Regular Polygon: Area, Across Flats and Across Corners

Area, perimeter, inradius and circumradius of a regular polygon from the number of sides and side length, with across-flats and across-corners sizes (hexagons).

Method: Regular polygon geometry

Input parameters

Unit system: SI

Parameter	Value	Unit
Number of sides	6.0000	
Side length	11.500	mm

Calculated results

Parameter	Value	Unit
Area	343.60	mm²
Perimeter	69.000	mm
Across flats (2 × inradius)	19.919	mm
Across corners (2 × circumradius)	23.000	mm
Interior angle	120.00	°

Formula and method

$$r_i = \frac{s}{2\tan(\pi/n)}, \quad r_c = \frac{s}{2\sin(\pi/n)}, \quad A = \frac{n s r_i}{2}$$

Variables

n	Number of sides	-
s	Side length	m
A	Area	m²
P	Perimeter	m
AF	Across flats (2 × inradius)	m
AC	Across corners (2 × circumradius)	m
α	Interior angle	rad

Method and standards

Geometry.

Assumptions and limits

- Regular polygon.

References

- Regular polygon geometry

Report details

Report reference	FCC-4HKT-X4BD (the same inputs always give the same reference)
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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/general/geometry/regular-polygon

Open this case on calc.firecad.com →

Reopens the calculator with the inputs of this report.