

HERON'S FORMULA**Area of triangle with given base and height**

$$\text{Area} = \frac{1}{2} \times \text{base} \times \text{height}$$

- **Area of right-angled triangle**

$$\frac{1}{2} \times h \times x$$

where h is the length of altitude and x is the length of the base

- **Area of isosceles triangle**

$$AD = \sqrt{x^2 - \frac{a^2}{4}}$$

where a is the length of the base and x is the length of the remaining sides.

- **Area of equilateral triangle**

$$A = \frac{\sqrt{3}}{4} a^2$$

where a is the length of the each side.

Area of a triangle by Heron's formula

$$\text{Area of a triangle} = \sqrt{s(s-a)(s-b)(s-c)}$$

where a, b, c are the sides of a triangle and S is the semi-perimeter

$$\text{i.e., } S = \frac{a+b+c}{2}$$

Applications of Heron's formula in finding area of a quadrilateral

Heron's formula can be applied to find the area of a quadrilateral by dividing the quadrilateral into two triangular parts. If we join any of the two diagonals of the quadrilateral, then we get two triangles. Area of each triangle is calculated and the sum of two areas is the area of the quadrilateral.