

The Special Triangles

10th Grade

Two triangles whose exact ratios are worth knowing without a calculator.

The 45-45-90 and 30-60-90 triangles have fixed side ratios, giving exact trig values for those angles.

45-45-90 $\rightarrow$ 1 : 1 : $\sqrt{2}$ · 30-60-90 $\rightarrow$ 1 : $\sqrt{3}$: 2

45-45-90

1 : 1 : $\sqrt{2}$

Half a square, cut along the diagonal.

30-60-90

1 : $\sqrt{3}$: 2

Half an equilateral triangle.

$\sin 30^\circ$

$1/2$

Opposite 1, hypotenuse 2.

$\tan 45^\circ$

1

Opposite and adjacent are equal.

The shortest side always faces the smallest angle. That check catches most ratio mix-ups.