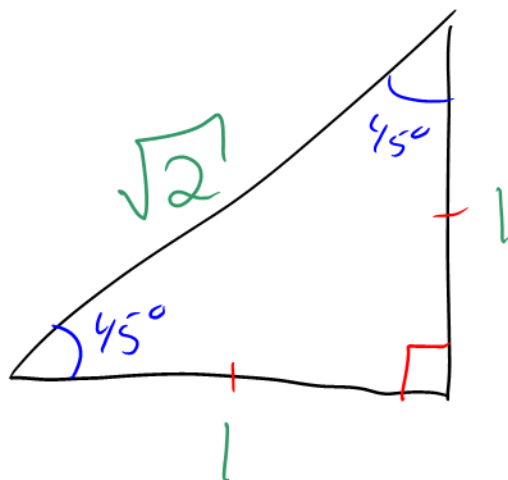


5.2 – Special Triangles

There are two special triangles: **Exact value = no decimal**

① 45-45-90



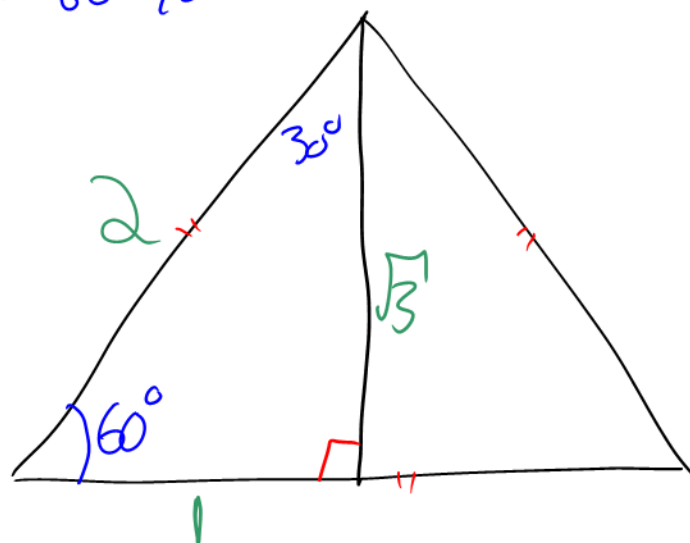
$$1^2 + 1^2 = c^2$$

$$1 + 1 = c^2$$

$$2 = c^2$$

$$\sqrt{2} = c$$

② 30-60-90



$$1^2 + b^2 = 2^2$$

$$b^2 = 4 - 1$$

$$b^2 = 3$$

$$b = \sqrt{3}$$

θ	$\sin \theta$	$\cos \theta$	$\tan \theta$
30°	$\frac{1}{2}$	$\frac{\sqrt{3}}{2}$	$\frac{1}{\sqrt{3}} \times \frac{\sqrt{3}}{\sqrt{3}} = \frac{\sqrt{3}}{3}$
45°	$\frac{1}{\sqrt{2}} \times \frac{\sqrt{2}}{\sqrt{2}} = \frac{\sqrt{2}}{2}$	$\frac{1}{\sqrt{2}} = \frac{\sqrt{2}}{2}$	$\frac{1}{1} = 1$
60°	$\frac{\sqrt{3}}{2}$	$\frac{1}{2}$	$\frac{\sqrt{3}}{1} = \sqrt{3}$

= no calculator

Determine the exact values of the following:

1. $\sin 30 + \cos^2 45 - \tan 45$

$$\begin{aligned} &= \frac{1}{2} + \left(\frac{\sqrt{2}}{2}\right)^2 - 1 \\ &= \frac{1}{2} + \frac{2}{4} - 1 \end{aligned} \quad \begin{aligned} &\rightarrow = \frac{1}{2} + \frac{1}{2} - 1 \\ &= 1 - 1 \\ &= 0 \end{aligned}$$

2. $\tan 30 \times \csc 60 - \sec 60$

$$= \left(\frac{\cancel{\sqrt{3}}}{3}\right)\left(\frac{2}{\cancel{\sqrt{3}}}\right) - \frac{2}{1}$$

$$= \frac{2}{3} - \frac{6}{3} = -\frac{4}{3}$$

Determine the exact values of the following:

3. $\sin^2 60 + \cos^2 60$

$$= \left(\frac{\sqrt{3}}{2}\right)^2 + \left(\frac{1}{2}\right)^2$$

$$= \frac{3}{4} + \frac{1}{4} = 1$$

Determine the following angle:

4. $\frac{\sqrt{2} \sin \theta}{\sqrt{2}} = 1$

$$\sin \theta = \frac{1}{\sqrt{2}}$$

$$\theta = 45^\circ$$

HW: pg 287

#	4bd	9
	5a	12
	6c	13
	7ac	15a