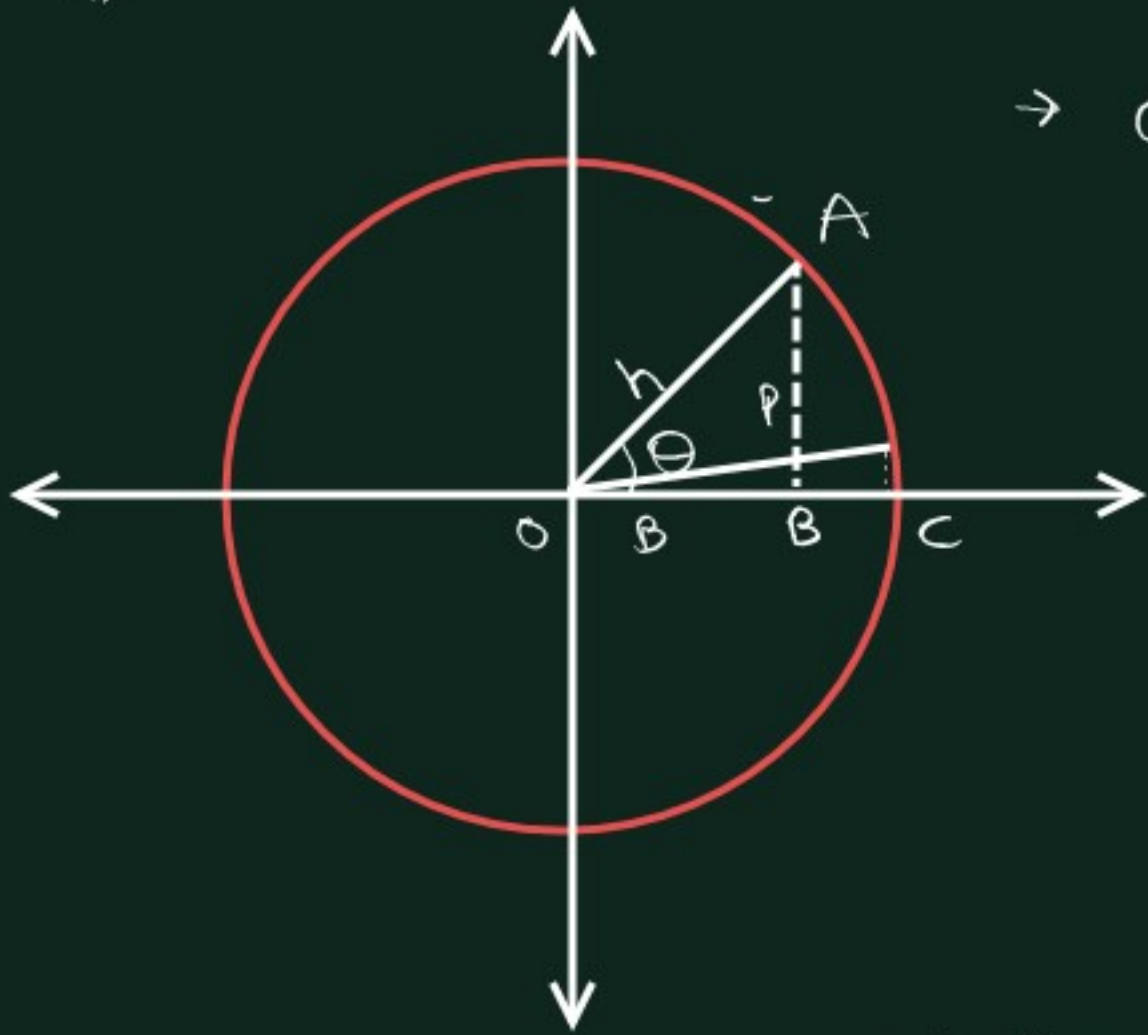


Small Angle Approximation

→ Degree

Radians



$$\rightarrow \text{arc } (AB) = \theta R$$

$$\text{angle} = \frac{\text{arc length}}{\text{Radius (त्रिज्या)}} =$$

(Radians)

① $AB \neq AC$

② as θ is made small

$$AB \approx AC$$

$$\sin \theta = \frac{p}{h} = \frac{AB}{OA} \approx \frac{AC}{OA} = \theta^{\text{radians}}$$

$$\sin \theta \approx \theta^{\text{radians}} \quad (\text{for small } \angle)$$

$$\sin(\theta) \approx \frac{\pi}{20} = \frac{22}{140} = 0.15714$$

$$\sin 45^\circ = \frac{1}{\sqrt{2}} = 0.707$$

\downarrow
 $\frac{\pi}{4}$

* Degree to Radians Conv.

$$180^\circ \rightarrow \pi$$

$$1^\circ \rightarrow \frac{\pi}{180^\circ}$$

$$x^\circ \rightarrow \frac{\pi \times x^\circ}{180^\circ}$$

$$\Rightarrow \cos \theta = \frac{B}{H} \approx \frac{H}{H} = 1 \quad (\text{for small } \theta)$$

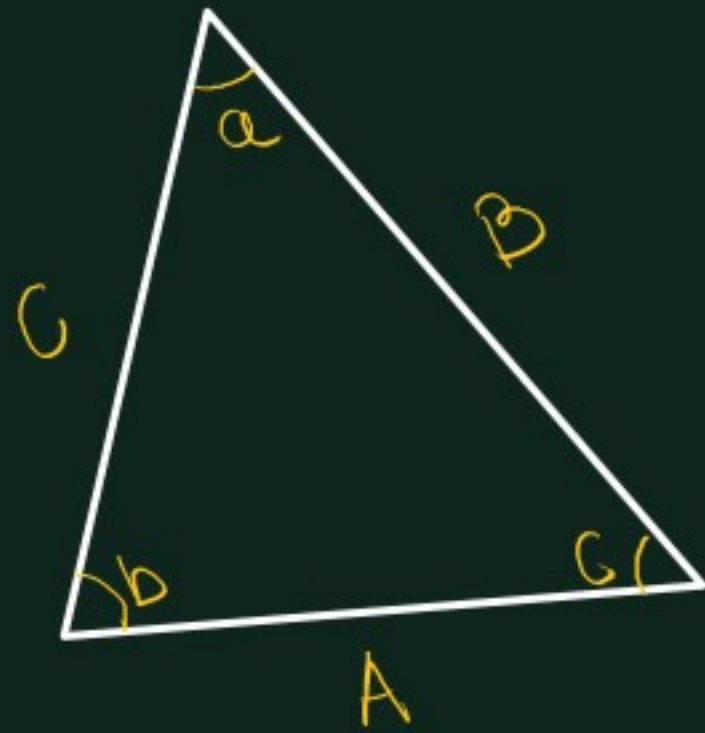
$$\Rightarrow \tan \theta \approx \frac{\sin}{\cos} \approx \frac{\theta}{1} = \theta^{\text{rad}}$$

$$\frac{Q}{=} \sin\left(\frac{\pi}{20}\right) \approx \frac{\pi}{20} = 0.15 \dots$$

$$\frac{Q}{=} \cos(9^\circ) \approx 1$$

$$\frac{Q}{=} \tan(5^\circ) \approx 5^\circ \times \frac{\pi}{180^\circ} = \frac{\pi}{36} \text{ rad}$$

Sine Rule



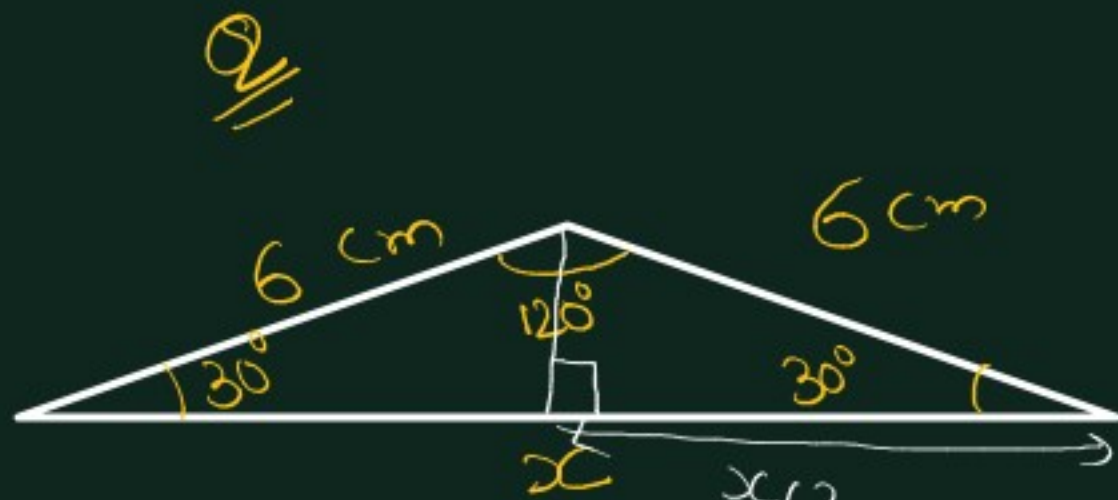
$$\frac{\sin(a)}{A} = \frac{\sin(b)}{B} = \frac{\sin(c)}{C}$$

$$\frac{\sin 120^\circ}{x} = \frac{\sin 30^\circ}{6}$$

$$x = 6 \times \frac{\sin 120^\circ}{\sin 30^\circ}$$

$$= 6 \times \frac{\sqrt{3}/2}{1/2}$$

$$= 6\sqrt{3} \text{ cm}$$

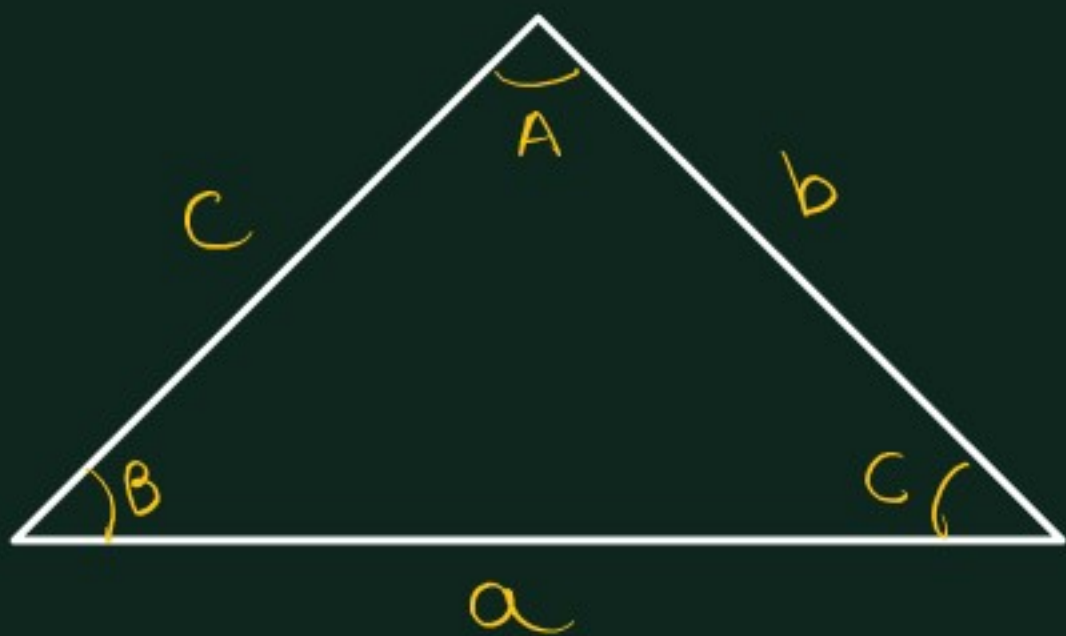


$$\cos 30^\circ = \frac{x}{12}$$

$$\frac{\sqrt{3}}{2} = \frac{x}{12 \times 6}$$

$$x = 6\sqrt{3}$$

Cosine Rule



$$\cos A = \frac{b^2 + c^2 - a^2}{2bc}$$

$$\cos B = \frac{a^2 + c^2 - b^2}{2ac}$$

$$\cos C = \frac{a^2 + b^2 - c^2}{2ab}$$

* Pythagoras triplet

→ 3, 4, 5

→ 5, 12, 13

→ 7, 24, 25

} frequent use

Time-Table (Aarushi Sharma)

→ Wake up 5:00 AM

8:00 - 9:15 PM (Physics class)

9:15 - 10:00 PM (Physics Revise)

(Physics)

(Chemistry class)

(Revise Chemistry class)

(maths solve)

(maths class)

(maths Revise)

(Physics Qn solve)

• 5:30 AM - 7:30 AM

• 8:00 - 10:00 AM

• 10:00 - 11:00 AM

• 11:00 AM - 1:00 PM

• 1:00 PM - 2:30 PM

• 2:30 - 3:30 PM

• 4:00 - 5:00 PM

• 5:00 - 6:00 PM

• 6:30 - 8:00 PM

21 Days Rule



Habit

• vector (\mathbb{R}^n)

• Basic mathematics