



UDAAN



2026

Some Applications Of Trigonometry

MATHS

LECTURE-1

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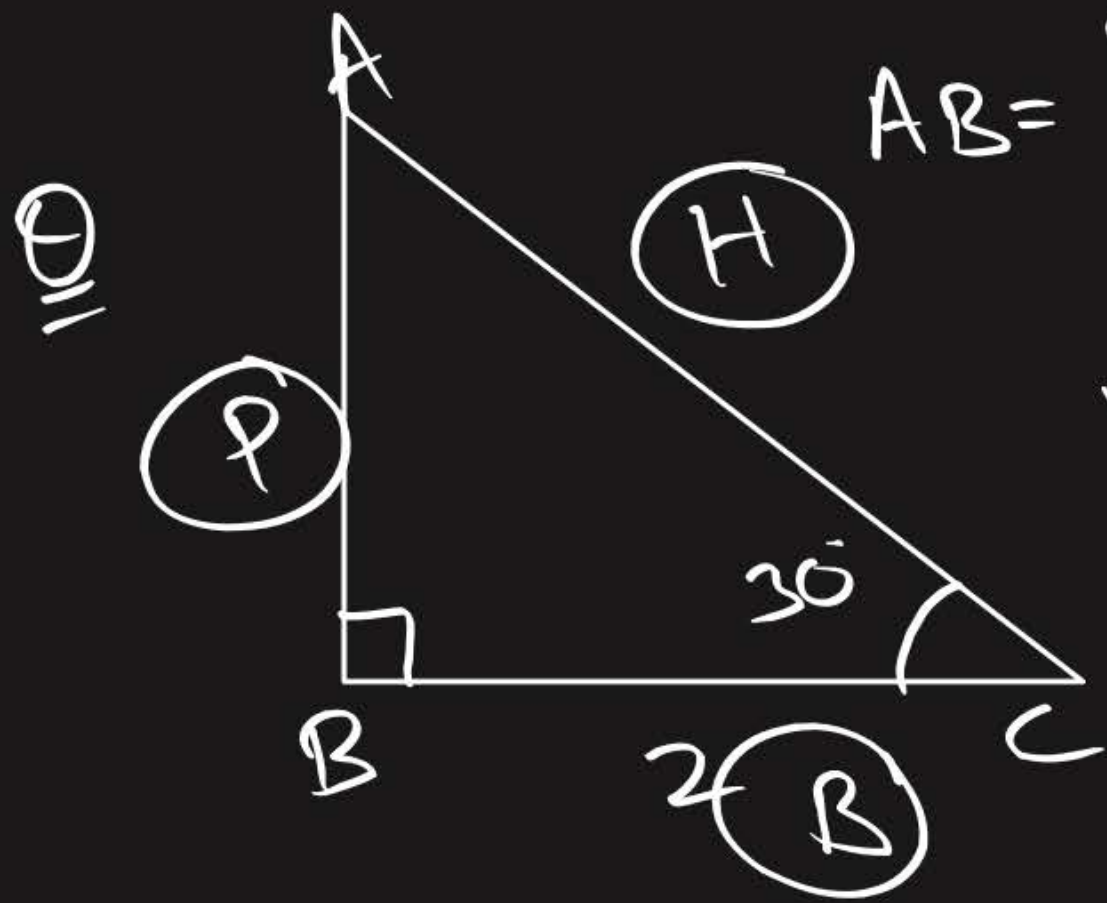
Topics *to be covered*



A Basic baatien

B Angles of elevation, line of sight, angles of depression

C Questions (part 1)



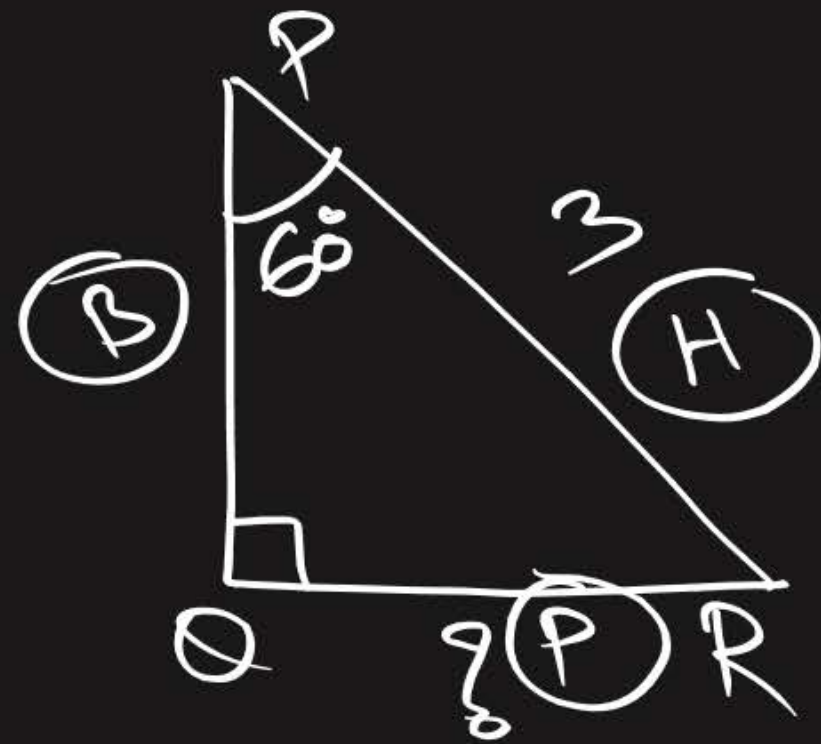
$$\tan 30 = \frac{P}{B}$$

$$\frac{1}{\sqrt{3}} = \frac{AB}{2}$$

$$\frac{\sqrt{3}}{\sqrt{3}} \times \frac{2}{\sqrt{3}} = AB$$

$$\frac{2\sqrt{3}}{3}$$

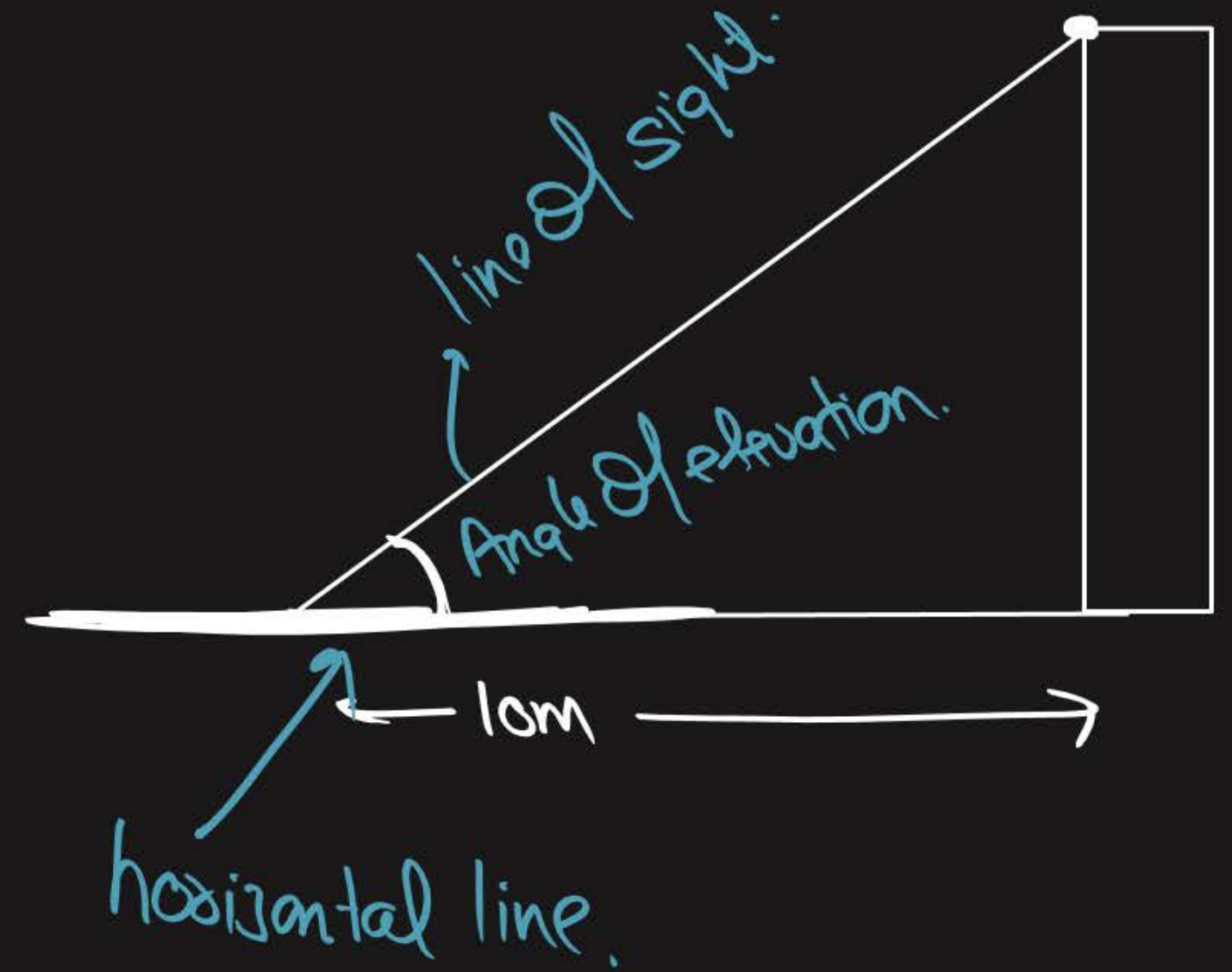
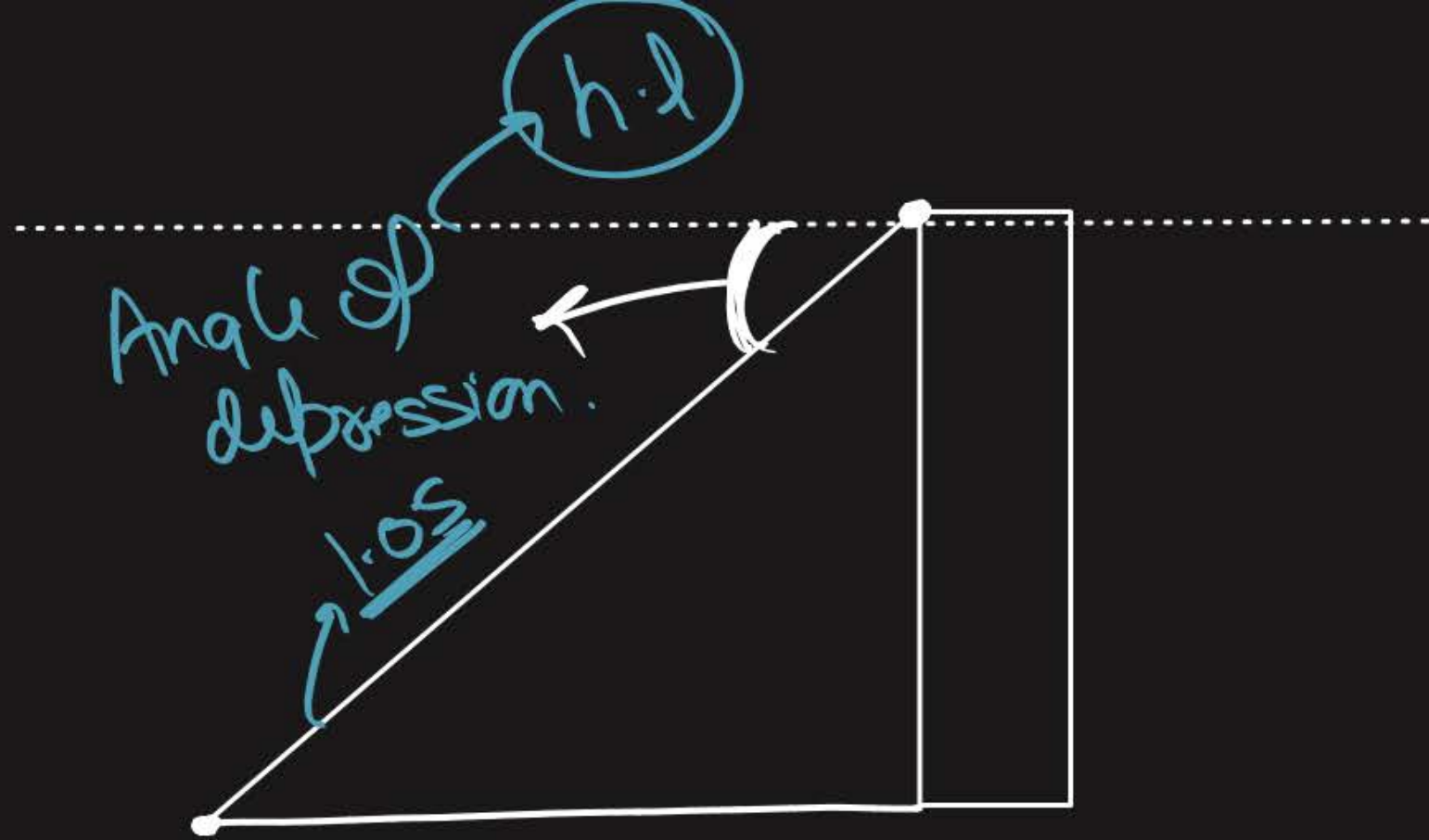
110



$$\sin 60 = \frac{P}{H}$$

$$\frac{\sqrt{3}}{2} = \frac{QR}{3}$$

$$\frac{3\sqrt{3}}{2} = QR$$





Heights and Distances

With the help of trigonometric ratios, we can determine the height of an object or distance between two objects.


Some terms used to determine these are as follows.





Line of Sight

The line of sight is a straight line along which an observer observes an object i.e., the line joining the eye of the observer and the point on the object is called the line of sight.

A white, hand-drawn checkmark is positioned to the right of the text.



Angle of Elevation

If the object is above the horizontal level, the angle between the line of sight and the horizontal is called the angle of elevation.





Angle of Depression

If the object is below the horizontal level, the angle between the line of sight and the horizontal is called the angle of depression.



#points



- ① Question main kho jao...
- ② diagram banao...
- ③ Trigonometry.
- ④ Solve.

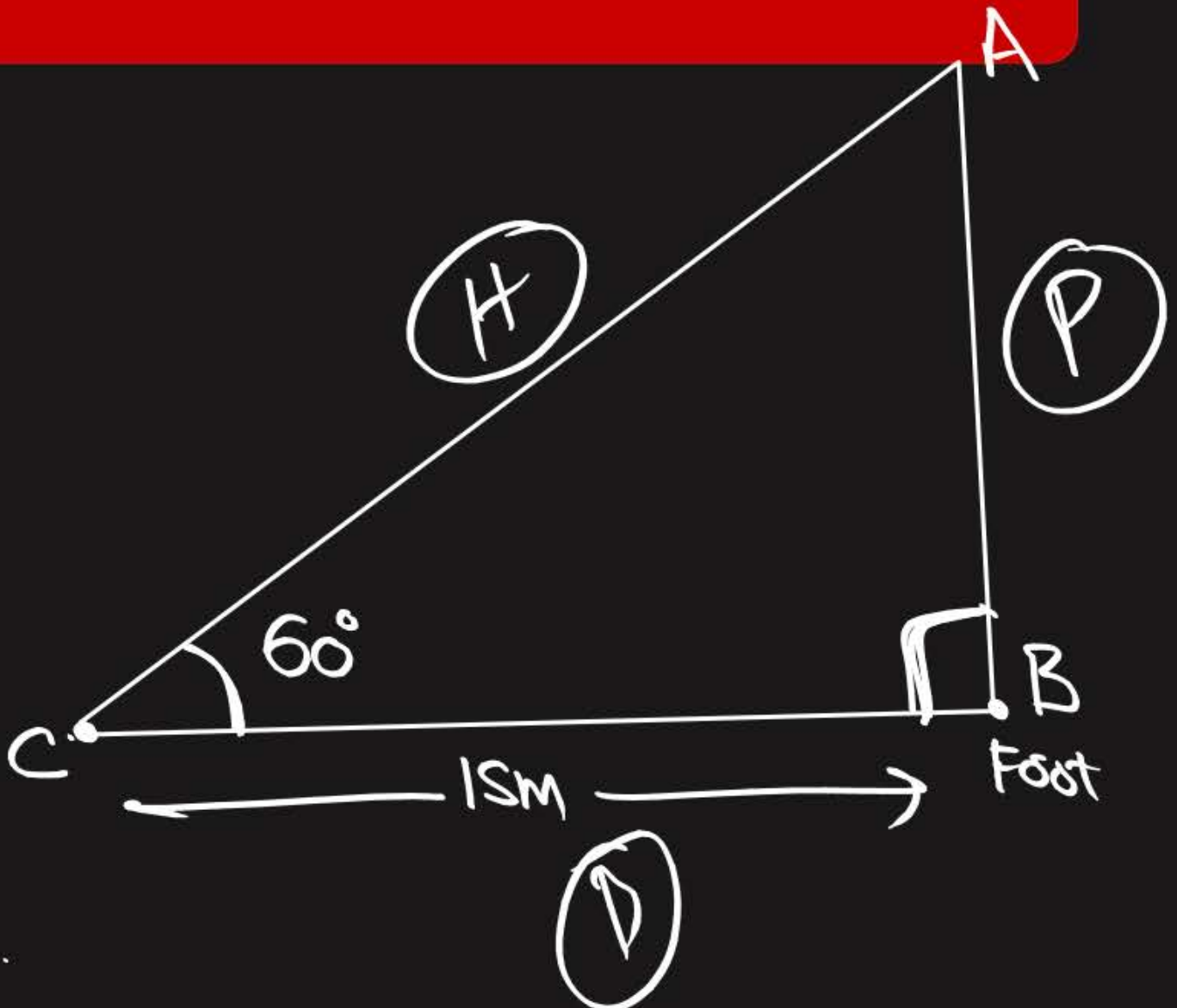
#Q. From a point on the ground, which is 15 m away from the foot of a vertical tower, the angle of elevation of the top of the tower, is found to be 60 deg. The height of the tower (in metres) is

$$AB = ?$$

$$\tan 60^\circ = \frac{P}{B}$$

$$\sqrt{3} = \frac{AB}{15}$$

$$15\sqrt{3} \text{ m} = AB$$



A $5\sqrt{3}$

B $15\sqrt{3}$

C 15

D 7.5

#Q. The angle of elevation of the top of a tower from a point on the ground, which is 30 m away from the foot of the tower is 45° . The height of the tower (in metres) is

A

15

B

30

C

$30\sqrt{3}$

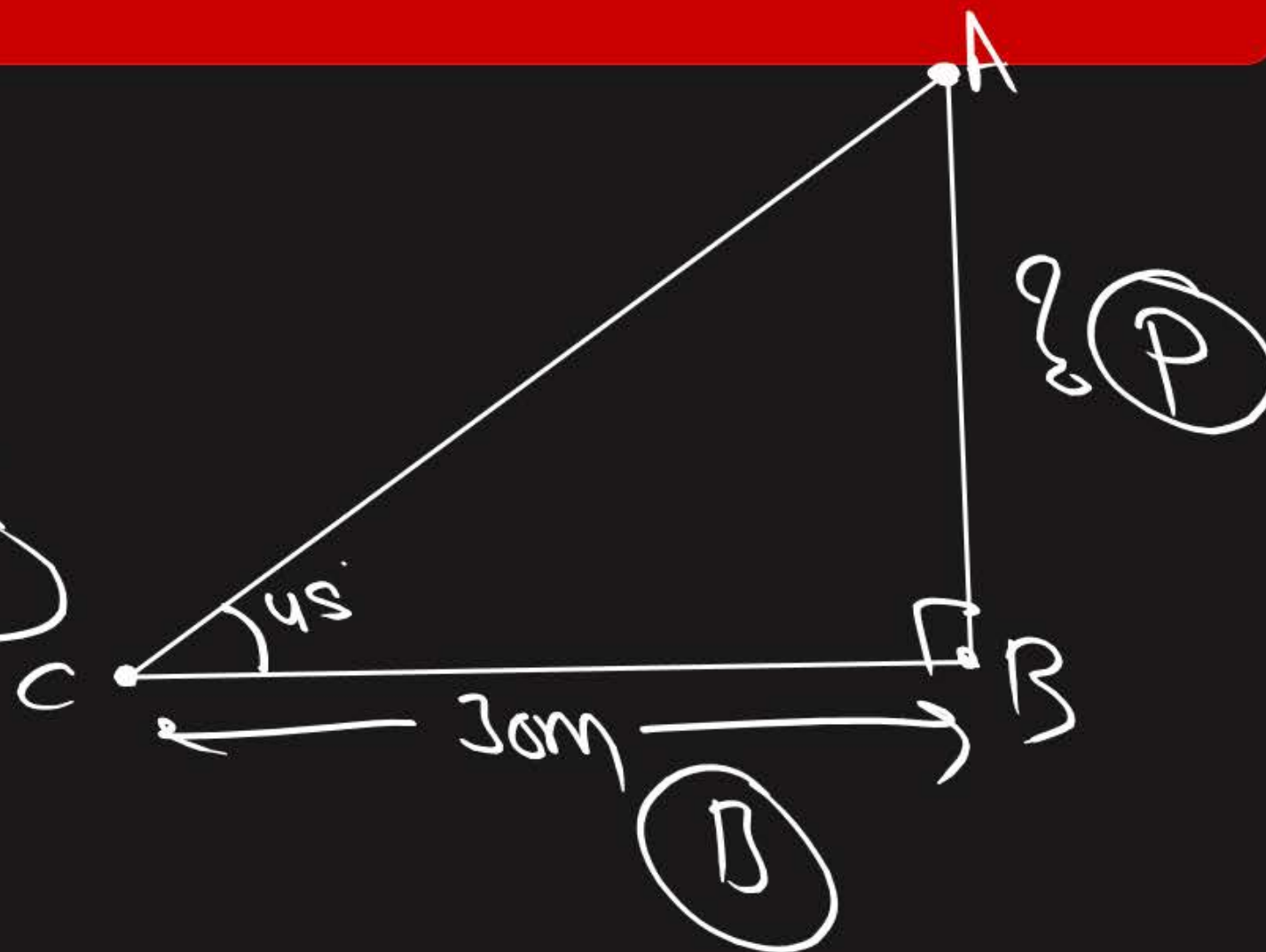
D

$10\sqrt{3}$

$$\tan 45^\circ = \frac{P}{B}$$

$$1 = \frac{AB}{30}$$

$$30 \text{ m} = AB$$



#Q. The figure shows the observation of point C from point A. The angle of depression of A is

A 30°

B 45°

C 50°

D 75°

$$\tan \theta = \frac{P}{B}$$

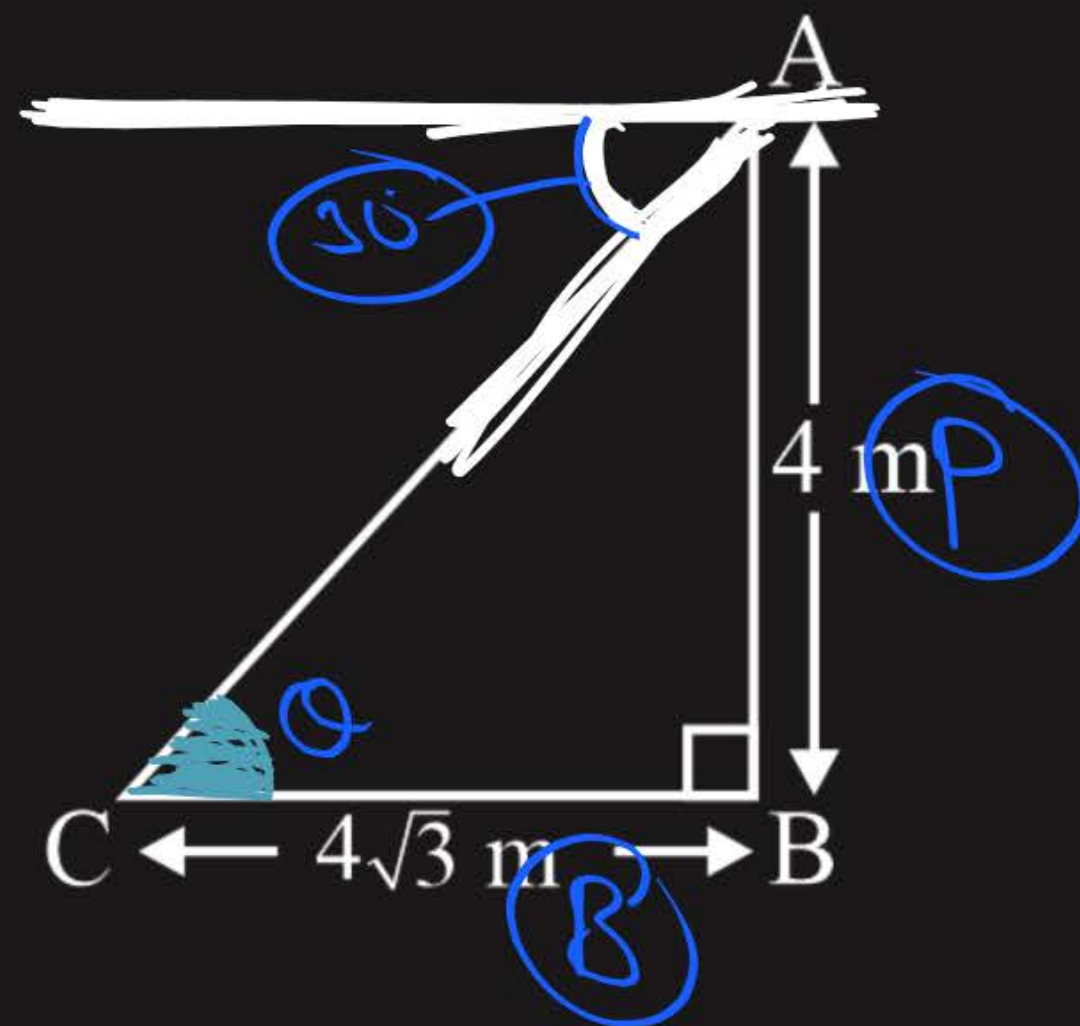
$$\tan \theta = \frac{4}{4\sqrt{3}}$$

$$\tan \theta = \frac{1}{\sqrt{3}}$$

$$\tan \theta = \tan 30^\circ$$

on comp.

$$\theta = 30^\circ$$



#Q. A ladder makes an angle of 60° with the ground when placed against a wall. If the foot of the ladder is 2 m away from the wall, then the length of the ladder (in meters) is

A

$$4/\sqrt{3}$$

B

$$4\sqrt{3}$$

C

$$2\sqrt{2}$$

D

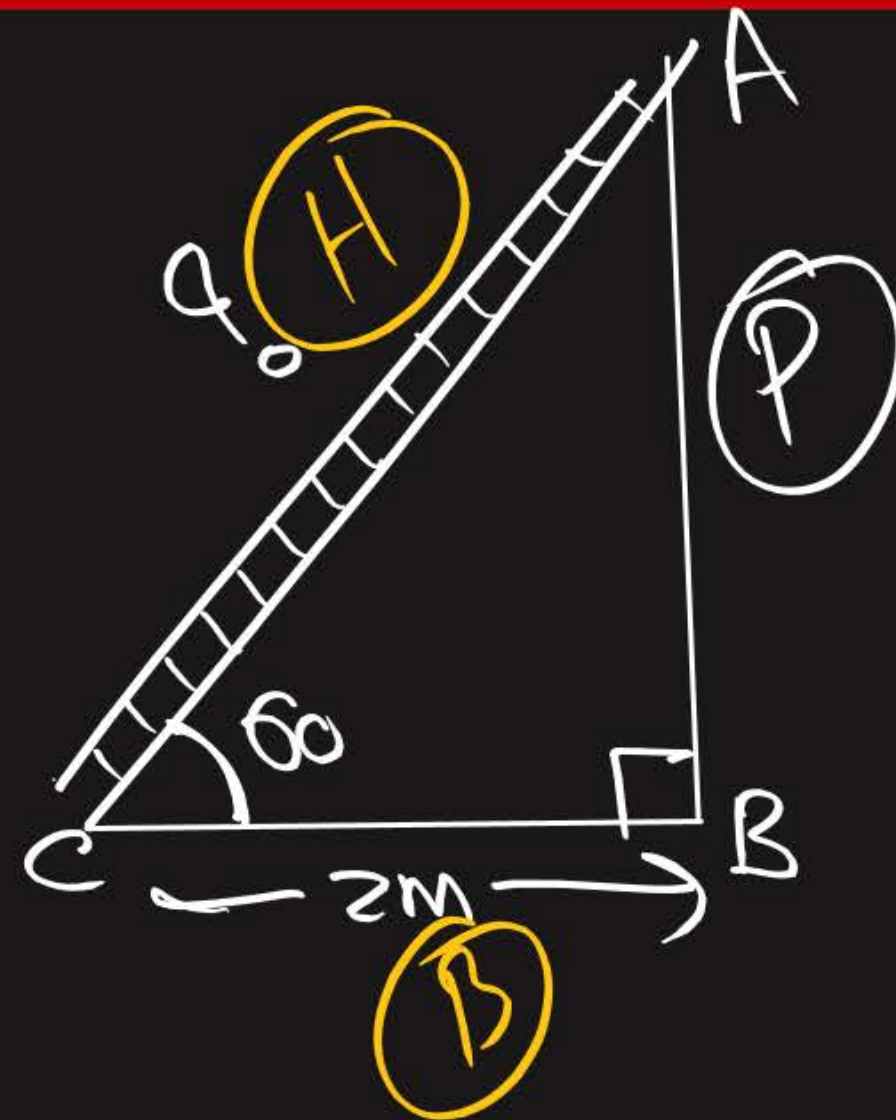
$$4$$

$$\cos 60^\circ = \frac{B}{H}$$

$$\frac{1}{2} = \frac{BC}{AC}$$

$$\frac{1}{2} = \frac{2}{AC}$$

$$AC = 4m$$



#Q. A man sitting on the top of a tower of height 30 m observes the angle of depression of a dog sitting on the ground as 60° . Find the distance between the foot of the tower and the dog. (Use $\sqrt{3} = 1.732$)

A $5\sqrt{3}$ m

B $10\sqrt{3}$ m

C $8\sqrt{3}$ m

D $12\sqrt{3}$ m

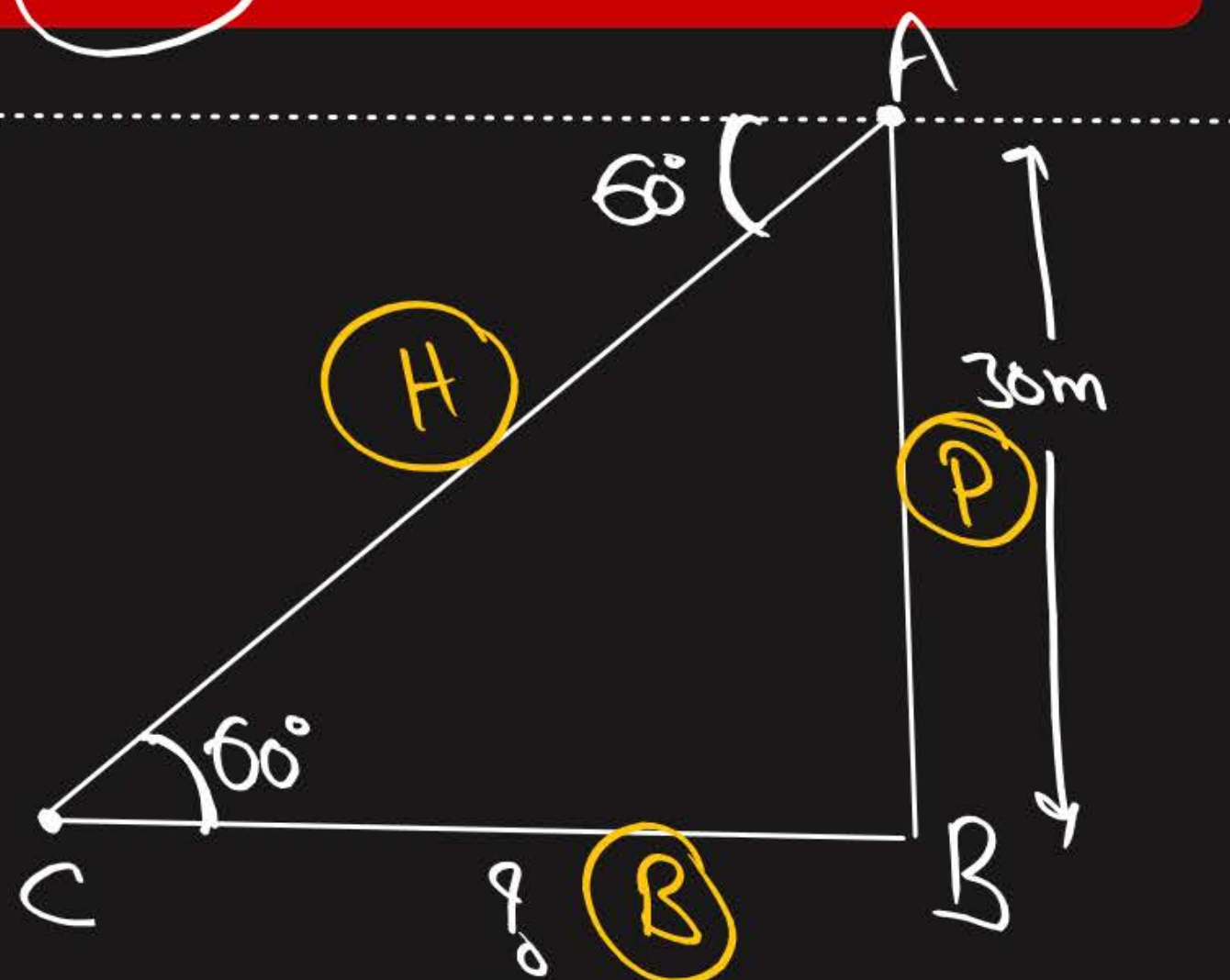
$$\tan 60^\circ = \frac{P}{B}$$

$$\sqrt{3} = \frac{30}{BC}$$

$$BC = \frac{30 \times \sqrt{3}}{\sqrt{3}}$$

$$BC = \frac{30\sqrt{3}}{3}$$

$$BC = 10\sqrt{3} = 10 \times 1.732 = 17.32 \text{ m}$$



#Q. A kite is flying at a height of 45 m above the ground. The string attached to the kite is temporarily tied to a point on the ground. The inclination of the string with the ground is 60° . Find the length of the string assuming that there is no slack in the string. (Use $\sqrt{3} = 1.732$)

A 45.35 m

B 72.96 m

☒ C 51.96 m

D 50 m

$$\sin 60^\circ = \frac{P}{H}$$

$$\frac{\sqrt{3}}{2} = \frac{45}{AC}$$

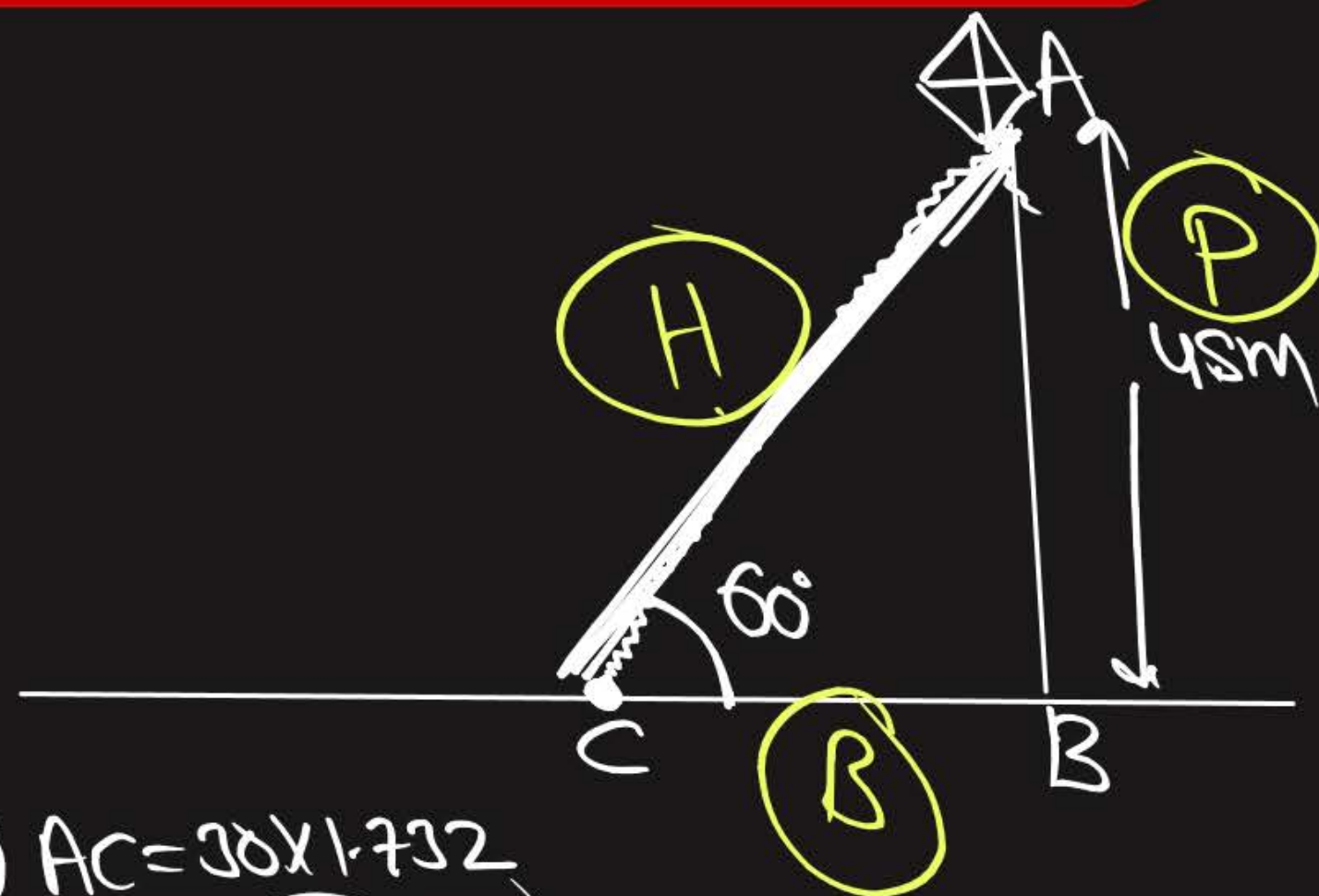
$$AC = \frac{45 \times 2 \times \sqrt{3}}{\sqrt{3}}$$

$$AC = 45 \times 2 \times \sqrt{3}$$

$$AC = 30\sqrt{3}$$

$$AC = 30 \times 1.732$$

$$= 51.96 \text{ m}$$



#last



#Q. An observer 1.5 m tall is 28.5 m away from a tower. The angle of elevation of the top of the tower from her eyes is 45°. What is the height of the tower?

To find: AB

In $\triangle ADE$

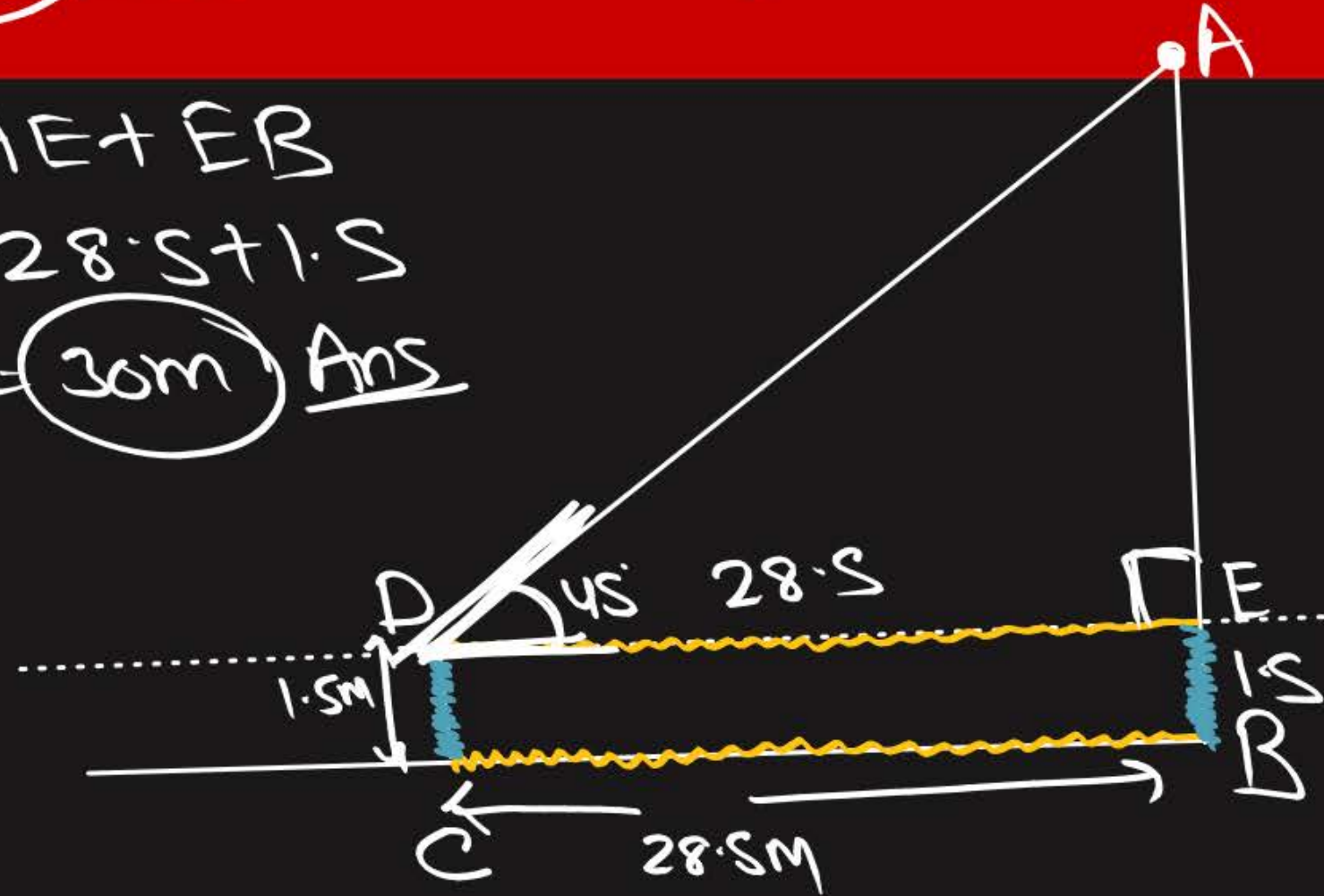
$$\tan 45^\circ = \frac{AE}{DE}$$

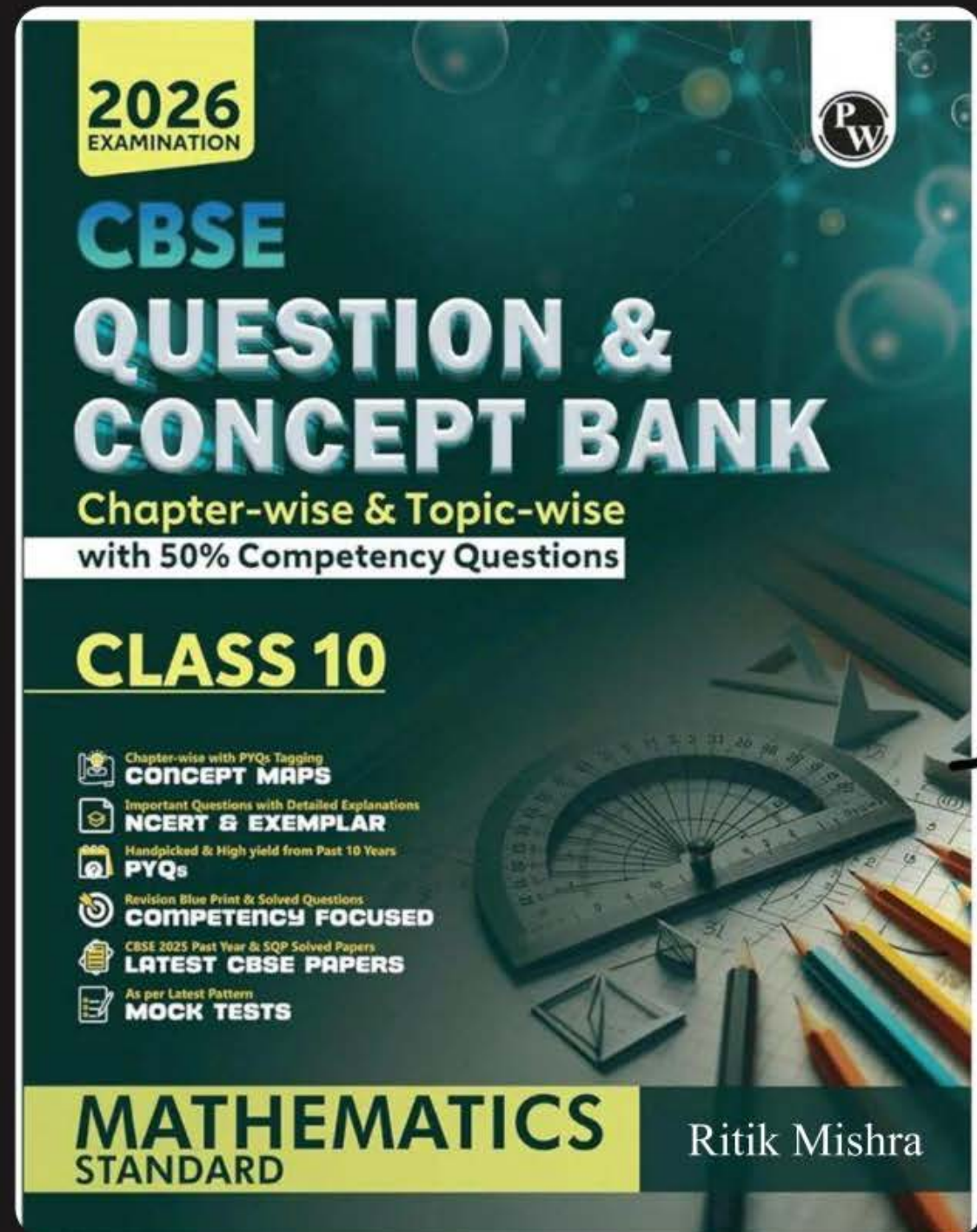
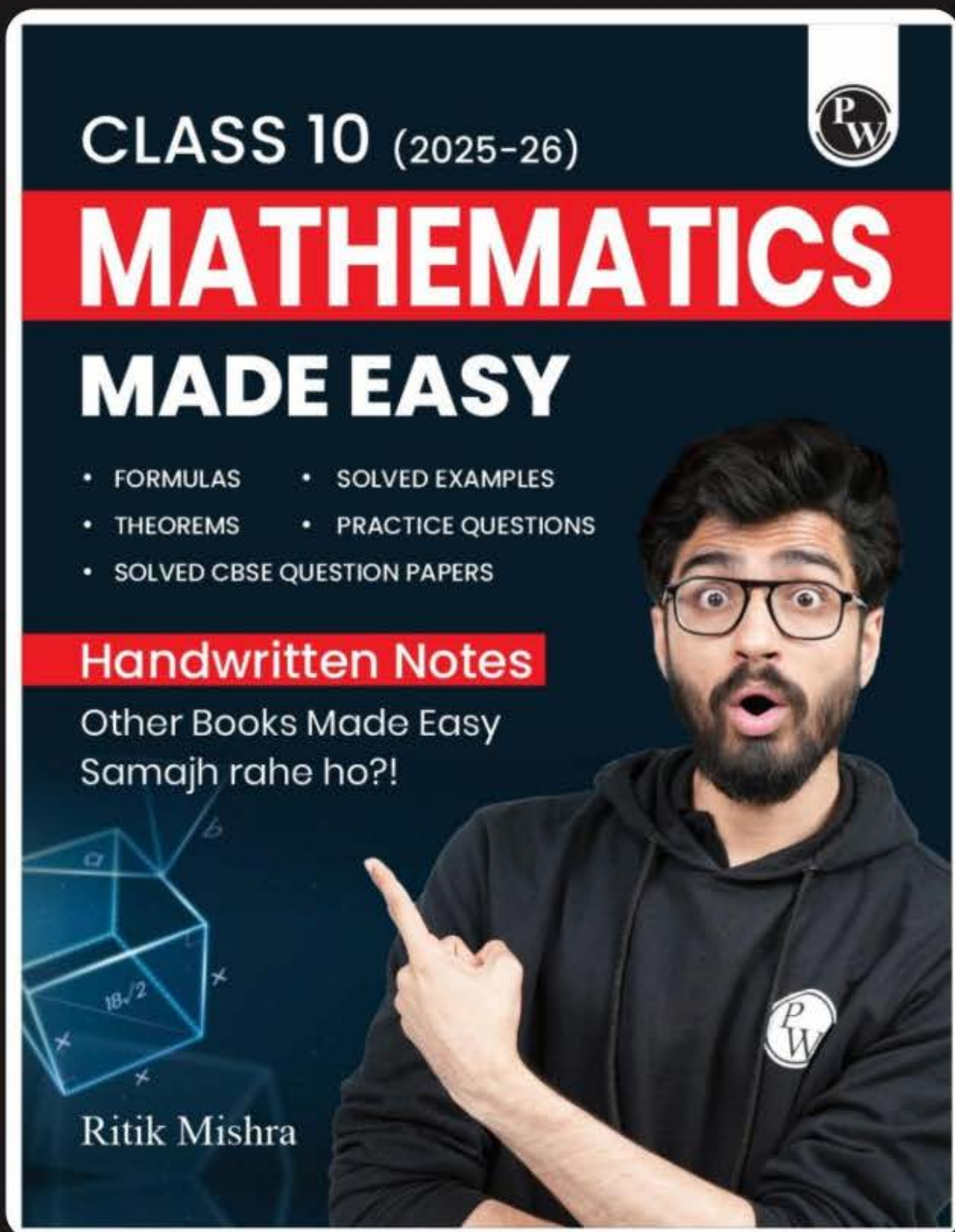
$$1 = \frac{AE}{DE}$$

$$1 = \frac{AE}{28.5}$$

$$28.5 = AE$$

$$\begin{aligned} AB &= AE + EB \\ &= 28.5 + 1.5 \\ &= 30 \text{ m} \text{ Ans} \end{aligned}$$





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RITIK SIR

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Thank
You