UDAAN

2025

Trigonometry

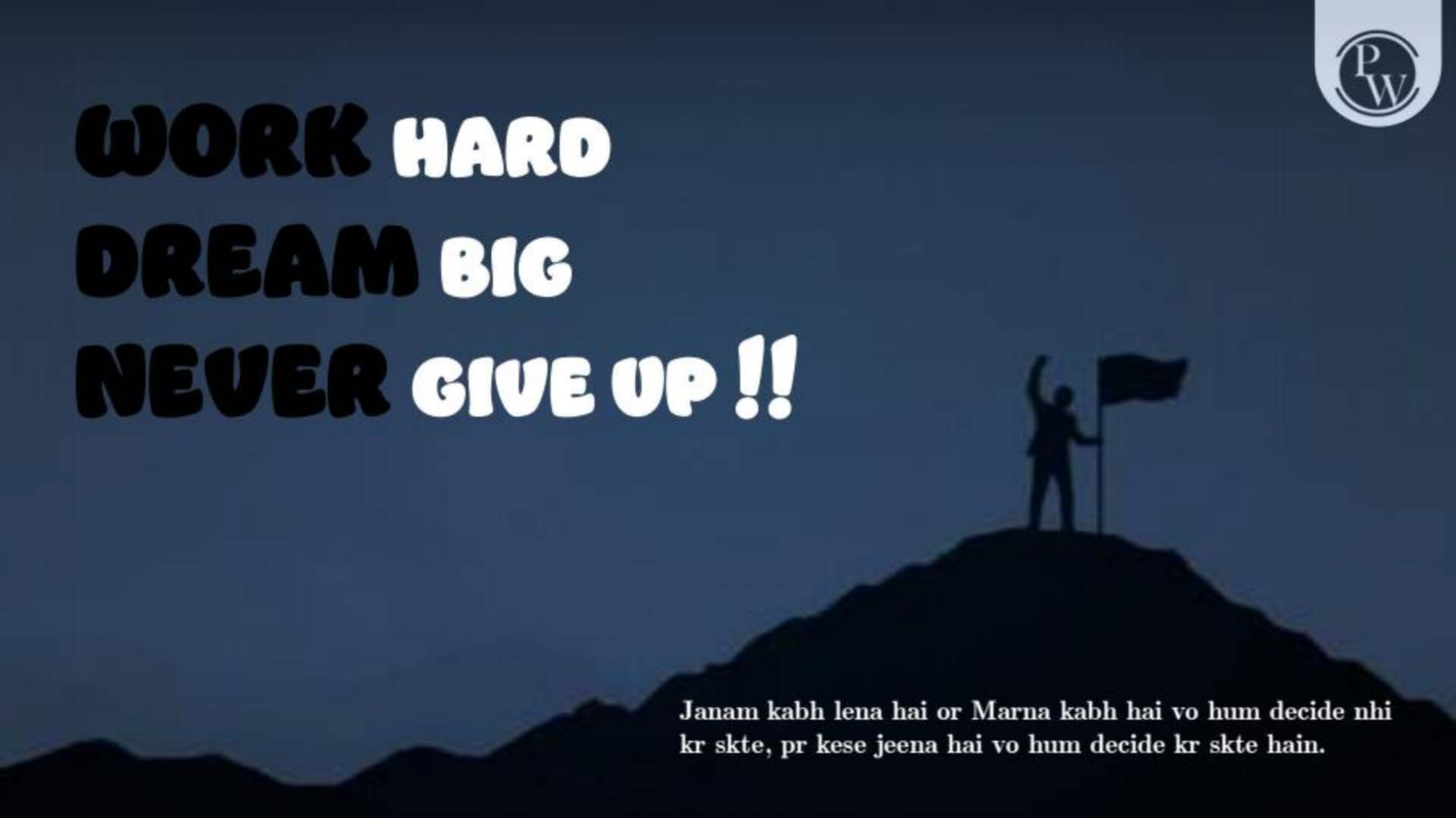
Mathematics | Lecture – 03

By – Ritik Sir

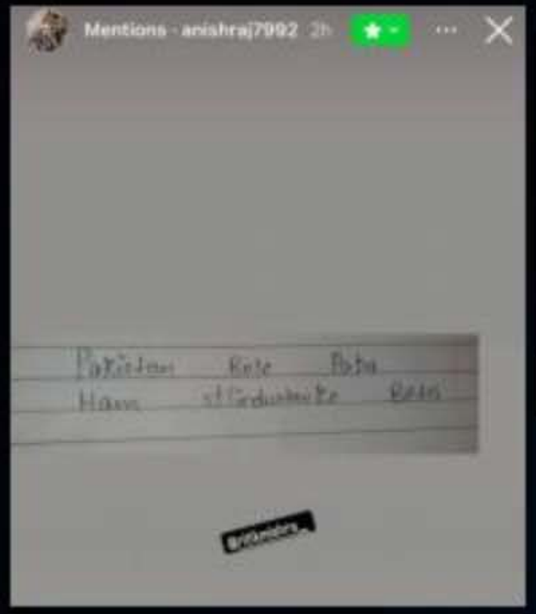
Topics *to be covered*

1. Proof of t ratio for some specific angles
2. Questions.

WORK HARD
DREAM BIG
NEVER GIVE UP !!



Janam kabh lena hai or Marna kabh hai vo hum decide nhi kr skte, pr kese jeena hai vo hum decide kr skte hain.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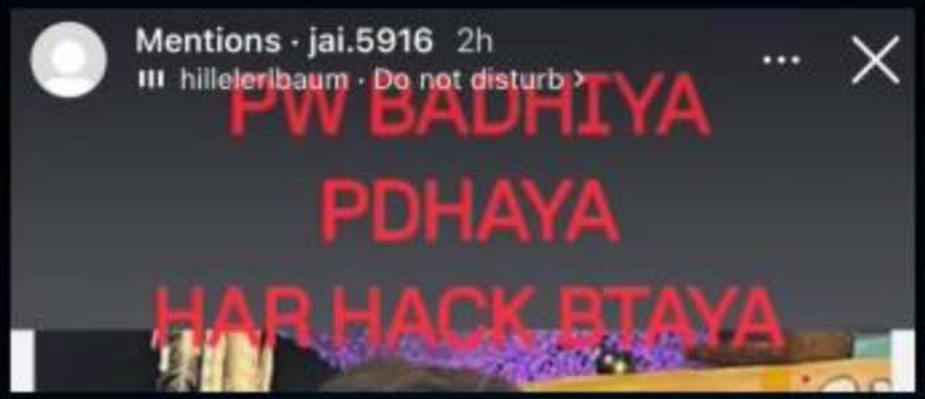
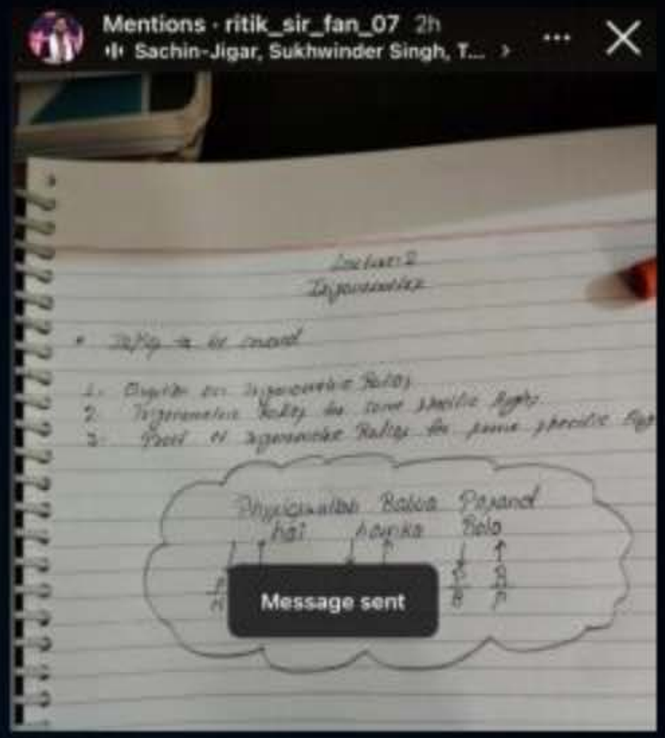
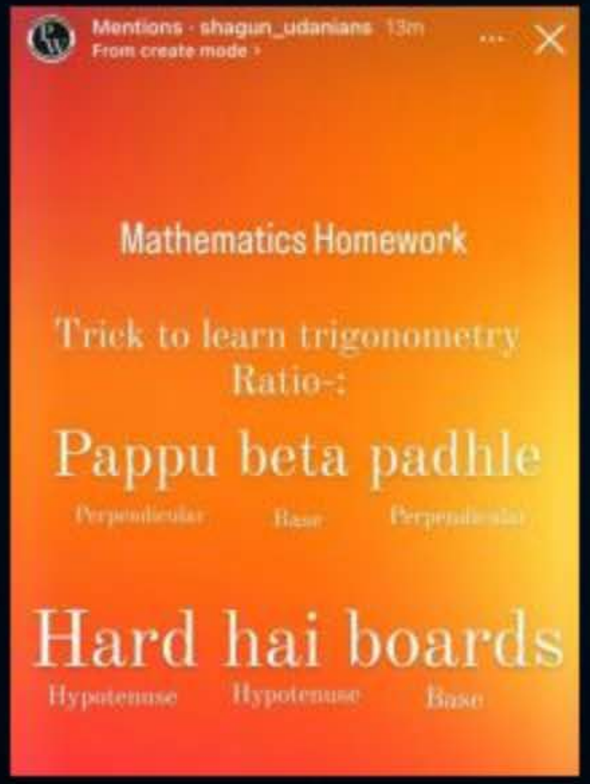

Mentions · jai.5916 2h
hillelerlbaum · Do not disturb
PW BADHIYA
PDHAYA
HAR HACK BTAYA


Mentions · ritik_sir_fan_07 2h
Sachin-Jigar, Sukhwinder Singh, T...
Message sent


Mentions · tanvi90239 1h
From create mode
Here is the answer babua:
Papa bole pakistan
Hindustan hai
bhaibhai

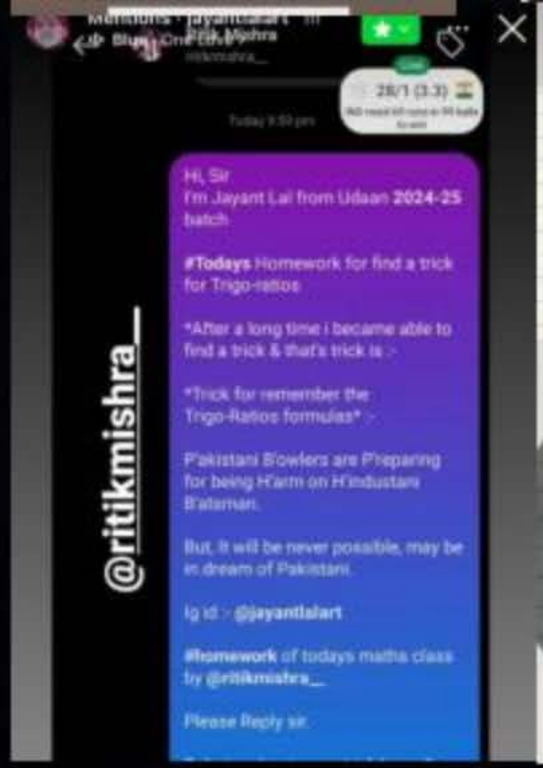

Mentions · shagun_udanians 13m
From create mode
Mathematics Homework
Trick to learn trigonometry
Ratio-:
Pappu beta padhle
Perpendicular Base Perpendicular
Hard hai boards
Hypotenuse Hypotenuse Base

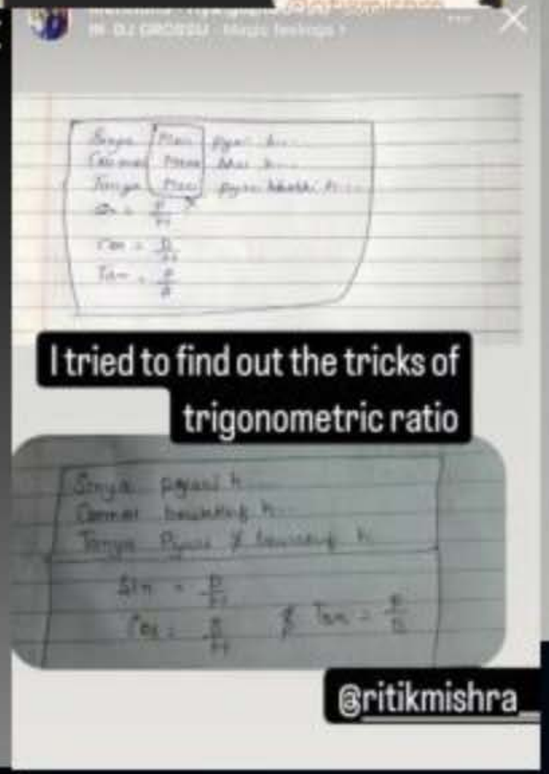

Mentions · bajrang_dal_official_... 2h
TRIGONOMETRY TRICK
PBPHHB
Padhle beta padhle humare
hoshiyar babua.se

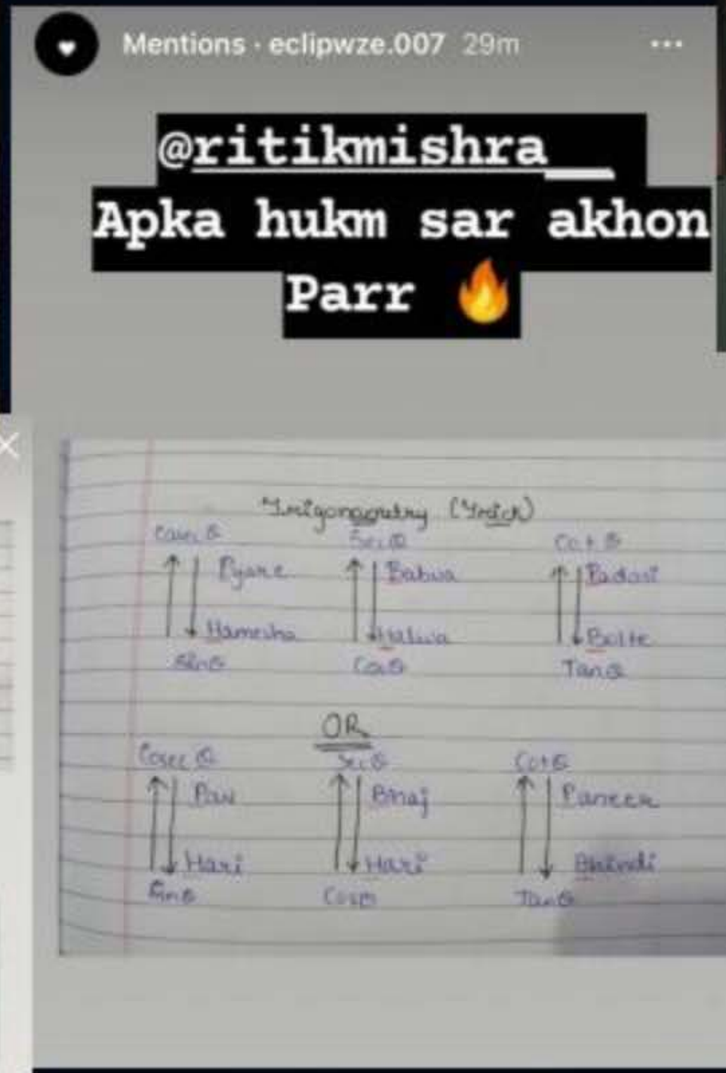

Mentions · 2as838 55m
10th
HOME WORK
COMPLETED
Babua
Pizza Burger pyaar
Hai Hmare babua
Super star hai


Hello sir new trigonometry formula ___>
Padloo Babuuaass Padloo
Ha Haa Babuuaasss


Mentions · udaan__2025 50m
SinA=P/H
CosecA=H/P
CosA=B/H
SecA=H/B
TanA=P/B
CotA=B/P
Pappu Bola Papa
Hum Hindi Bolenge


@ritikmishra__
Hi, Sir
I'm Jayant Lal from Udaan 2024-25 batch
#Todays Homework for find a trick for Trigo-ratios
*After a long time i became able to find a trick & that's trick is :-
Trick for remember the Trigo-Ratios formulas :-
Pakistani Bowlers are Preparing for being H'arm on H'industani B'atsman.
But, It will be never possible, may be in dream of Pakistani.
Ig id :- @jayantlalart
#homework of todays maths class by @ritikmishra__
Please Reply sir


I tried to find out the tricks of trigonometric ratio
@ritikmishra__


Mentions · eclipwze.007 29m
@ritikmishra__
Apka hukm sar akhon Parr 🔥

Trigonometry (Trick)
Pyare
Hamesha
Babua
Halwa
Badaat
Bolte
OR
Pani
Hari
Bhaj
Hari
Paneer
Bhindi


Mentions · whoishubhi 2h
Trick-Physicswallah Banaye Percentage Ha Ha Bangye


Mentions · udaanions_2025 40m
Thanku so much sir.. aaj ki class mein mazza aa gya tha Naya tha but usko aap tough nhi rahne diye ..
Trick 1 :-
P= Papa B = Bole P= putra
H= Hamshe H= Har B= Baat
(btao)
Trick 2:-
P= Pyare B= Babuaa P= poll
(secret)
H= Hamko H= Hamare B= Babuaa
(ke bato)

A) Pabbu Beta Padhle

Hard Hain Boards.

B) Pizza Burger pyaar

hain Hamare Babuas.

Super ⭐ hain

Recall:

Reciprocal

P $\sin\theta \longleftrightarrow \operatorname{cosec}\theta$ H

B $\cos\theta \longleftrightarrow \sec\theta$ H

P $\tan\theta \longleftrightarrow \cot\theta$ B

Quotient

$\tan\theta = \frac{\sin\theta}{\cos\theta}$

$\cot\theta = \frac{\cos\theta}{\sin\theta}$

F.Y.

$\tan 60^\circ = \frac{\sin 60^\circ}{\cos 60^\circ}$

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

$= \sqrt{3}$

Topic : Trigonometric ratios of some specific angles

T. ratios \ θ	0°	30°	45°	60°	90°
sin θ	0	$\frac{1}{2}$	$\frac{1}{\sqrt{2}}$	$\frac{\sqrt{3}}{2}$	1
cos θ	1	$\frac{\sqrt{3}}{2}$	$\frac{1}{\sqrt{2}}$	$\frac{1}{2}$	0
tanθ	0	$\frac{1}{\sqrt{3}}$	1	$\sqrt{3}$	n.d
cosec θ	n.d	2	$\sqrt{2}$	$\frac{2}{\sqrt{3}}$	1
sec θ	1	$\frac{2}{\sqrt{3}}$	$\sqrt{2}$	2	n.d
cot θ	n.d	$\sqrt{3}$	1	$\frac{1}{\sqrt{3}}$	0

$\tan\theta = \frac{\sin\theta}{\cos\theta}$

$\frac{1}{n.d} = 0$

$0 < \theta \leq 90$

Q. $\sin\theta = \frac{1}{2}$

$\theta = ?$

$\sin\theta = \sin 30^\circ$

on comparison

$\theta = 30^\circ$

Q. $\sin 2\theta = \frac{1}{2}$

$\theta = ?$

$\sin 2\theta = \sin 30^\circ$

on comparison –

$2\theta = 30^\circ$

$\theta = 15^\circ$

Topic : T Rations for some specific angles

#Q. Find the value of θ in each of the following:

(i) $2\sin 2\theta = \sqrt{3}$

$\sin 2\theta = \frac{\sqrt{3}}{2}$

$\sin 2\theta = \sin 60^\circ$

on comparison

$2\theta = 60^\circ$

$\theta = 30^\circ$

(ii) $2\cos 3\theta = 1$

$2\cos 3\theta = 1$

$\cos 3\theta = \frac{1}{2}$

$\cos 3\theta = \cos 60^\circ$

on comparison

$3\theta = 60$

$\theta = 20$

Topic : T Rations for some specific angles

#Q. Find the value of x in each of the following:

(i) $\tan 3x = \sin 45° \cos 45° + \sin 30°$

$\tan 3x = \frac{1}{\sqrt{2}} \times \frac{1}{\sqrt{2}} + \frac{1}{2}$

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

$= \frac{2}{2}$

$\tan 3x = 1$

$\tan 3x = \tan 45°$

On comparison..

$3x = 45°$

$x = \frac{45}{3}$

$x = 15°$

Topic : T Rations for some specific angles

#Q. Find the value of x in each of the following:

(ii) $\cos x = \cos 60° \cos 30° + \sin 60° \sin 30°$

$\cos x = \frac{1}{2} \times \frac{\sqrt{3}}{2} + \frac{\sqrt{3}}{2} \times \frac{1}{2}$

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

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

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

$\cos x = \frac{\sqrt{3}}{2}$

$\cos x = \cos 30°$

on 'C'

$x = 30°$

Topic : T Rations for some specific angles

#Q. If $\sin(A + B) = 1$ and $\sin(A - B) = 1/2$, $0 \le A + B \le 90°$ and $A > B$, then find A and B.

[Board Term – I, 2016]

$\sin(A+B) = 1$ $\quad$ $\sin(A-B) = \frac{1}{2}$

$\sin(A+B) = \sin 90°$ $\quad$ $\sin(A-B) = \sin 30°$

on comp. $\quad$ on c...

$A+B = 90°$ ... (1) $\quad$ $A-B = 30°$ ... (2)

$A+B = 90°$

$A-B = 30°$

(+)

$2A = 120°$

$A = 60°$

$A+B = 90°$

$60 + B = 90$

$B = 30°$

Topic : T Ratios for some specific angles

#Q. Find acute angles A and B, if $\sin(A + 2B) = \frac{\sqrt{3}}{2}$ and $\cos(A + 4B) = 0$, $A > B$.

angle less than 90°

$\sin(A+2B) = \sin 60^\circ$

on comp...

$A+2B = 60^\circ$ — (1)

$\cos(A+4B) = 0$

$\cos(A+4B) = \cos 90^\circ$

on comp...

$A+4B = 90^\circ$ — (2)

$A+2B = 60^\circ$

$A+4B = 90^\circ$

$-2B = -30$

$B = \frac{-30}{-2}$

$B = 15^\circ$

$A+2(15) = 60$

$A+30 = 60$

$A = 30^\circ$

Ans

Topic : T Rations for some specific angle

#Q. If $\sqrt{3}\sin\theta - \cos\theta = 0$ and $0° < \theta < 90°$, find the value of θ.

[Board SQP, 2020-21]

$\sqrt{3}\sin\theta - \cos\theta = 0$

$\sqrt{3}\sin\theta = \cos\theta \times 1$

$\frac{\sqrt{3}\sin\theta}{\cos\theta} = 1$

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

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

$\tan\theta = \tan 30°$

$\theta = 30°$

When a 10th Class student solves Trigonometry problem without converting
Tan into Sin and Cos :

Topic : T Rations for some specific angles

#Q. If $\tan(3x + 30°) = 1$, then find the value of x. **[Board Term – I, 2015]**

A) 5

B) 25

C) 15

D) 2

$\tan(3x+30) = 1$

$\tan(3x+30) = \tan 45°$

$3x+30 = 45°$

$3x = 15°$

$x = 5$

Topic : T Rations for some specific angles

#Q. If $\sin\alpha = \frac{\sqrt{3}}{2}$ and $\cos\beta = 0$, then find the value of $\beta - \alpha$.

[CBSE SQP, 2020]

$\sin\alpha = \sin 60^\circ$

$\alpha = 60^\circ$

$\cos\beta = \cos 90^\circ$

$\beta = 90^\circ$

$90^\circ - 60^\circ = 30^\circ$

Topic : T Rations for some specific angles

#Q. In a right triangle ABC, right angled at B, the ratio of AB to AC is $1:\sqrt{2}$. Find the value of $\frac{2\tan A}{1-\tan^2 A}$.

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

$$(AC)^2 = (AB)^2 + (BC)^2$$

$$(\sqrt{2}x)^2 = (1x)^2 + (BC)^2$$

$$2x^2 = 1x^2 + BC^2$$

$$2x^2 - 1x^2 = BC^2$$

$$1x^2 = BC^2$$

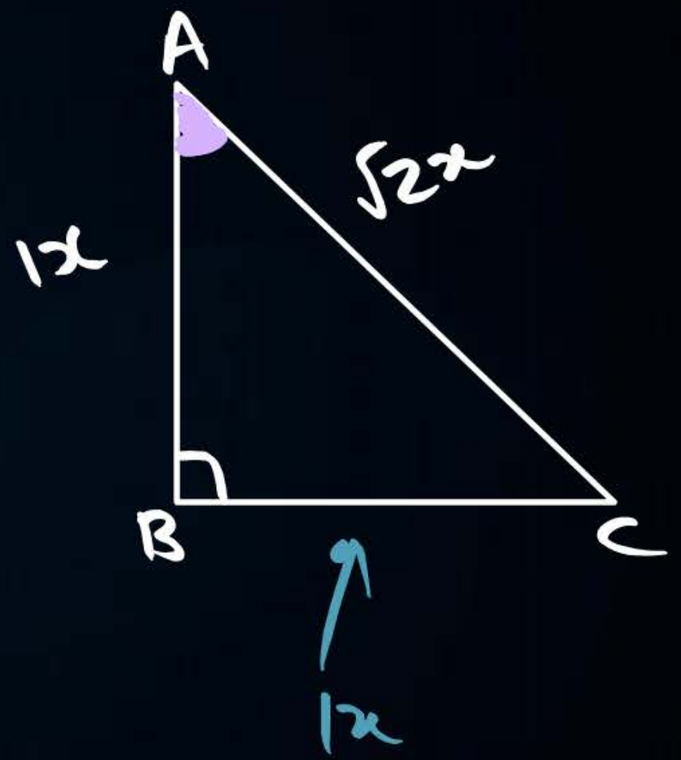
$$\pm\sqrt{1x^2} = BC$$

$$1x = BC$$

$$\tan A = \frac{P}{B} = \frac{BC}{AB} = \frac{1x}{1x}$$

$$\tan A = 1$$

$$= \frac{2 \times 1}{1-(1)^2} = \frac{2}{0} = \text{n.d}$$



Topic : T Rations for some specific angles

#Q. Given that $\sec\theta = \sqrt{2}$ the value of $\frac{1+\tan\theta}{\sin\theta}$ is

M.I

$\sec\theta = \sqrt{2}$

$\sec\theta = \frac{H}{B} = \frac{\sqrt{2}}{1}$

$H = \sqrt{2}x$

$B = 1x$

$P = 9$

M.II

$\sec\theta = \sqrt{2}$

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

$\cos\theta = \cos 45^\circ$

$\theta = 45^\circ$

$\frac{1+\tan\theta}{\sin\theta}$

$= \frac{1+\tan 45^\circ}{\sin 45^\circ}$

$= \frac{1+1}{\frac{1}{\sqrt{2}}}$

$= \left[\frac{2}{\frac{1}{\sqrt{2}}}\right] = 2\sqrt{2}$

Topic : T Rations for some specific angles

#Q. If the value of $\sin\theta = 1/2$, then find the value of $3\cos\theta - 4\cos^3\theta$.

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

$\sin\theta = \sin 30^\circ$

$\theta = 30^\circ$

$= 3\cos 30 - 4\cos^3 30$

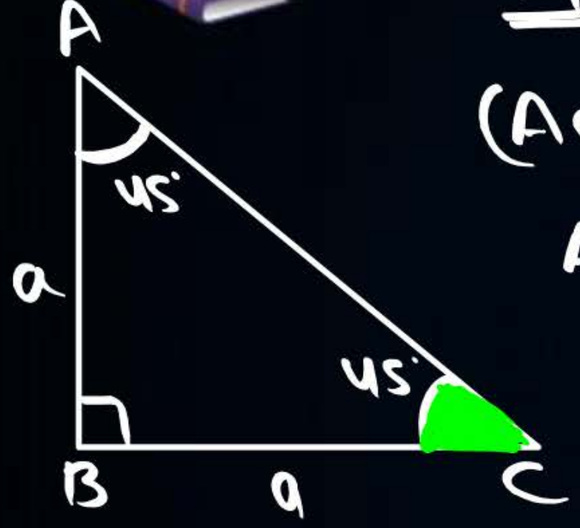
$= 3\left(\frac{\sqrt{3}}{2}\right) - 4\left(\frac{\sqrt{3}}{2}\right)^3$

$= \frac{3\sqrt{3}}{2} - \frac{4\times 3\sqrt{3}}{8_2}$

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

$= \boxed{0}$

Trigonometric Ratios of 45°



By P.T

$(AC)^2 = a^2 + a^2$

$AC^2 = 2a^2$

$AC = \pm\sqrt{2a^2}$

$\boxed{AC = \sqrt{2}a}$

$\text{Sinus} = \frac{P}{H} = \frac{AB}{AC} = \frac{a}{\sqrt{2}a} = \boxed{\frac{1}{\sqrt{2}}}$

$\text{Cosus} = \frac{B}{H} = \frac{BC}{AC} = \frac{a}{\sqrt{2}a} = \boxed{\frac{1}{\sqrt{2}}}$

$\text{Tanus} = \frac{P}{B} = \frac{AB}{BC} = \frac{a}{a} = \boxed{1}$

$\text{Cosecus} = \boxed{\sqrt{2}}$

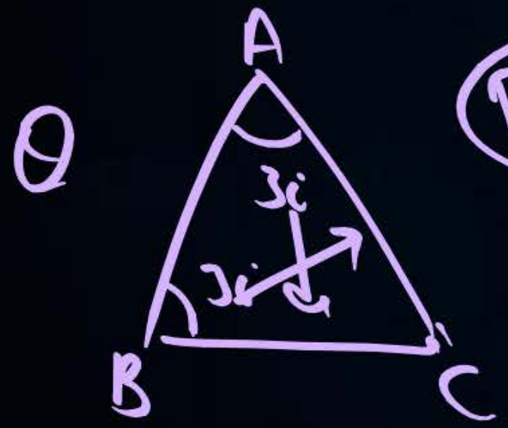
$\text{Secus} = \boxed{\sqrt{2}}$

$\text{Cotus} = \boxed{1}$

Isosceles Δ Property:

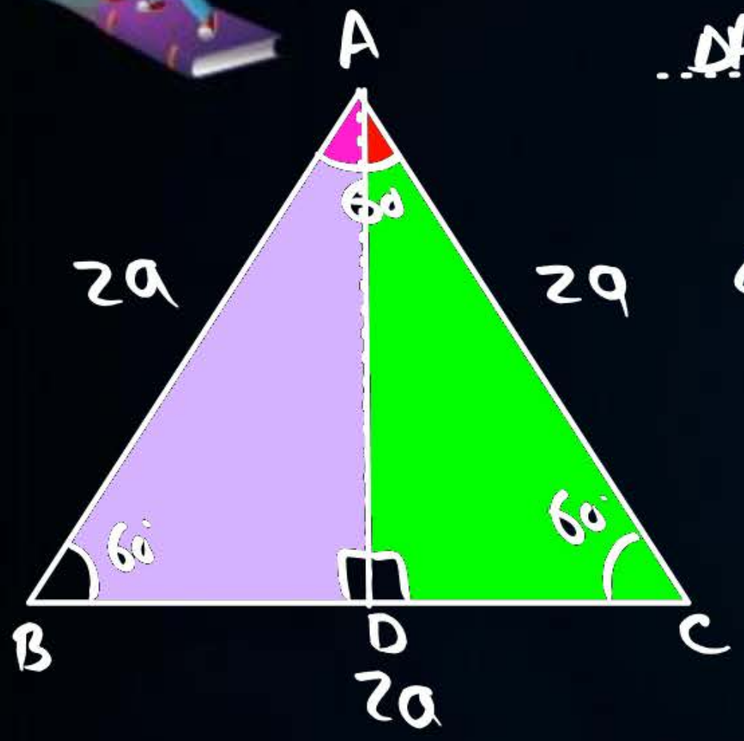
PQ = PR

★ Sides opposite to equal angles are equal.



BC = AC

Trigonometric Ratios of 60° to 30°



ΔADB and ΔADC :

AB = AC (given) H

∠ADB = ∠ADC (90°) R

AD = AD (common) S

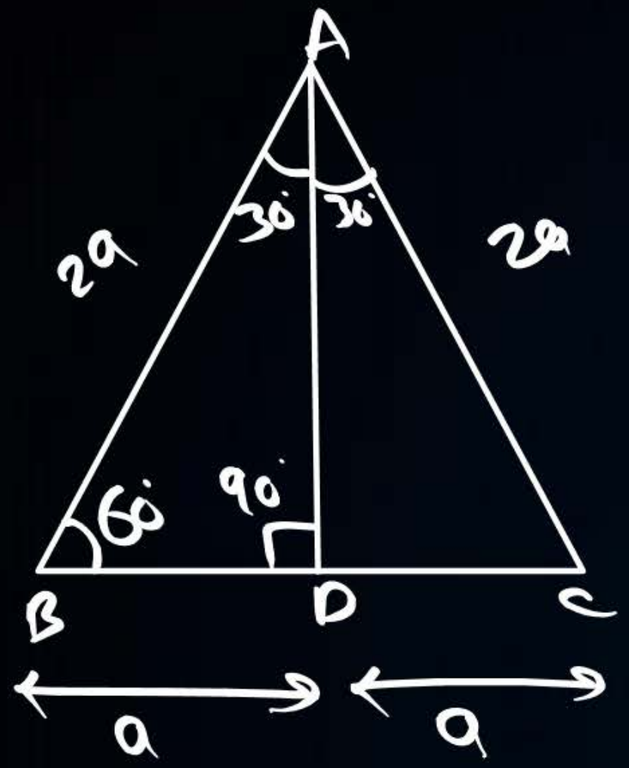
By R.H.S. . .

$\Delta ADB \cong \Delta ADC$

By CPCT. .

BD = DC

$\angle BAD = \angle CAD = 30°$



$(AD)^2 = (BD)^2 + (AD)^2$

$(2a)^2 = (BD)^2 + (a)^2$

$3a^2 = BD^2$

$\boxed{\sqrt{3}a = BD}$

$\sin 60° = \frac{P}{H} = \frac{BD}{AB} = \frac{\sqrt{3}a}{2a} = \boxed{\frac{\sqrt{3}}{2}}$

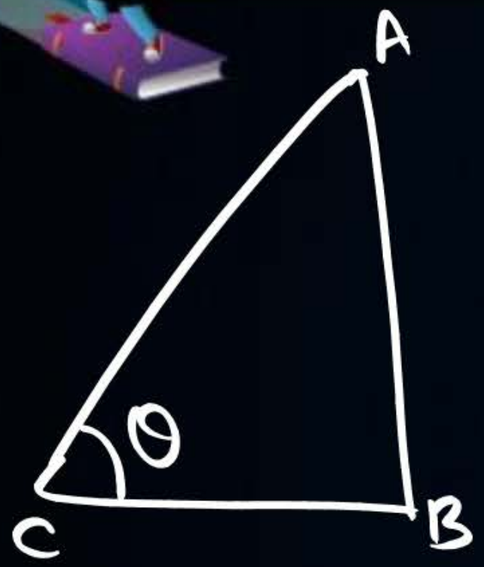
$\sin 30° = \frac{P}{H} = \frac{BD}{AB} = \frac{a}{2a} = \boxed{\frac{1}{2}}$

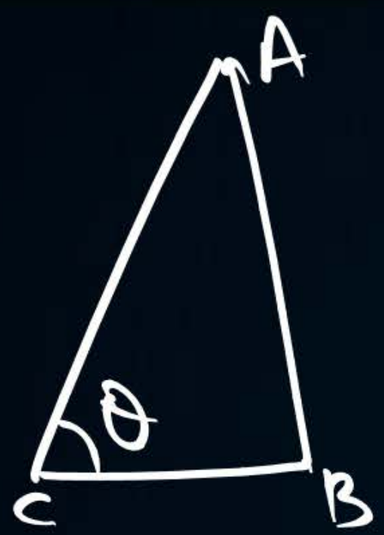
$\cos 30° = \frac{B}{H} = \frac{AD}{AB} = \frac{\sqrt{3}a}{2a} = \boxed{\frac{\sqrt{3}}{2}}$

$\tan 60° = \frac{P}{B} = \frac{AD}{BD} = \frac{\sqrt{3}a}{a} = \boxed{\sqrt{3}}$

Trigonometric Ratios of 0° to 90°

$\theta \rightarrow 90$





$\sin\theta = \frac{AB}{AC}$

$\tan\theta = \frac{AB}{BC}$

$\cos\theta = \frac{BC}{AC}$

$\sin 90^\circ = \frac{AB}{AC} = \frac{AB}{AB} = 1$

$\cos 90^\circ = \frac{BC}{AC} = \frac{0}{AC} = 0$

$\tan 90^\circ = \frac{AB}{BC} = \frac{AB}{0} =$ n.d

$AB = AC$

$BC = 0$

1. Ratio for 0°

$\theta \to 0^\circ$

$\sin\theta = \frac{AC}{AB}$ → $\sin 0 = \frac{0}{AB} = 0$

$\cos\theta = \frac{BC}{AB}$ → $\cos 0 = \frac{BC}{AB} = \frac{BC}{BC} = 1$

$\tan\theta = \frac{AC}{BC}$ → $\tan 0 = \frac{0}{BC} = 0$

$AC = 0$

$AB = BC$

Topic : T Ratios for some specific angles

#Q. If A and B are acute angles such that $\tan A = \frac{1}{2}$, $\tan B = \frac{1}{3}$ and $\tan (A + B) = \frac{\tan A + \tan B}{1 - \tan A \tan B}$, find A + B.

H.W

$$\frac{sin(os)}{cos(os)} =$$

Topic : T Rations for some specific angles

#Q. If $\tan^2 45° - \cos^2 30° = x \sin 45° \cos 45°$, then x =

(A) 2

(B) –2

(C) –1/2

(D) 1/2 ✓

Topic : T Rations for some specific angles

#Q. If $\sqrt{3}\tan\theta = 1$, then find the value of $\sin^2\theta - \cos^2\theta$.

Answer = -1/2

Topic : T Rations for some specific angles

#Q. If $\sin\theta - \cos\theta = 0$, then the value of $(\sin^4\theta + \cos^4\theta)$ is

(A) 1

(B) 3/4

(C) 1/2

(D) 1/4

H.W

Topic : T Rations for some specific angles

#Q. In a ΔABC, if $\angle B = 90°$, $BC = 5$ cm, $AC - AB = 1$ cm. Then the value of $\frac{1 + \sin C}{1 + \cos C}$ is

(A) $\frac{18}{25}$

(B) $\frac{36}{31}$

(C) $\frac{25}{18}$

(D) $\frac{31}{36}$

H.W

Topic : T Rations for some specific angles

#Q. In an acute angled triangle ABC, if $\sin(A + B - C) = 1/2$ and $\cos(B + C - A) = \frac{1}{\sqrt{2}}$. Then measure of angle B is

(A) $37\frac{1}{2}^\circ$

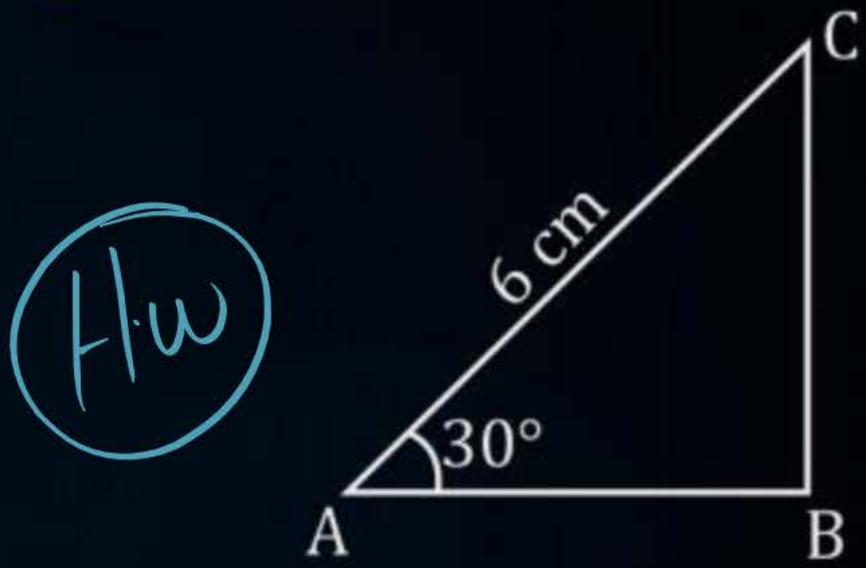
(B) 45°

(C) 75°

(D) 62.5°

Topic : T Rations for some specific angles

#Q. In figure, lengths of sides BC and AB are respectively



H.W

(A) 12 cm, $3\sqrt{3}$ cm

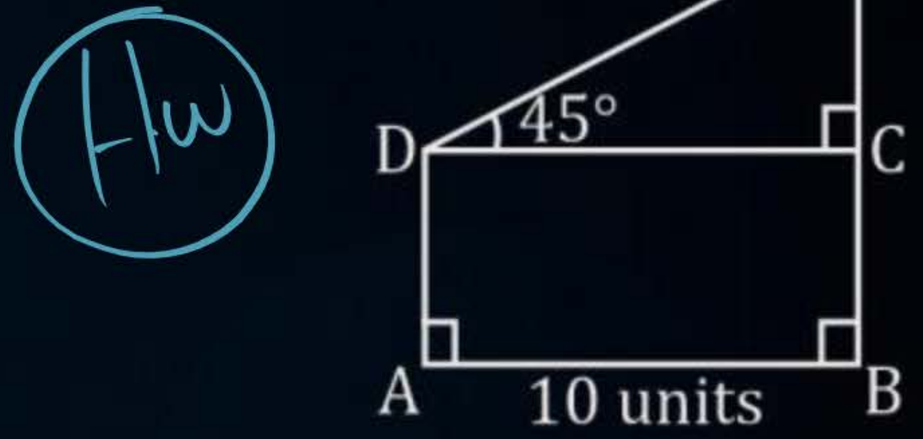
(B) 3 cm, $3\sqrt{3}$ cm

(C) 12 cm, $6\sqrt{3}$ cm

(D) 18 cm, $9\sqrt{3}$ cm

Topic : T Rations for some specific angles

#Q. In figure, the value of DE is



(A) $5\sqrt{2}$ units

(B) 10 units

(C) $10\sqrt{2}$ units

(D) $15\sqrt{2}$ units

Hw

Homework

8 Questions

→ khub maje karo.

→ Backlog Complete.

→ Pending work

PPL

THANK YOU