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ARJUN BATCH

कक्षा-10 गणित

त्रिकोणमिति का परिचय

CHAPTER 08 | PART -1

10 SEP 2026 || 07:00 PM



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Ch-8
Aim-100

आज क्या पढेंगे ?

1 त्रिकोणमिति का परिचय

2 प्रश्नावली 8.1

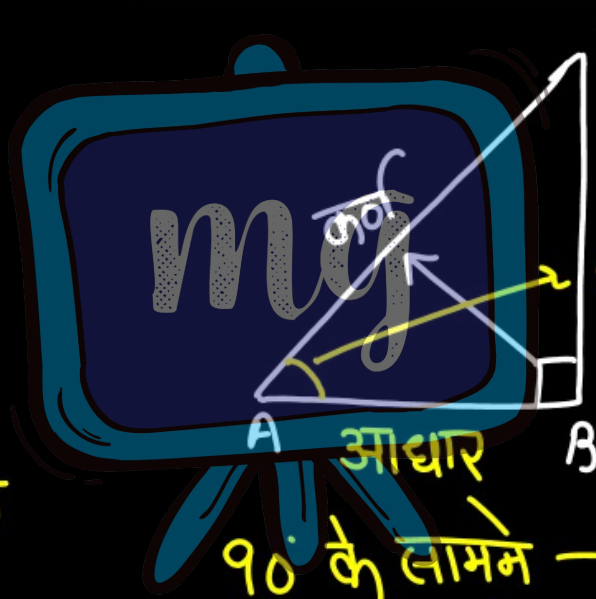


त्रिकोणमिति का परिचय

कर्ण

आधार

लम्ब



बची हुई भुजा

↓

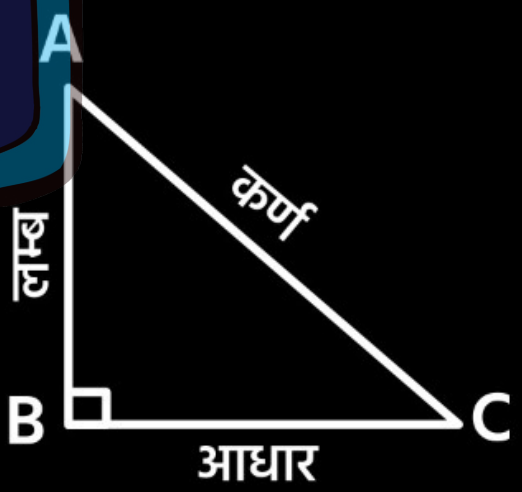
आधार

90° के सामने → कर्ण

कोण के सामने → लम्ब

समकोण त्रिभुज

एक त्रिभुज समकोण त्रिभुज कहलाता है यदि इसमें एक कोण समकोण (90°) हो।



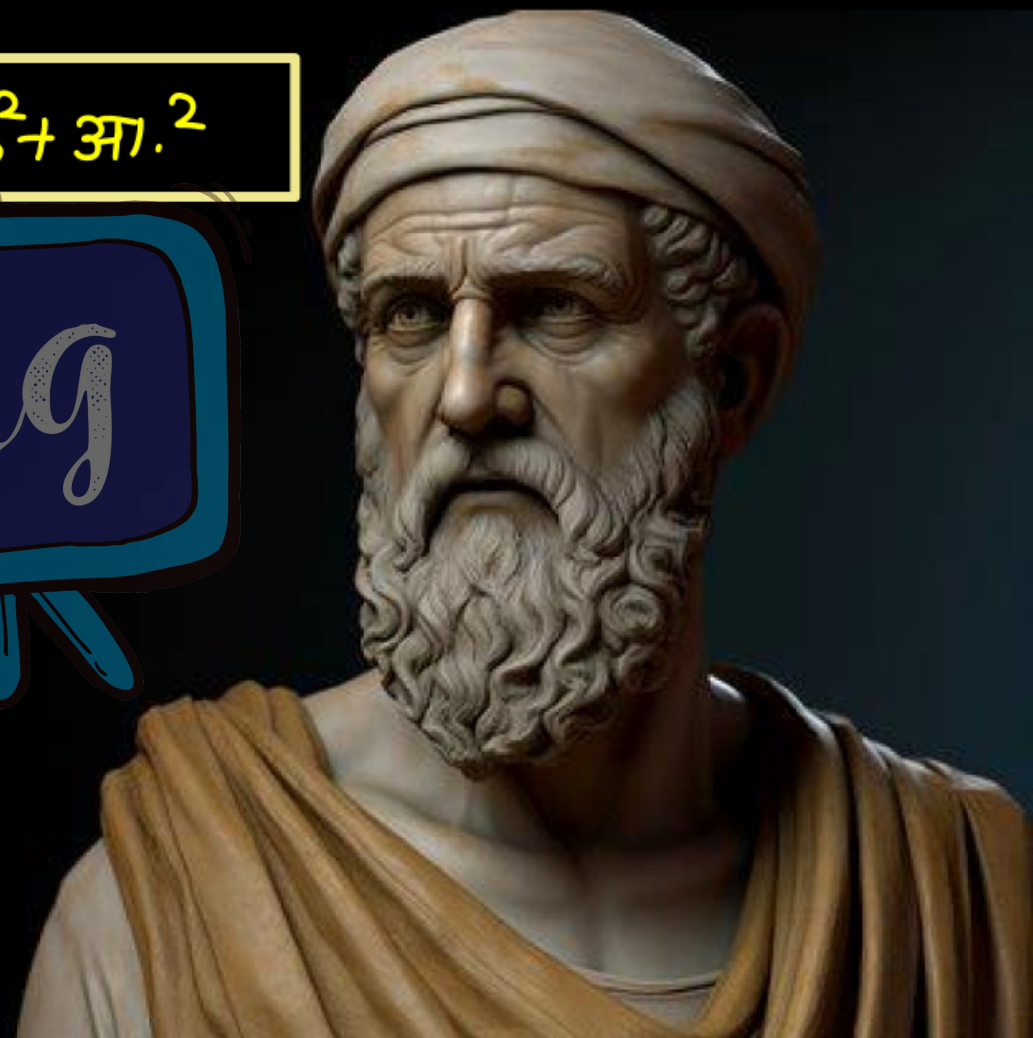
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पाइथागोरस प्रमेय

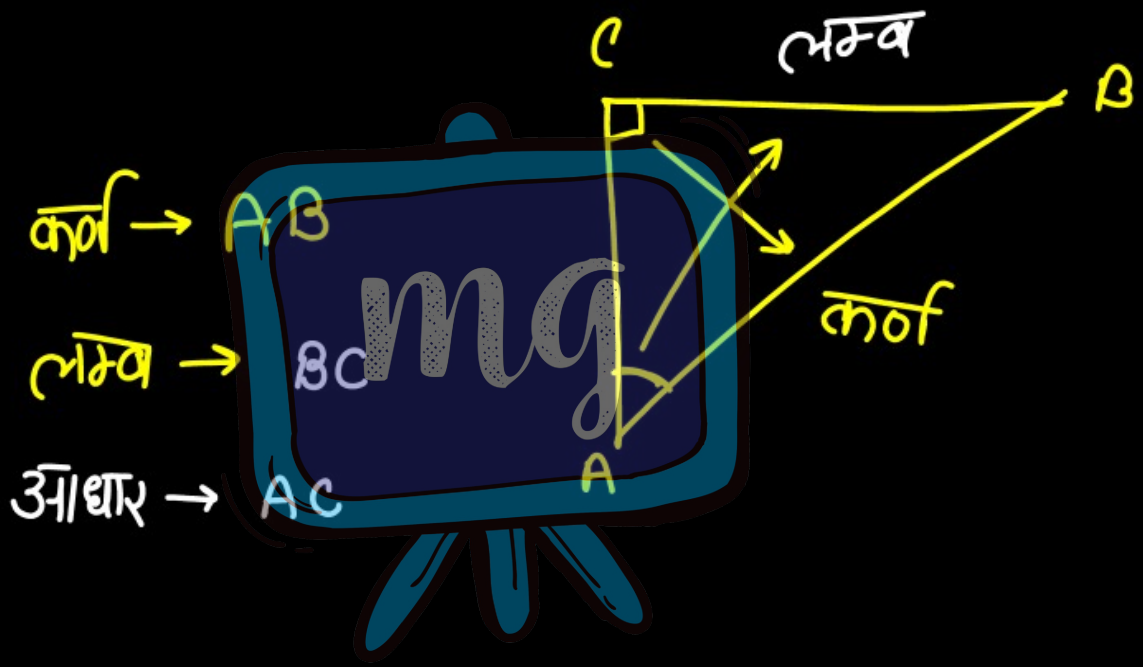
कर्ण^2 = लं०^2 + आ.^{2}





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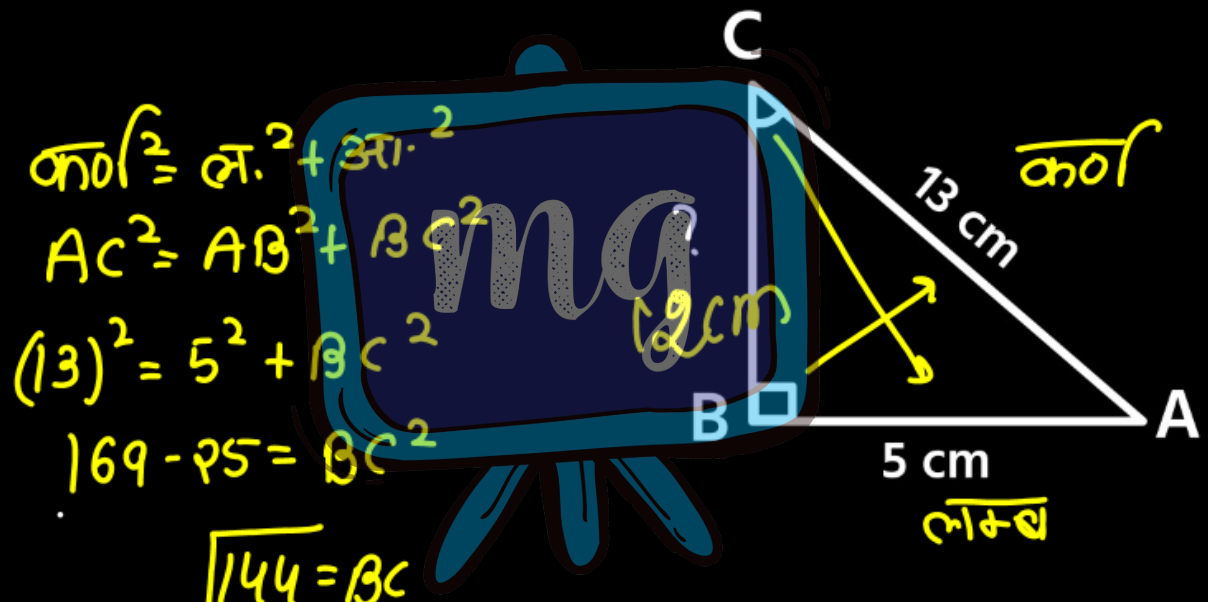
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उदाहरण –



कर्ण^2 = ल.^{2} + आ.^{2}

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

$(13)^2 = 5^2 + BC^2$

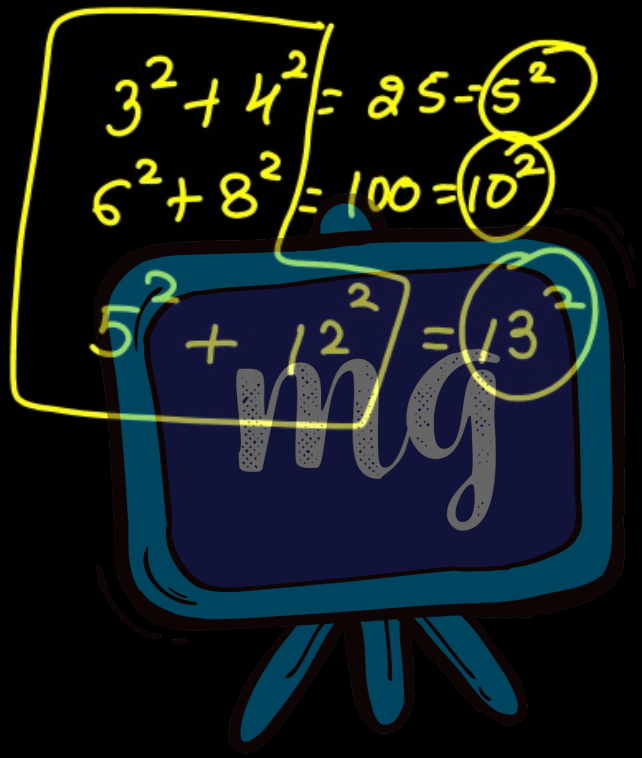
$169 - 25 = BC^2$

$\sqrt{144} = BC$

$12cm = BC$

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पाइथागोरस त्रिक

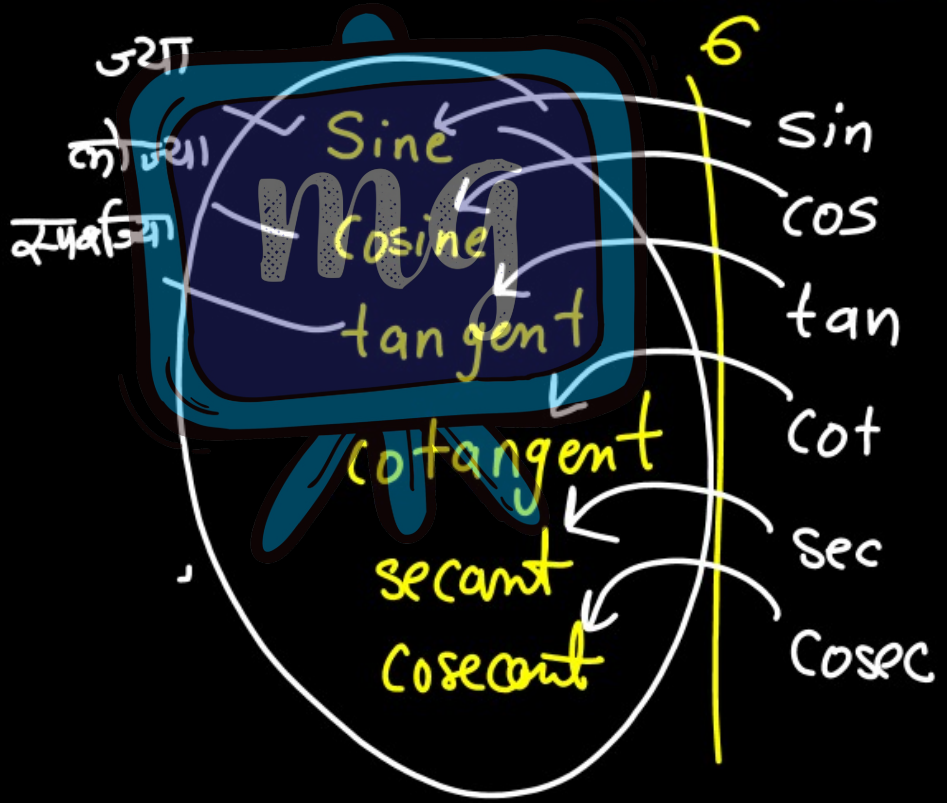
1. 3, 4, 5
2. 5, 12, 13
3. 7, 24, 25
4. 8, 15, 17
5. 9, 40, 41



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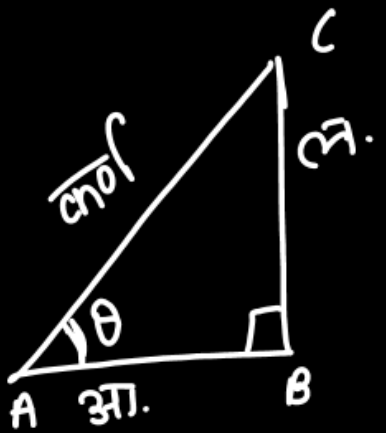
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त्रिकोणमितीय अनुपात



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$\sin\theta = \frac{\text{लं.}}{\text{कर्ण}}$ ✓

$\cos\theta = \frac{\text{आ.}}{\text{कर्ण}}$ ✓

$\tan\theta = \frac{\text{लं.}}{\text{आ.}}$ ✓

$\cot\theta = \frac{\text{आ.}}{\text{लं.}}$ ✓

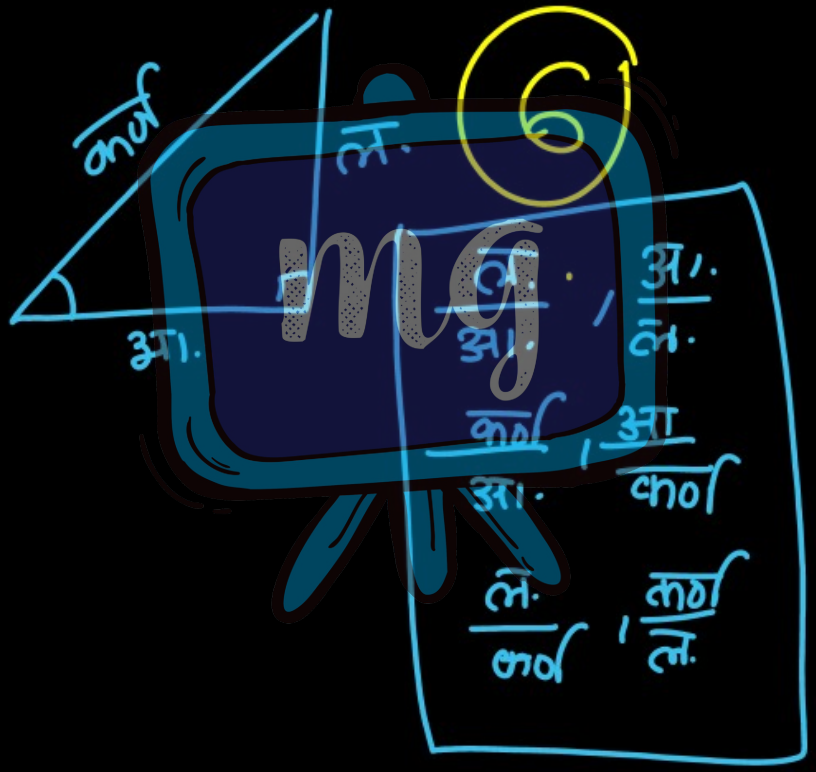
$\sec = \frac{\text{कर्ण}}{\text{आ.}}$ ✓

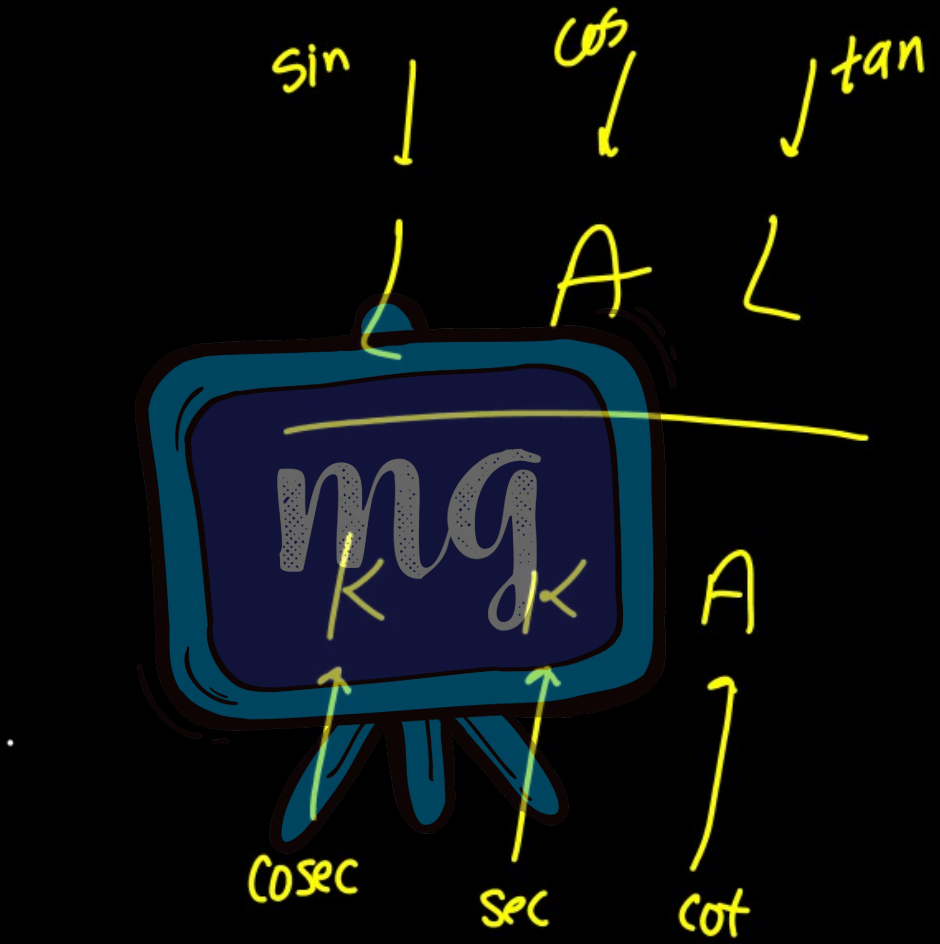
$\text{Cosec} = \frac{\text{कर्ण}}{\text{लं.}}$ ✓

$\left[\frac{LAL}{KKA}\right]$

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sin
cos
tan
A
L
mg
K
K
A
Cosec
Sec
cot

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$\frac{LAL}{KKA}$

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

$\sin\theta = \frac{12}{13}$

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

$\cos\theta = \frac{5}{13}$

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

$\tan\theta = \frac{12}{5}$

$\text{cosec}\,\theta = \frac{K}{L} = \frac{AC}{AB}$

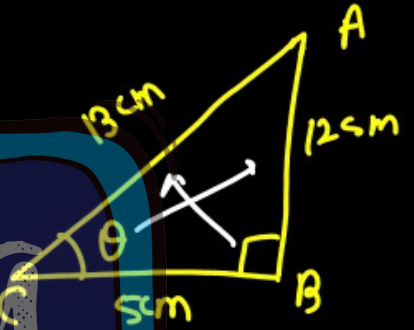
$\text{cosec}\,\theta = \frac{13}{12}$

$\sec\theta = \frac{K}{A} = \frac{AC}{BC}$

$\sec\theta = \frac{13}{5}$

$\cot\theta = \frac{A}{L} = \frac{BC}{AB}$

$\cot\theta = \frac{5}{12}$



कर्ण = AC = 13cm

लम्ब = AB = 12cm

आधार = BC = 5cm

$\sin\theta / \cos\theta / \tan\theta$

$\cot\theta / \sec\theta / \text{cosec}\,\theta$

विभिन्न त्रिकोणमितीय अनुपातो में संबंध

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

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

$\sin\theta = \frac{1}{\operatorname{cosec}\theta}$ | $\operatorname{cosec}\theta = \frac{1}{\sin\theta}$

$\cos\theta = \frac{1}{\sec\theta}$ | $\sec\theta = \frac{1}{\cos\theta}$

$\tan\theta = \frac{1}{\cot\theta}$ | $\cot\theta = \frac{1}{\tan\theta}$

प्रश्नावली 8.1

2. आकृति में, $\tan P - \cot R$ का मान ज्ञात कीजिए।

$169 = 144 + QR^2$

$169 - 144 = QR^2$

$\sqrt{25} = QR$

$QR = 5cm$

$PR = 13cm$

$PQ = 12cm$

पाइथोगोरस प्रमेय से,

कर्ण^2 = लं.^{2} + आ.^{2} से.

$PR^2 = PQ^2 + QR^2$

$13^2 = 12^2 + QR^2$



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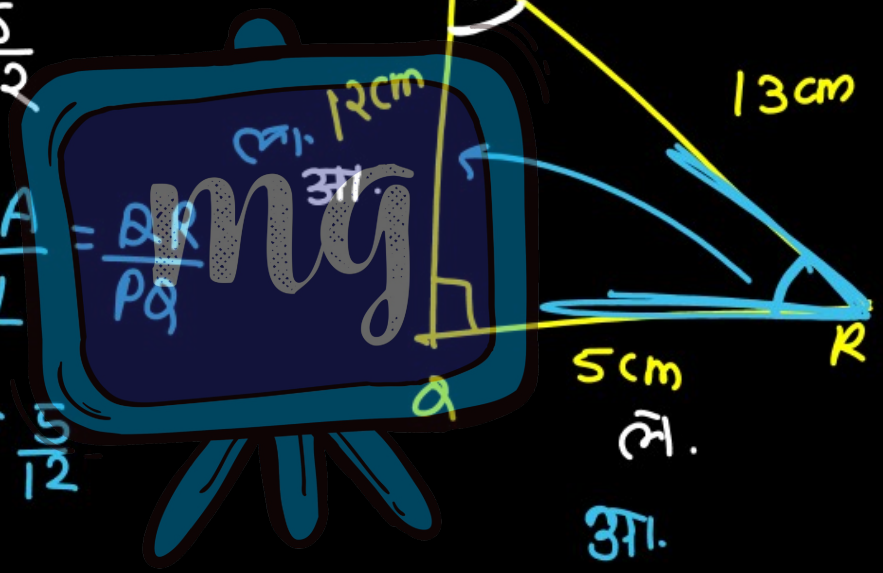
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$\tan P = \frac{L}{A} = \frac{QR}{PQ}$

$\tan P = \frac{5}{12}$

$\cot R = \frac{A}{L} = \frac{QR}{PQ}$

$\cot R = \frac{5}{12}$



कर्ण

ले. आ.

$\therefore \quad \tan P - \cot R = \frac{5}{12} - \frac{5}{12} = 0$

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CC

प्रश्नावली 8.1

3. यदि $\sin A = \frac{3}{4}$, तो cos A और tan A का मान परिकलित कीजिए।

हल :- $\sin A = \frac{3}{4} = \frac{\text{लं.}}{\text{कर्ण}}$

आ. = ?, लं. = 3k, कर्ण = 4k

$\text{कर्ण}^2 = \text{लं.}^2 + \text{आ.}^2$

$(4k)^2 = (3k)^2 + \text{आ.}^2$

$16k^2 = 9k^2 + \text{आ.}^2$

$16k^2 - 9k^2 = \text{आ.}^2$

$7k^2 = \text{आ.}^2$

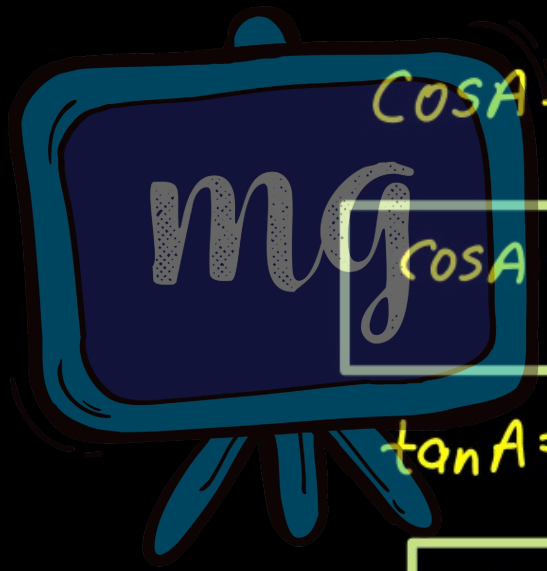
$\sqrt{7k^2} = \text{आ}$

$\sqrt{7}\,k = \text{आ}$

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$$\cos A = \frac{\text{आ.}}{\text{कर्ण}} = \frac{\sqrt{7}k}{4k}$$

$$\cos A = \frac{\sqrt{7}}{4}$$

$$\tan A = \frac{\text{ल.}}{\text{आ.}} = \frac{3k}{\sqrt{7}k}$$

$$\tan A = \frac{3}{\sqrt{7}}$$

प्रश्नावली 8.1

4. यदि 15 cot A = 8 हो तो sin A और sec A का मान ज्ञात कीजिए।

हल :- $15 \cot A = 8$

$\cot A = \frac{8}{15} = \frac{\text{आ.}}{\text{ल.}}$

आ. = 8k , ल. = 15k , कर्ण

कर्ण^2 = ल.^{2} + आ.^{2}

$= (15k)^2 + (8k)^2$

$= 225k^2 + 64k^2$

कर्ण $= \sqrt{289k^2}$

$= 17k$

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H.W.

SinA, SecA

