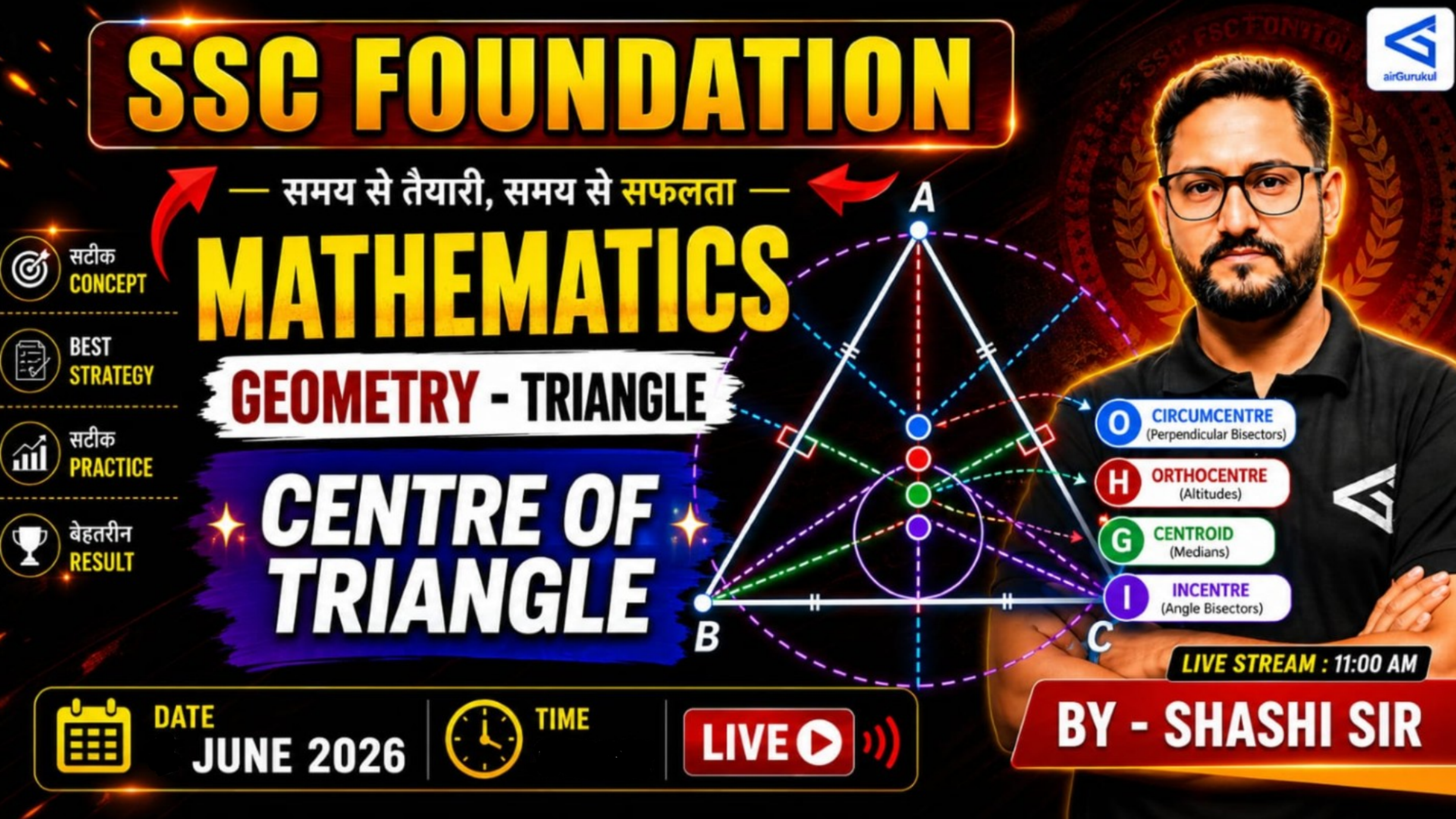
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airGurukul
— समय से तैयारी, समय से सफलता —
सटीक CONCEPT
BEST STRATEGY
सटीक PRACTICE
बेहतरीन RESULT
MATHEMATICS
GEOMETRY - TRIANGLE
CENTRE OF TRIANGLE
A
B
C
O CIRCUMCENTRE (Perpendicular Bisectors)
H ORTHOCENTRE (Altitudes)
G CENTROID (Medians)
I INCENTRE (Angle Bisectors)
LIVE STREAM : 11:00 AM
DATE JUNE 2026
TIME
LIVE
BY - SHASHI SIR

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Triangle (त्रिभुज)

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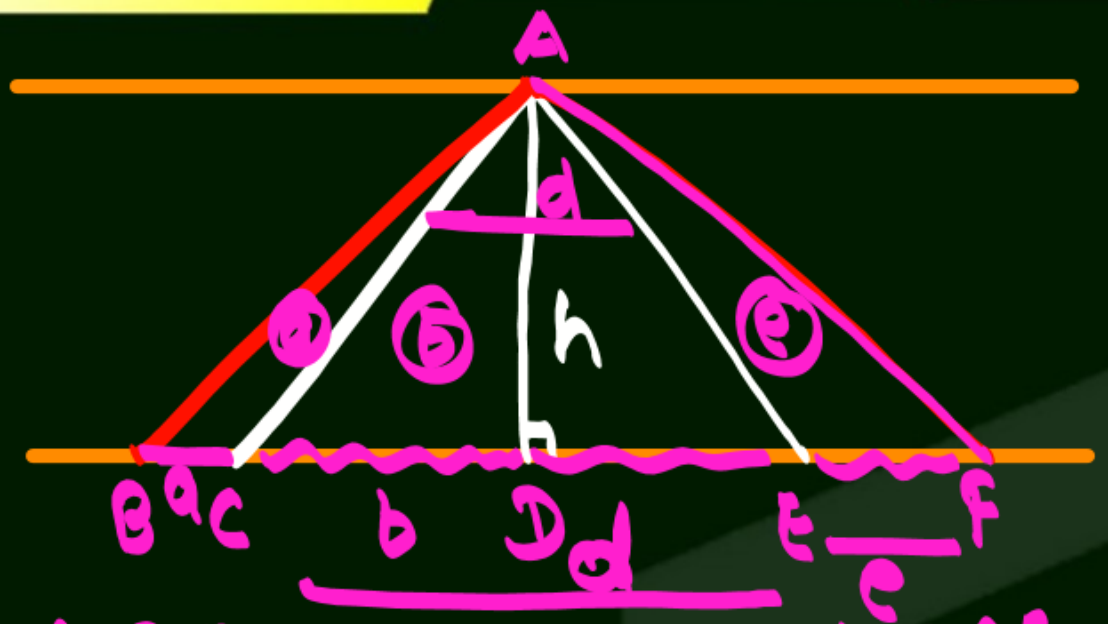

$\triangle BAC : \triangle CAD : \triangle CAE : \triangle EAF$

$\frac{1}{2} \times a \times h : \frac{1}{2} \times b \times h : \frac{1}{2} \times d \times h : \frac{1}{2} \times e \times h$

$a : b : d : e$

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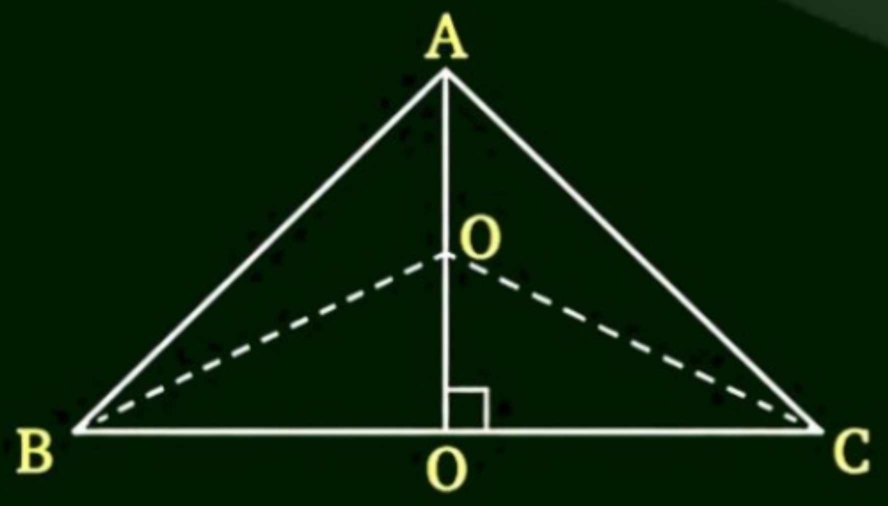
Rules – 2 – : यदि किसी त्रिभुज ABC में AD, BE तथा CF शीर्ष लेता है तो:

$$AH \times HD = BH \times HE = CH \times HF$$

Rules – 3 – :

△ABC में AD भुजा BC पर लंब है। तथा AD पर एक D बिंदु हैं। O को B,C से मिलाया जाता है तो,

$$AB^2 + CO^2 = AC^2 + BO^2$$



लंब-केन्द्र की स्थिति -:

समकोण त्रिभुज में लंबकेन्द्र उसके समकोणिय शीष पर ही होता है। परंतु परिकेन्द्र उसके कर्ण के मध्य बिंदु पर होता है।

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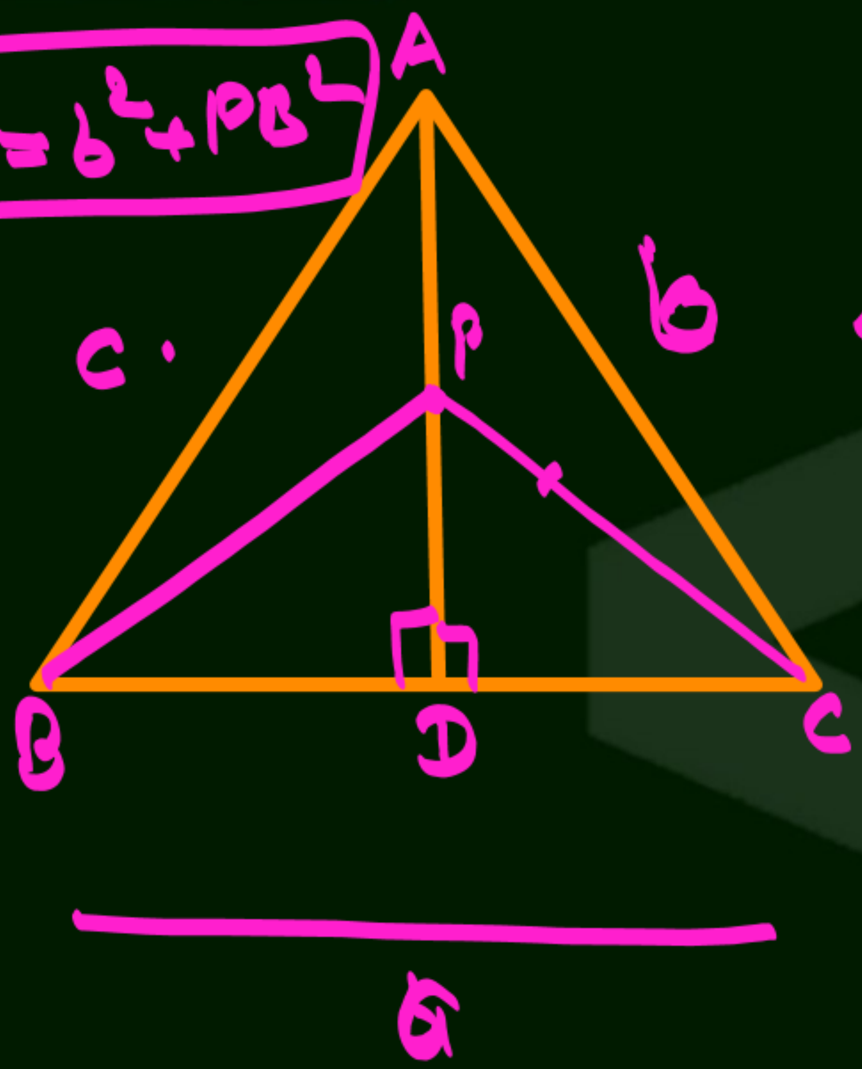
$c^2 + PC^2 = b^2 + PB^2$



$\triangle ABD$

$AB^2 = BD^2 + AD^2$ — (I)

$\triangle ADC$

$AC^2 = DC^2 + AD^2$ — (II)

$AB^2 - AC^2 = BD^2 - DC^2$

In $\triangle BPD$

$BP^2 = PD^2 + BD^2$

In $\triangle DPC$

$PC^2 = CD^2 + PD^2$

$BP^2 - PC^2 = BD^2 - CD^2$

$AB^2 - AC^2 = BP^2 - PC^2$

$AB^2 + PC^2 = BP^2 + AC^2$

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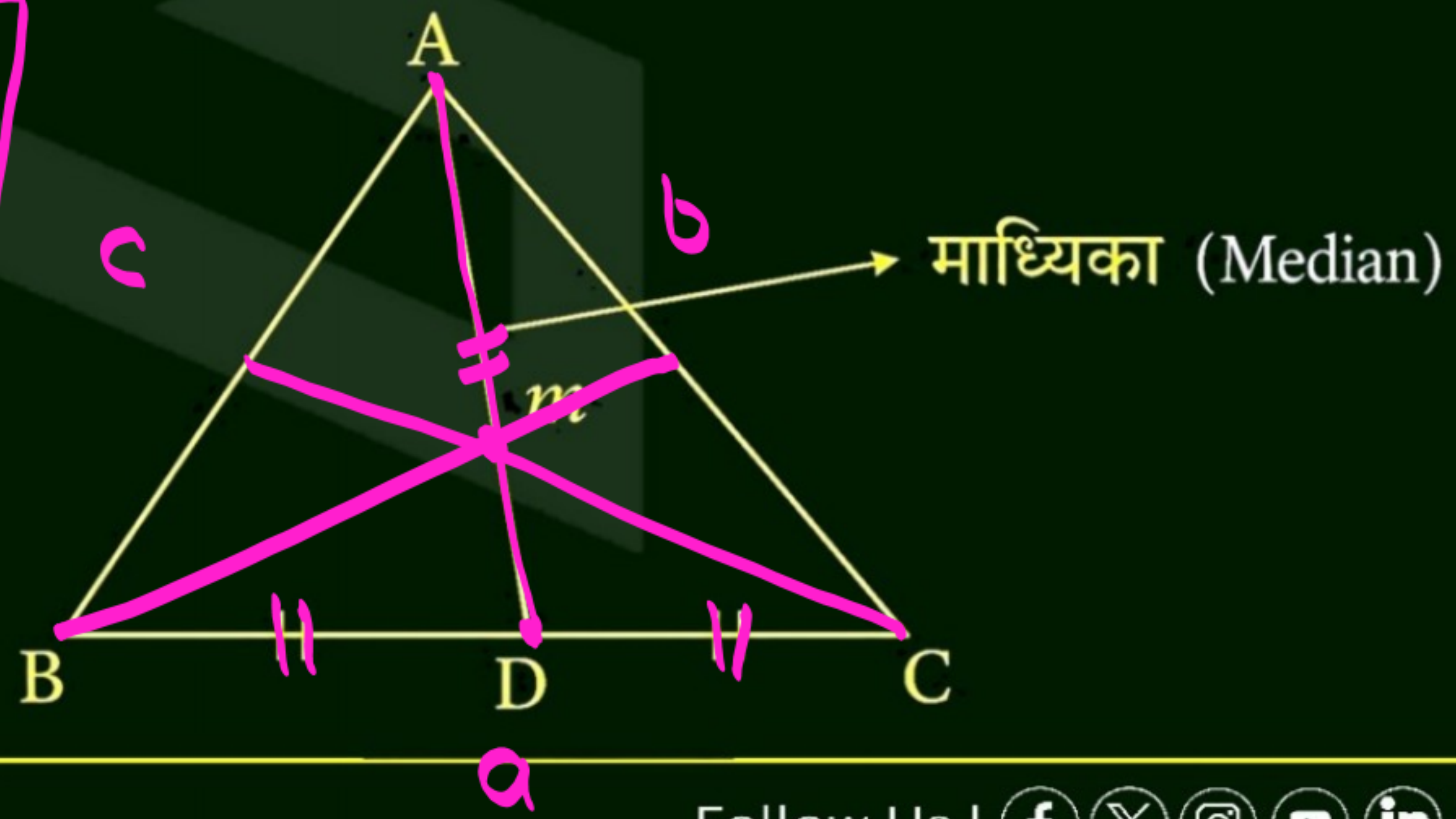
CENTROID (गुरुत्व केन्द्र (केन्द्रक)

माध्यिका - (Median) किसी भी शीर्ष से सामने वाली भुजां के मध्य-बिंदु को मिलाने वाली, रेखा, माध्यिका कहलाती है।

Lime joining a vertex of a triangle to the mid Point of obbosite Side is called median.

$$AD = \frac{1}{2}\sqrt{2c^2+2b^2-a^2}$$



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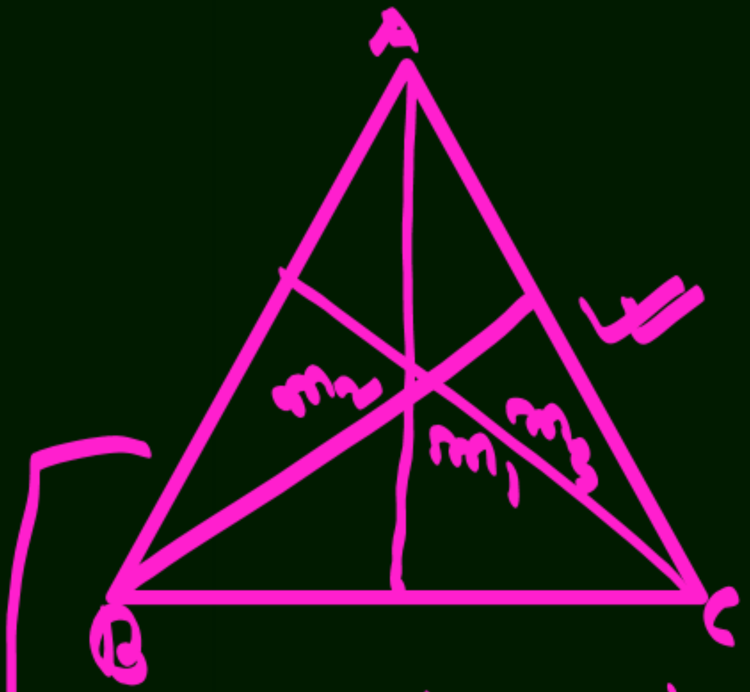
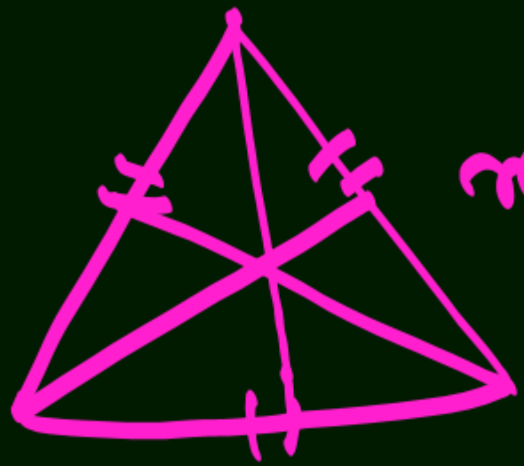
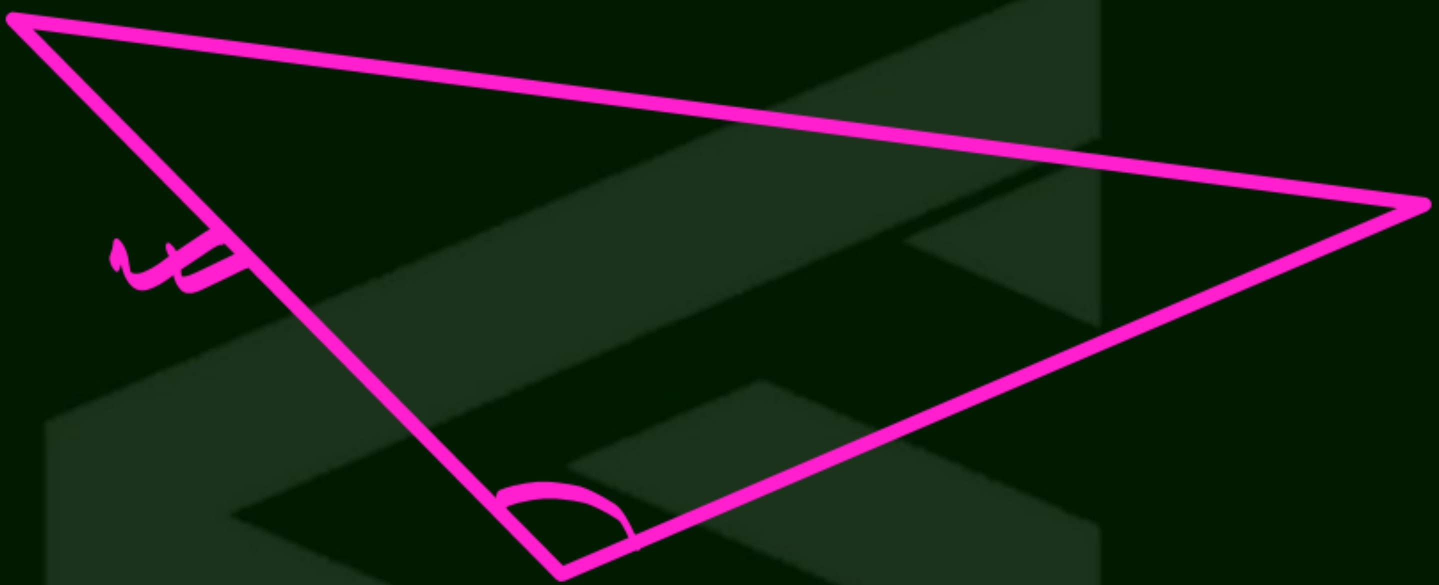


$m_1 \neq m_2 \neq m_3$

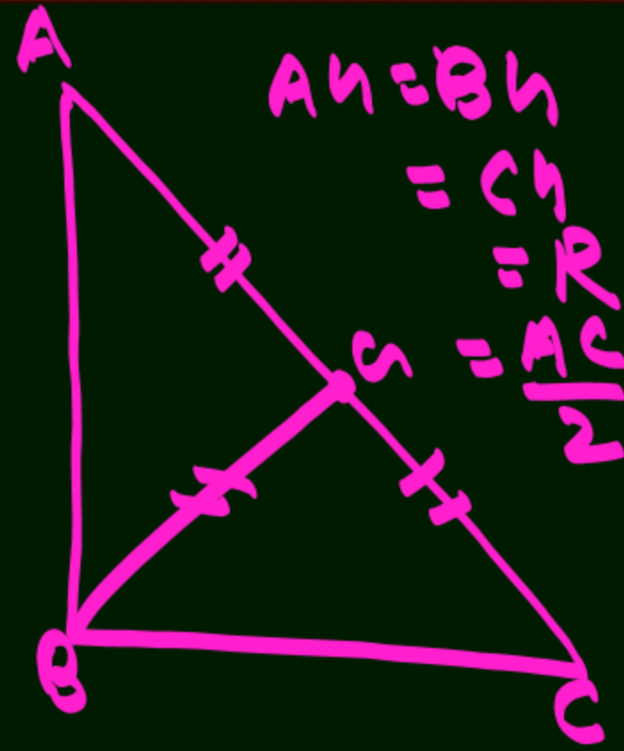


$m = h = A\cdot B = \boxed{\frac{\sqrt{3}}{2} \times a}$



$\angle AD = \text{median} = h = A\cdot B$

$AD \neq BF \neq CE$



$AN = BN = CN = R = \frac{AC}{2}$

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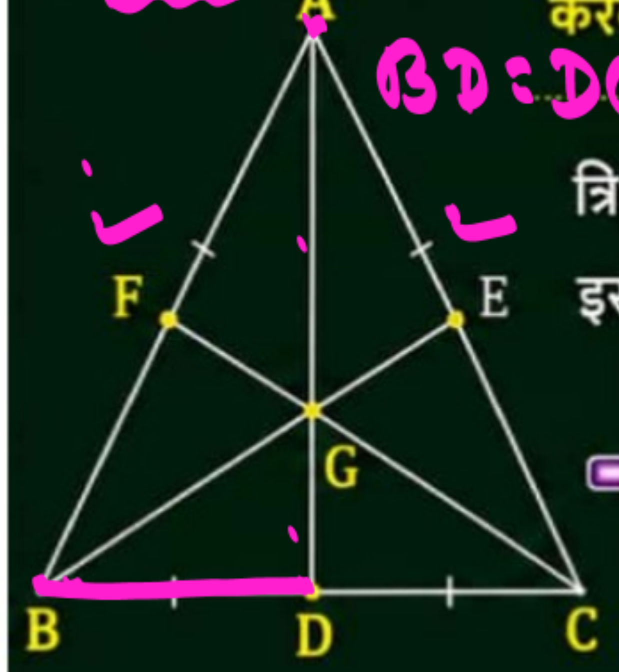
किसी Δ की माध्यिका (median) = $2(AD^2 + BD^2) = AB^2 + AC^2$

"माध्यिका की गणना "अपोलोनियस (Apollonius)" का उपयोग करके की गई है".



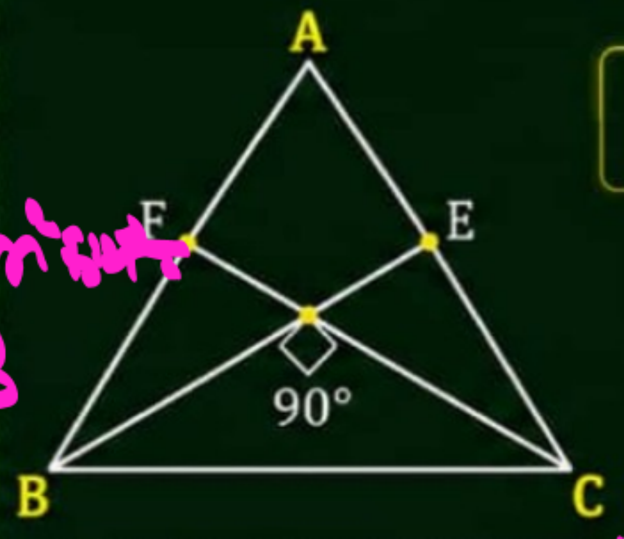
त्रिभुज की तीनों भुजाओं के वर्गों का योग का तिगुना, इसके तीनों माध्यिकाओं के वर्गों के योग चौगुने के बराबर होता है।

$$3(AB^2 + BC^2 + AC^2) = 4(AD^2 + BE^2 + CF^2)$$

त्रिभुज की माध्यिकाओं का योग उसके पराललोहर (परिमाप) से छोटा होता है।

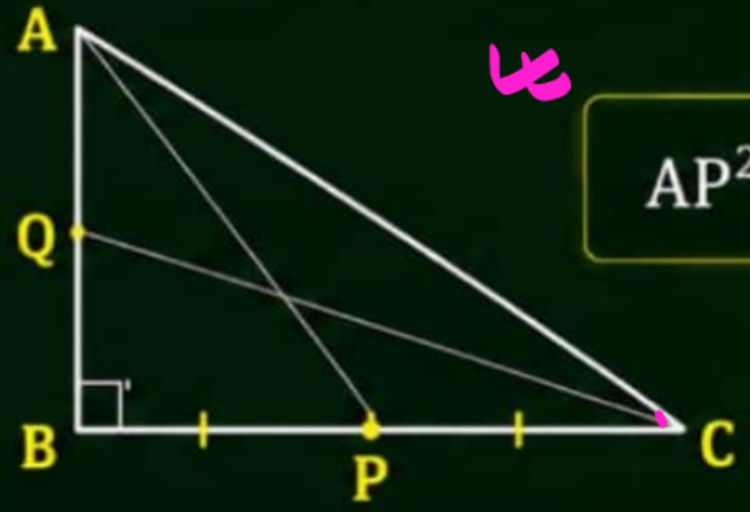
$$AB + BC + CA > AD + BE + CF$$

यदि एक ही त्रिभुज की दो माध्यिका 90° पर काटे।



$$AB^2 + AC^2 = 5\,BC^2$$

यदि समकोण त्रिभुज हो (दो माध्यिका CQ तथा AP) दी हो तो



$$AP^2 + CQ^2 = \frac{5}{4} AC^2$$

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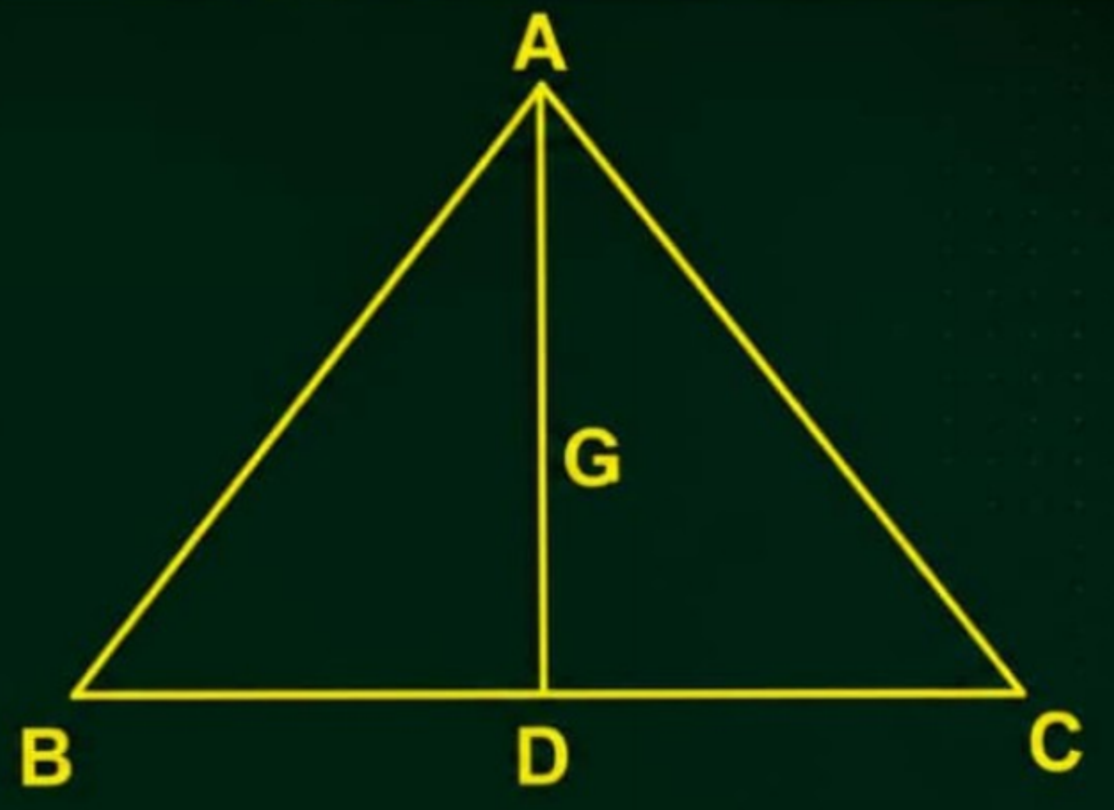
Important Point of Centroid
(गुरुत्व-केन्द्र के महत्वपूर्ण बिंदु)

Centorid divide the medion im 2:1 from the ventex

गुरुत्व केन्द्र माध्यिका को शीर्ष से 2:1 में बाँटता है।



यदि त्रिभुज की माध्याएँ (m_1, m_2, m_3) दी हुई हो तो क्षेत्रफल

$$Area = \frac{4}{3}\sqrt{Sm(S_m - m_1)(S_m - m_2)(S_m - m_3)}$$

$$S_m = \frac{m_1 + m_2 + m_3}{2}$$

जहाँ, m_1, m_2, m_3 त्रिभुज की माध्याएँ हैं

और S_m = अर्धपरिमाप = $\frac{m_1 + m_2 + m_3}{2}$

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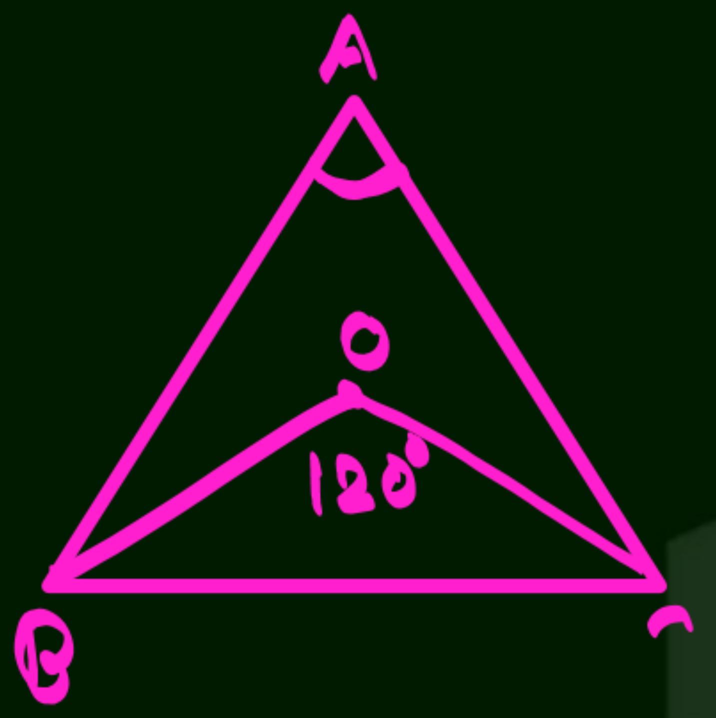

O is orthocentre of ΔABC is angle $\angle BOC = 120°$ find angle $\angle BAC$

O त्रिभुज ΔABC का लम्ब केन्द्र है। यदि $\angle BOC = 120°$ तो $\angle BAC$ है

(a) 135°

(b) 90°

(c) 150°

(d) 60°

$\angle BAC + \angle BOC = 180°$

60° 120°

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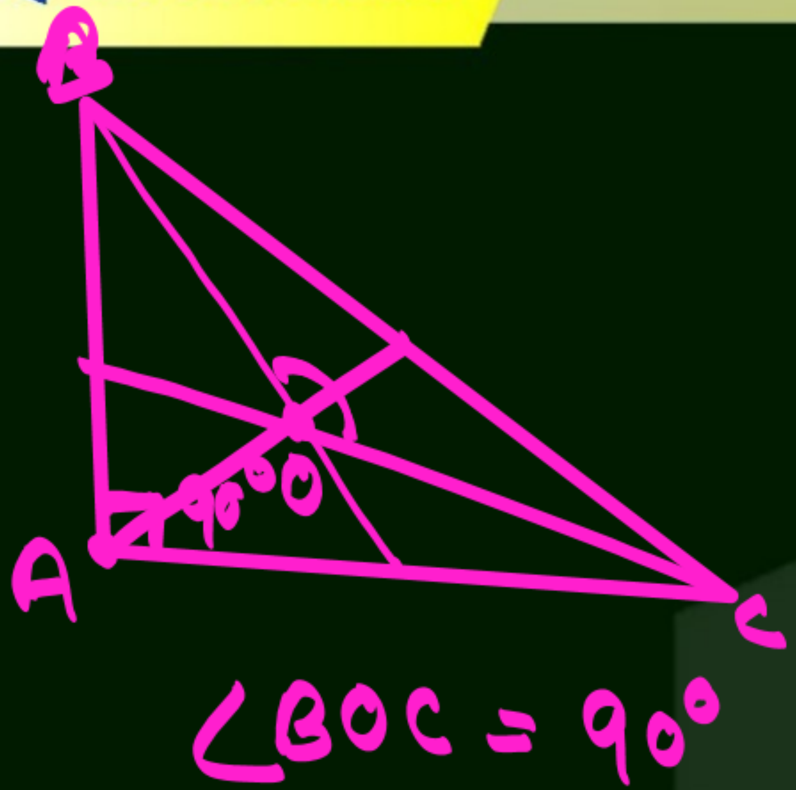

O is the orthocenter of a right angle ΔABC. and the value of ∠A is 90° then find the value of ∠BOC

समकोण ΔABC का लंबकेन्द्र है। और ∠A का मान 90° है, तो ∠BOC का मान ज्ञात कीजिए ?

(a) 130°
(b) 90°
(c) 70°
(d) 60°

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O is the orthocenter of an obtuse angle ΔABC and the value of ∠A is 110° then find the value of ∠BOC .

O अधिक कोण ΔABC का लंबकेन्द्र है। और ∠A का मान 110° है, तो ∠BOC का मान ज्ञात कीजिये ?

70°

(a) 130°

(b) 90°

(c) 70°

(d) 60°

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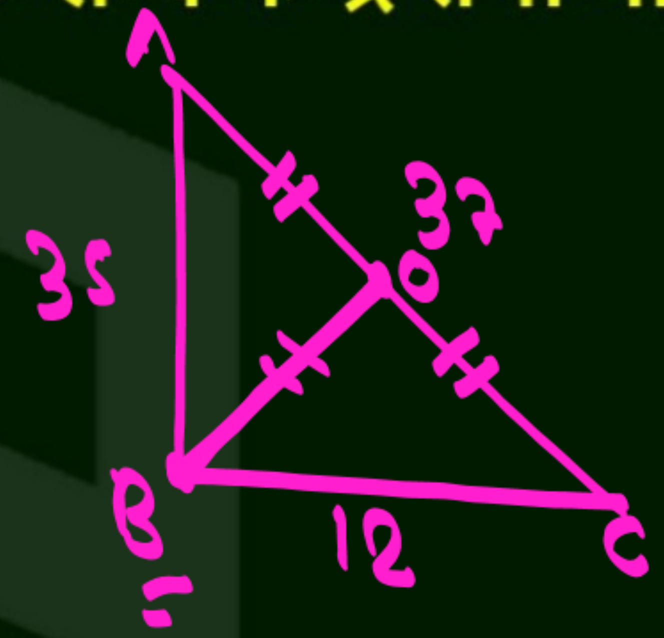
What is the distance between the orthocentre and circumcentre of a tri-angle whose side measure 12 cm, 35 cm and 37 cm?

एक त्रिभुज जिसकी भुजायें 12 सेमी. 35 सेमी. और 37 सेमी है तो उसके लम्ब केन्द्र तथा परिकेन्द्र के मध्य दूरी ज्ञात करो ?

(a) 17.5
(b) 15
(c) 18.5 ✓
(d) $8\sqrt{8}$



$1225 + 144 = 1369$

$\frac{37}{2} = 18.5$

$AO = OB = OC = R = \frac{AC}{2}$

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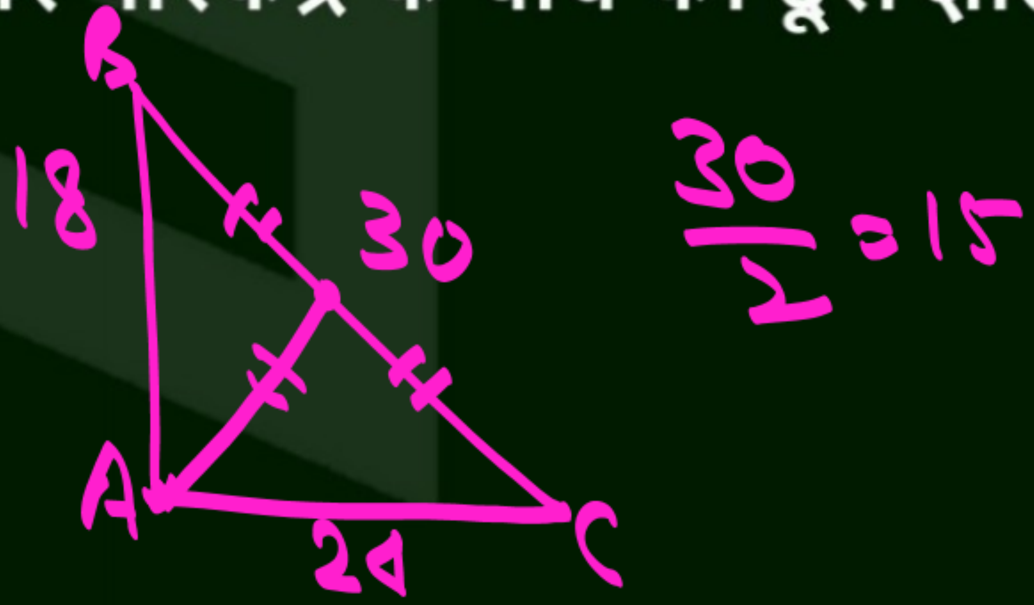
In a right angle ΔABC , $\angle A = 90°$ If the length of AB and AC is 18 cm and 24 cm then
समकोण ΔABC में, $\angle A = 90°$ है। AB और AC की लंबाई 18 सेमी. और 24 सेमी. है तो:
Find the distance between orthocenter and circumcentre?
लंबकेंद्र और परिकेंद्र के बीच की दूरी ज्ञात करें?

(a) 15
(b) 9
(c) 12
(d) 30



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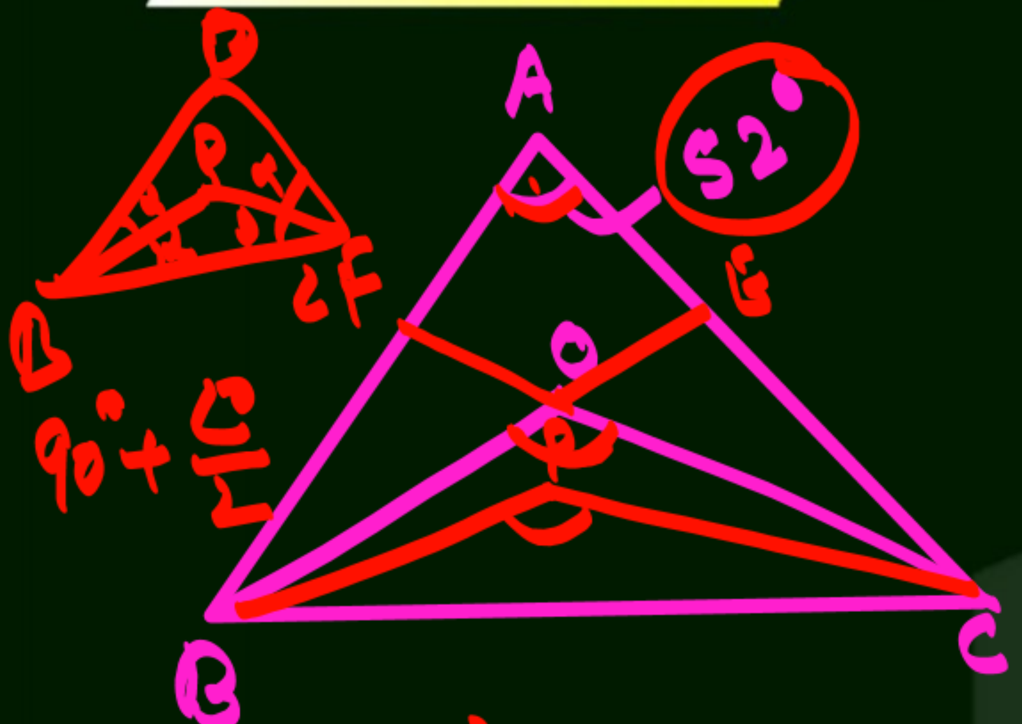

$\angle BOC = 180° - 52° = 128°$

$\angle BPC = 90° + \frac{128}{2}$

$= 90° + 64$

$= 154°$

In ΔABC, $\angle A = 52°$ and O is the orthocenter of the triangle (BO and CO meet AC and AB at E and F respectively when produced). If the bisectors of $\angle OBC$ and $\angle OCB$ meet at P, then the measure of BPC is:

ΔABC में, $\angle A = 52°$ और O एक त्रिभुज का लंब केंद्र है (BO और CO तब क्रमशः E और F पर AC एवं AB से मिलते हैं जब उन्हें आगे बढ़ाया जाता है।) यदि $\angle OBC$ और $\angle OCB$ के द्विभाजक p पर मिलते है, तो $\angle$ BPC है।

(a) 124°
(b) 132°
(c) 138°
(d) 154° ✓

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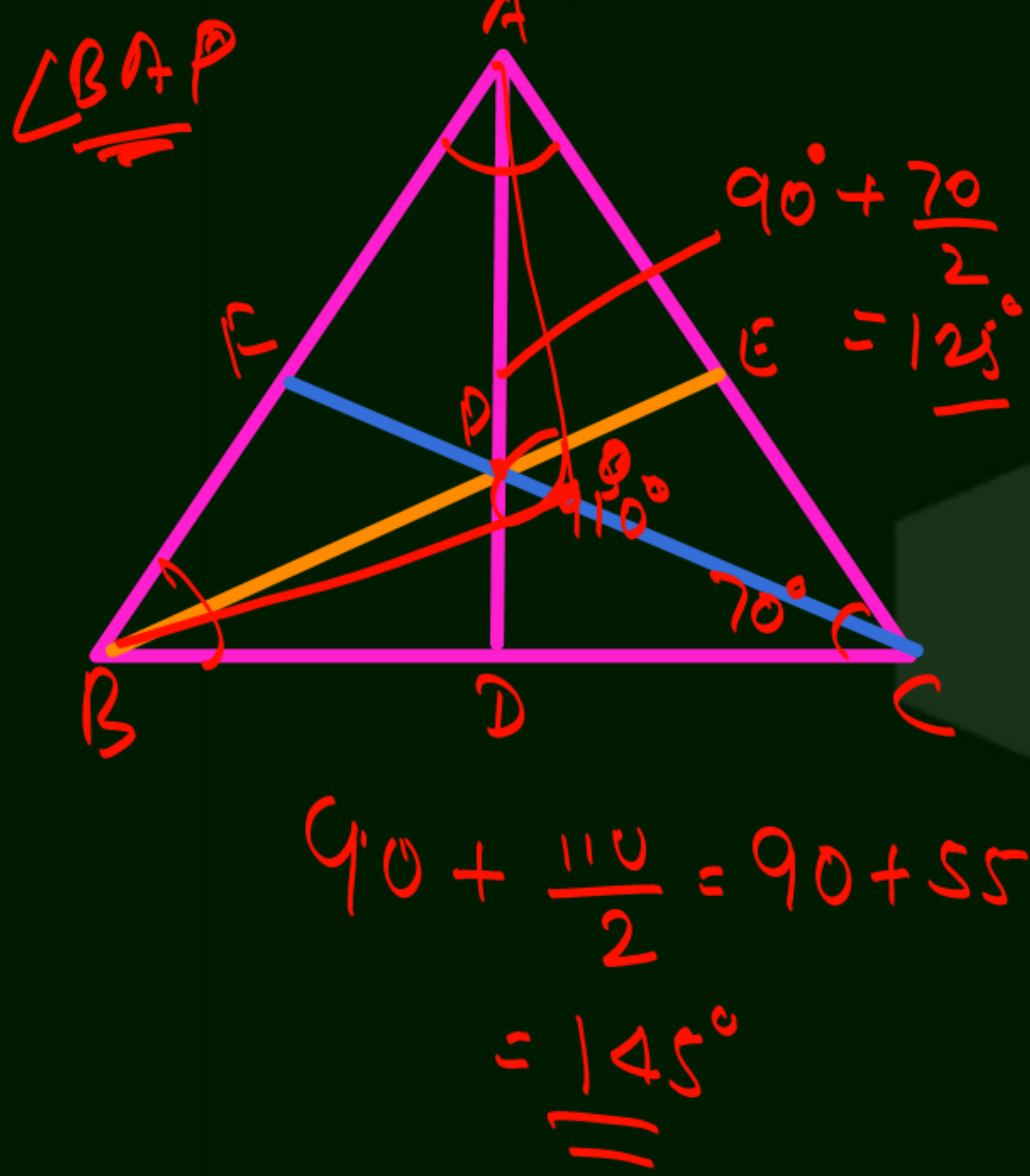
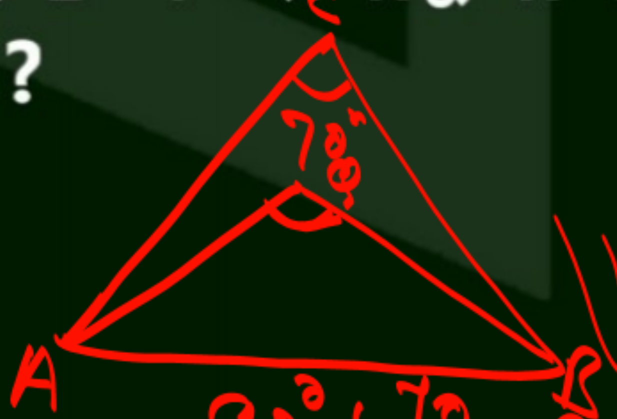


In ΔABC, the perpendiculars drawn from A, B and C meet the opposite sides at points D, E and F respectively. AD, BE and CF intersect at point P. If EPD = 110° and the bisector of ∠A and ∠B meet at point Q, then AQB = ?

Δ ABC में, A, B और C से खींचे गए लंब क्रमशः बिंदु D, E और F पर विपरीत भुजाओं से मिलते हैं। AD, BE और CF बिंदु P पर प्रतिच्छेद करते हैं। यदि ∠ EPD = 110° और ∠ A और ∠ B के समद्विभाजक बिंदु Q पर मिलते हैं, तो ∠AQB = ?

(a) 115°
(b) 110°
(c) 135°
(d) 125°



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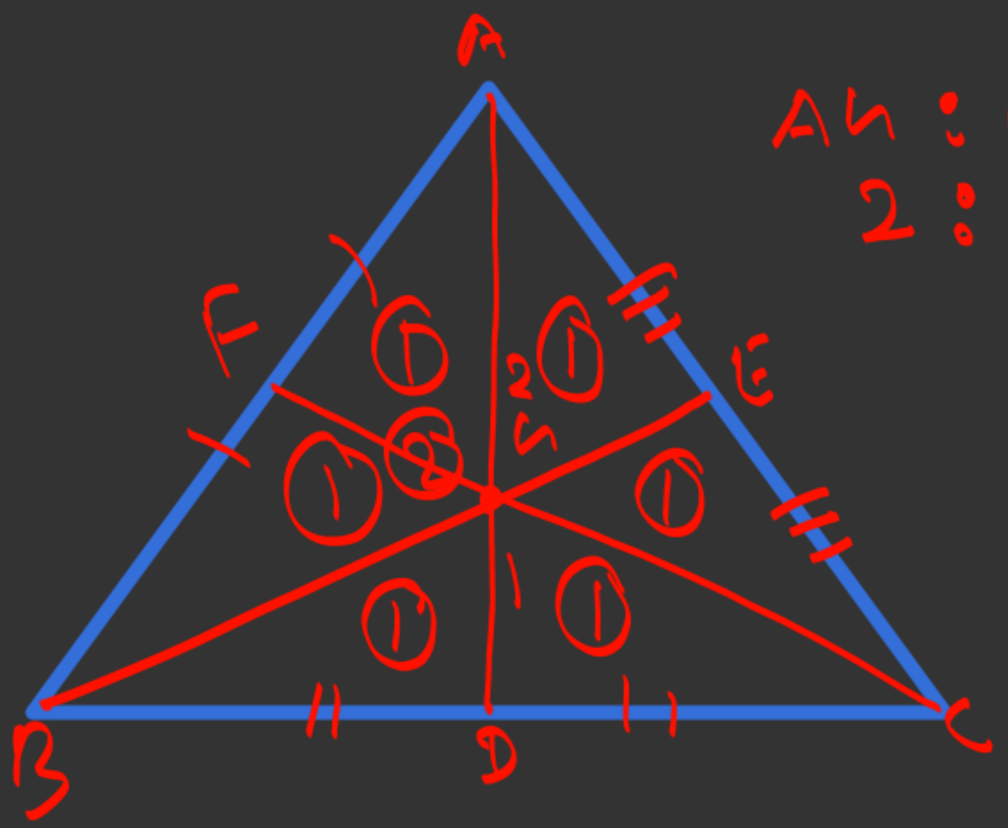
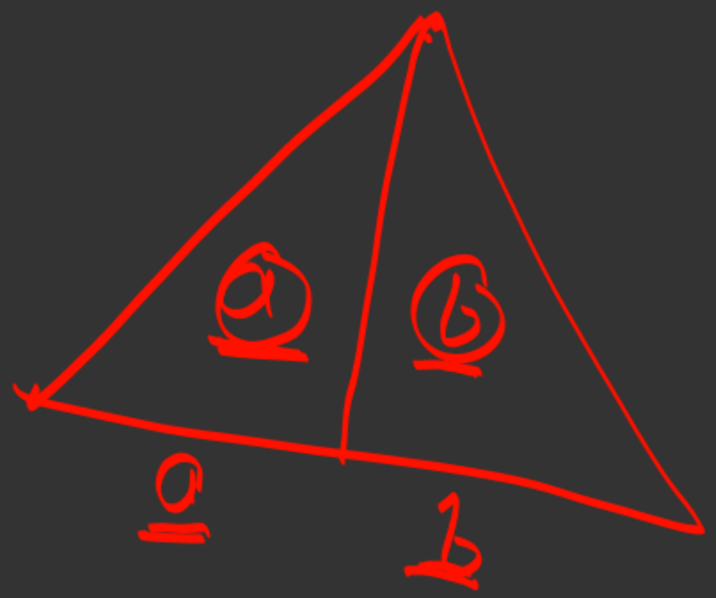
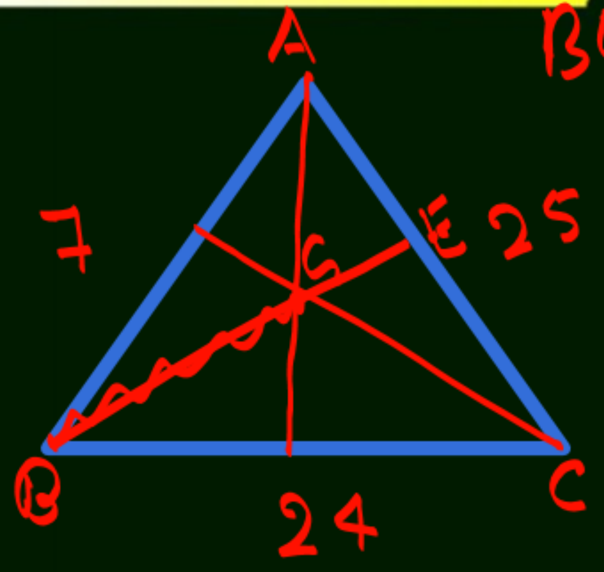


AG : GD

2 : 1





G is the centroid of the triangle ABC, where AB, BC and CA are 7 cm, 24 cm and 25 cm respectively, then BG is:

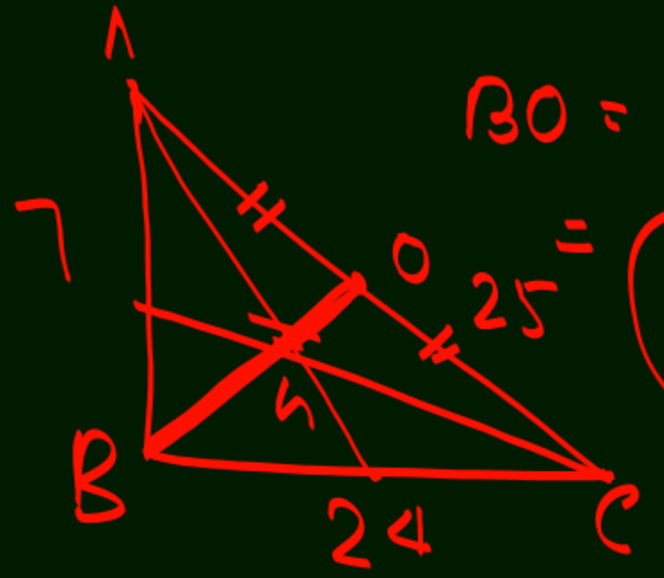
त्रिभुज ABC का केन्द्रक G है, उसकी भुजाएँ AB, BC और CA क्रमशः 7 सेमी. 24 सेमी. और 25 सेमी. है। BG का मान है।

(a) $6\frac{1}{3}$ cm

(b) $8\frac{1}{3}$ cm

(c) $5\frac{1}{2}$ cm

(d) $4\frac{1}{6}$ cm



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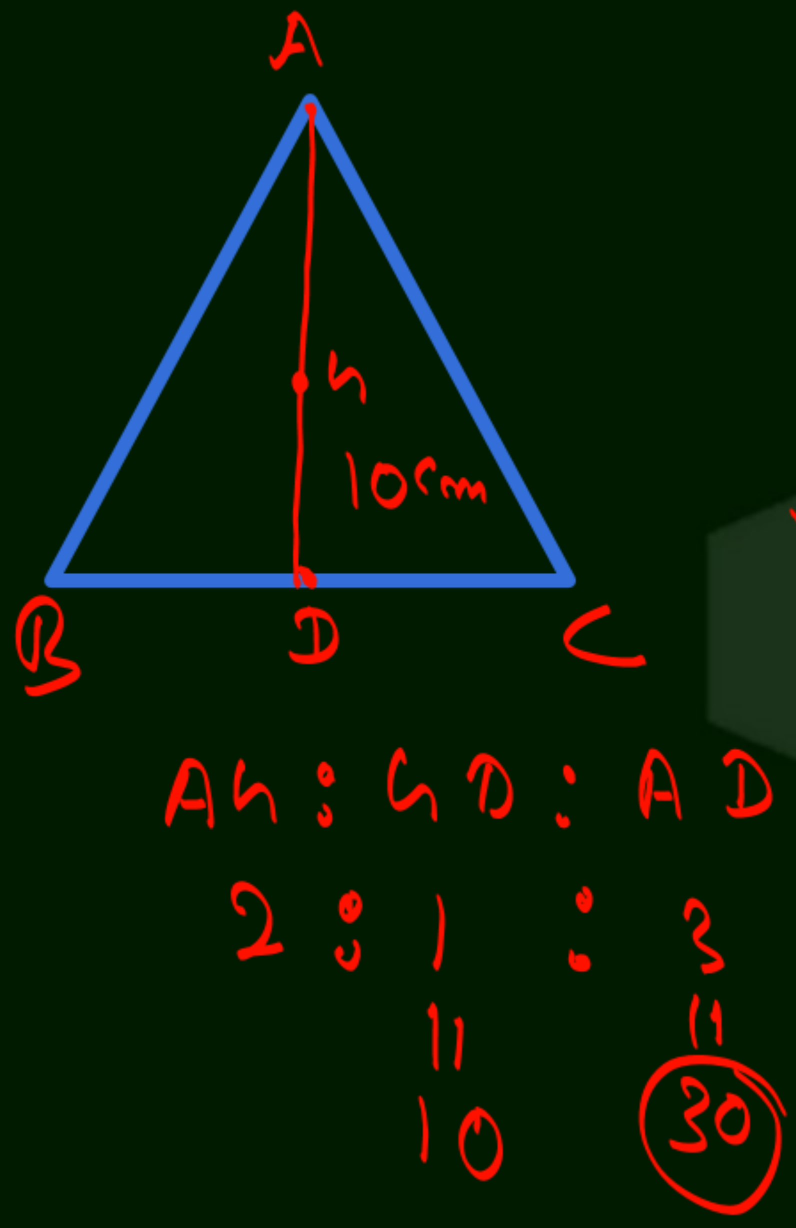

In ΔABC, D is the mid point of BC and Gis centroid. If GD = 10cm then the length of AD is.

ΔABC में, D, BC का मध्यबिंदु है और G केन्द्रक है। यदि GD = 10 सेमी. है, तो AD की लंबाई कितनी होगी?

(a) 20 cm

(b) 30 cm

(c) 15 cm

(d) 10 cm

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In ΔSTU, SX is the median on TU. If SX = TX, then what is the value of ΔTSU ?

ΔSTU में, SX, TU पर माध्यिका है। यदि SX = TX है, तो ΔTSU का मान क्या है?

(a) 75°

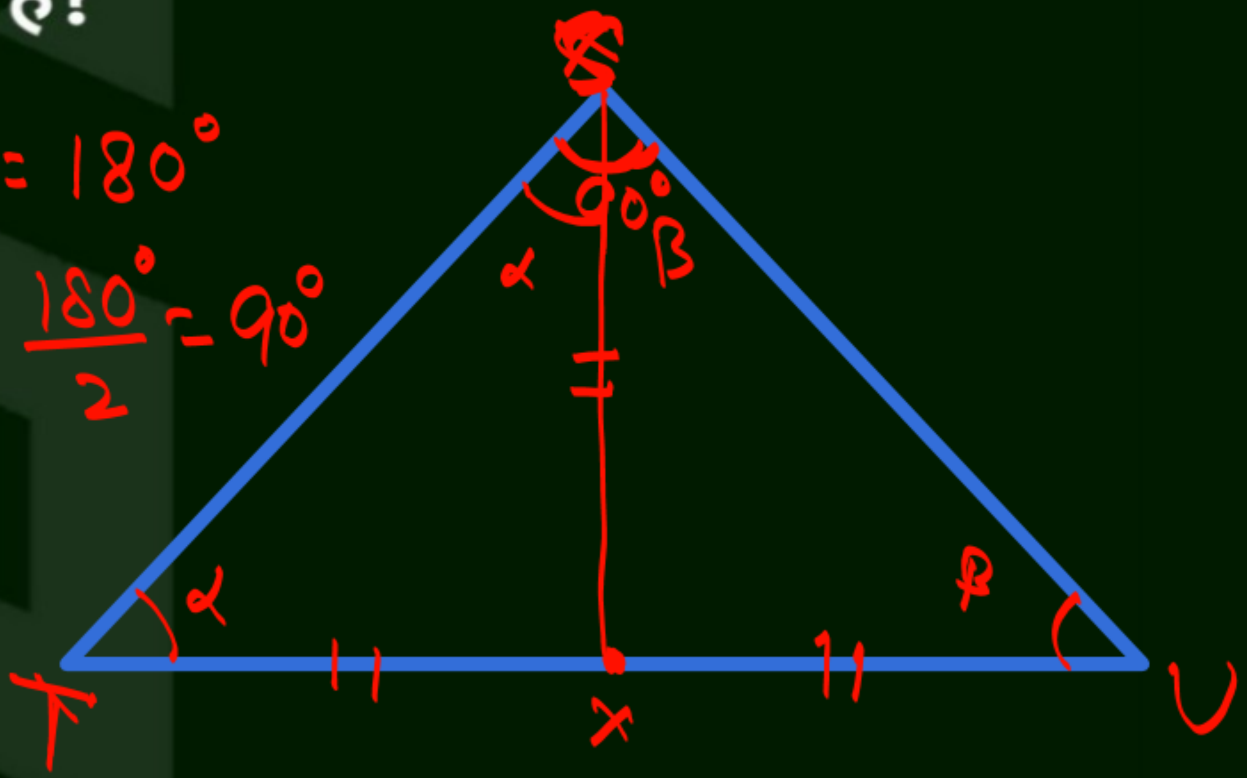
(b) 45°

(c) 60°

(d) 90°

$2\alpha + 2\beta = 180°$

$\alpha + \beta = \frac{180°}{2} = 90°$



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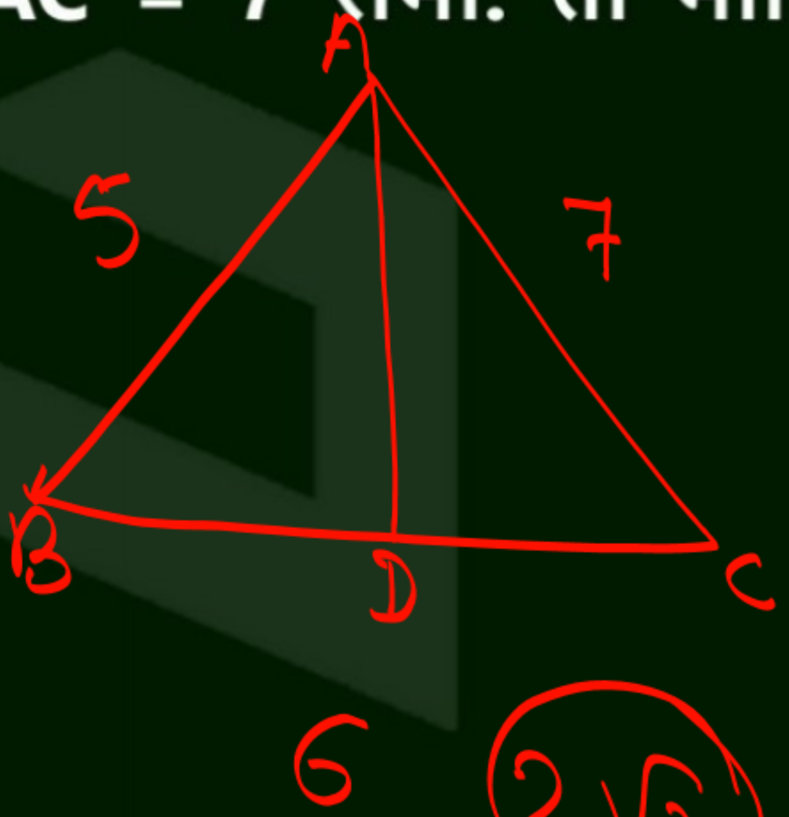
In ΔABC, AD is the median. If AB = 5 cm, BC = 6 cm and AC = 7cm then find the length of the median AD?

ΔABC में,AD माध्यिका है। यदि AB = 5 सेमी. BC = 6 सेमी. और AC = 7 सेमी. तो माध्यिका AD की लंबाई निकालें?

(a) $2\sqrt{7}$
(b) $3\sqrt{7}$
(c) $5\sqrt{7}$
(d) $4\sqrt{7}$



$AD = \frac{1}{2}\sqrt{2\times5^2+2\times7^2-6^2}$

$= \frac{1}{2}\sqrt{50+98-36}$

$= \frac{1}{2}\sqrt{112}$

$= \frac{1}{2}\times\sqrt{16\times7} = \frac{1}{2}\times4\sqrt{7}$

$2\sqrt{7}$

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