

KGS



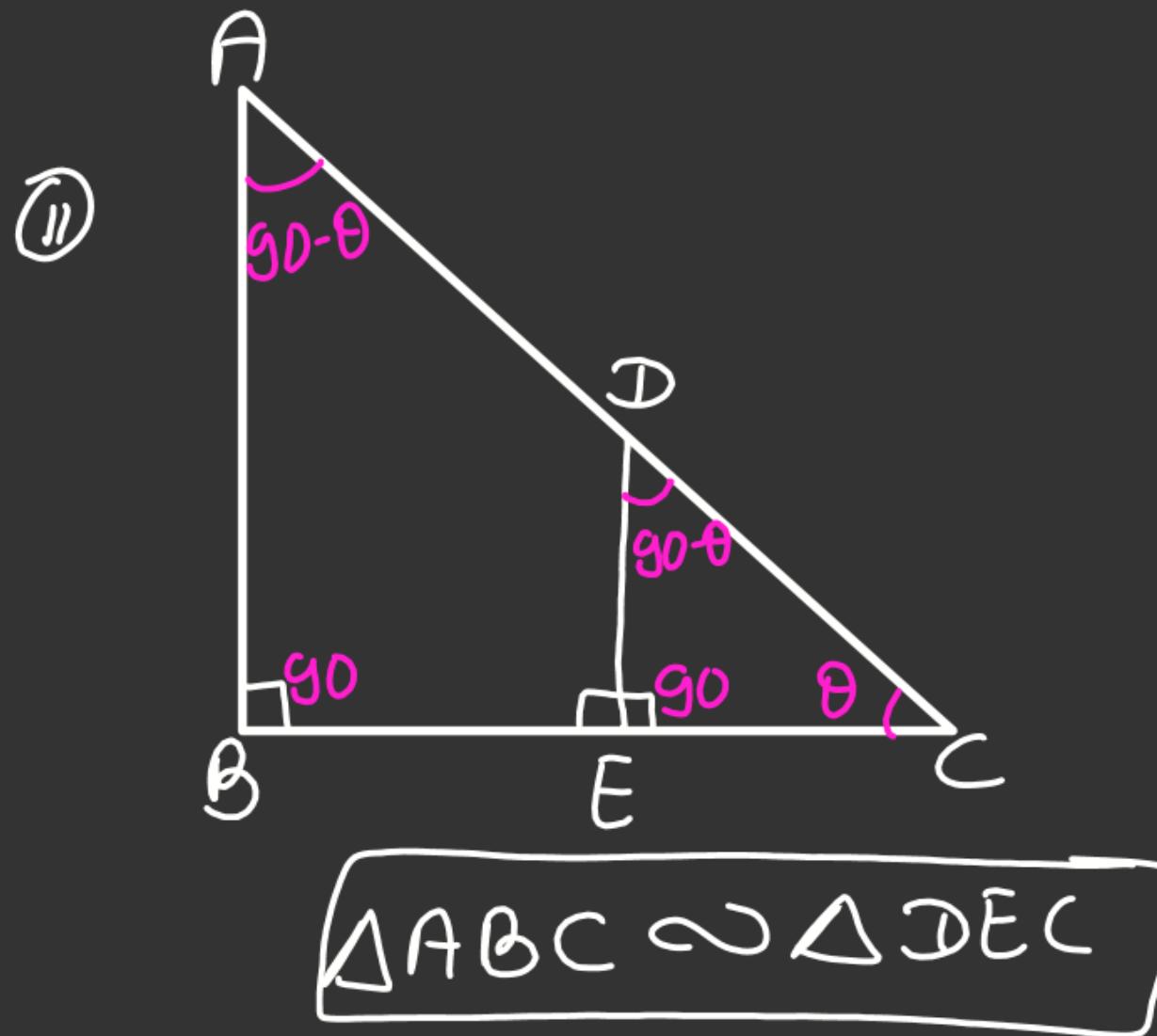
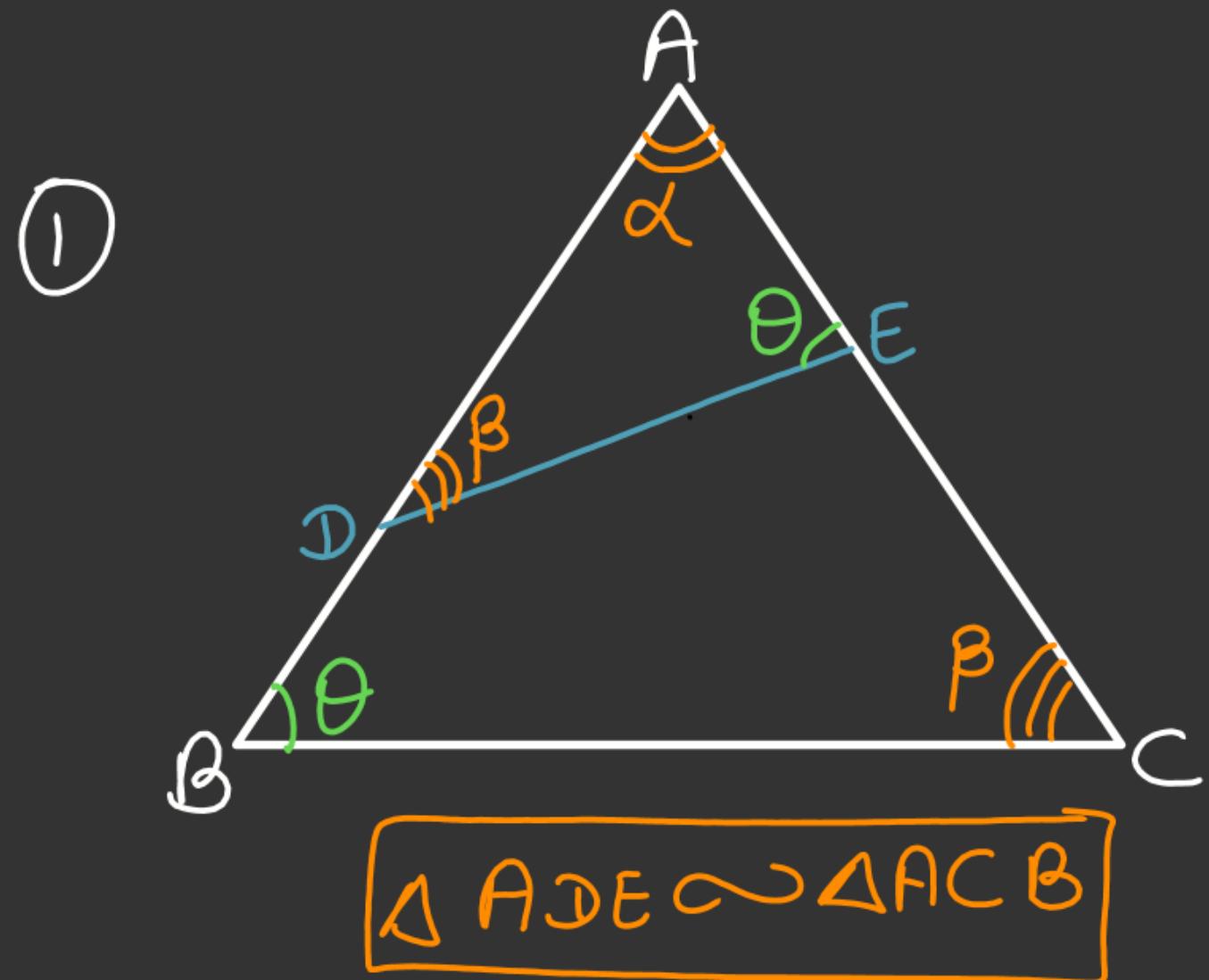
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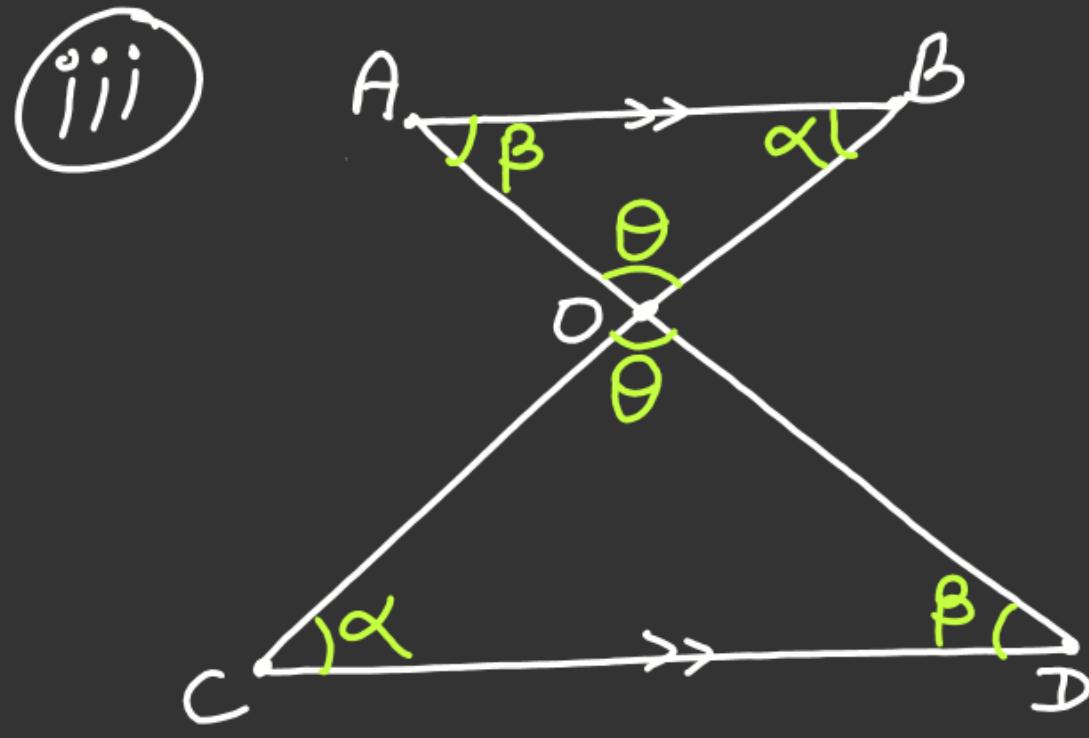
TRIANGLE PART-2



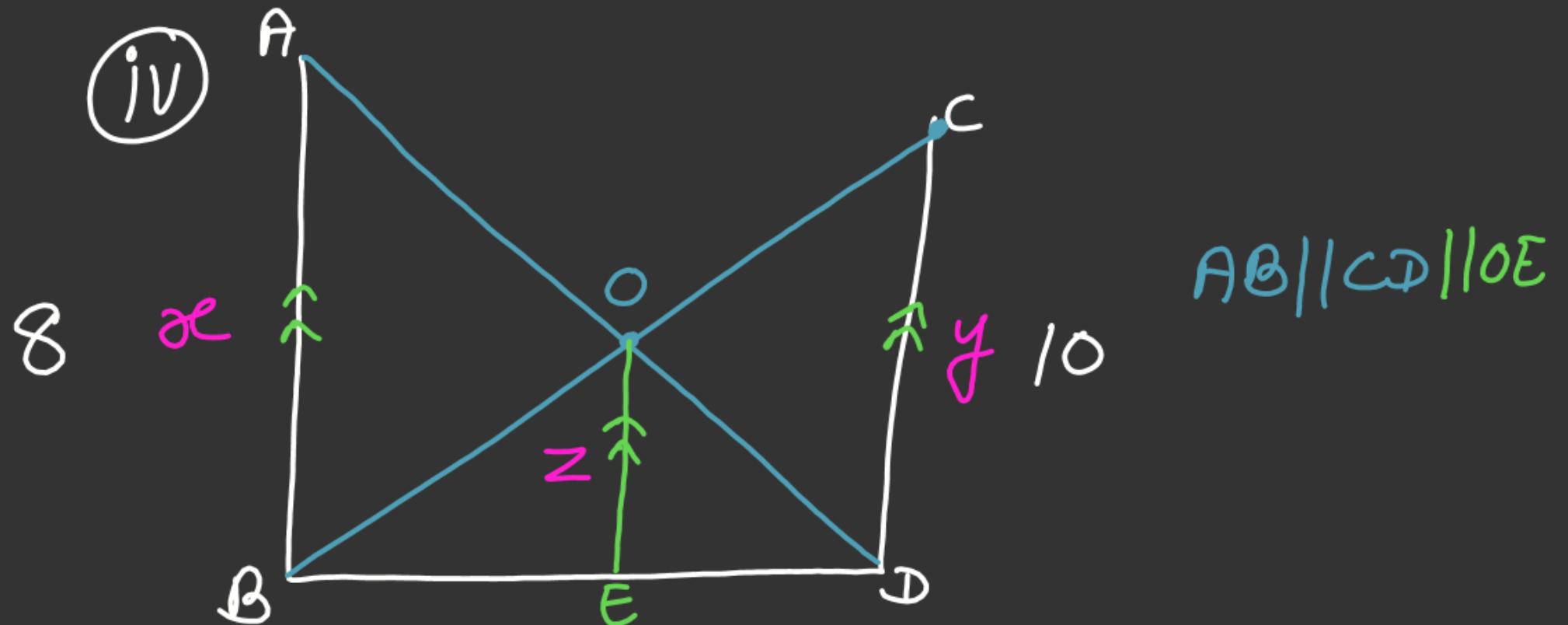
By: P.K Sir







$$\triangle AOB \sim \triangle DOC$$

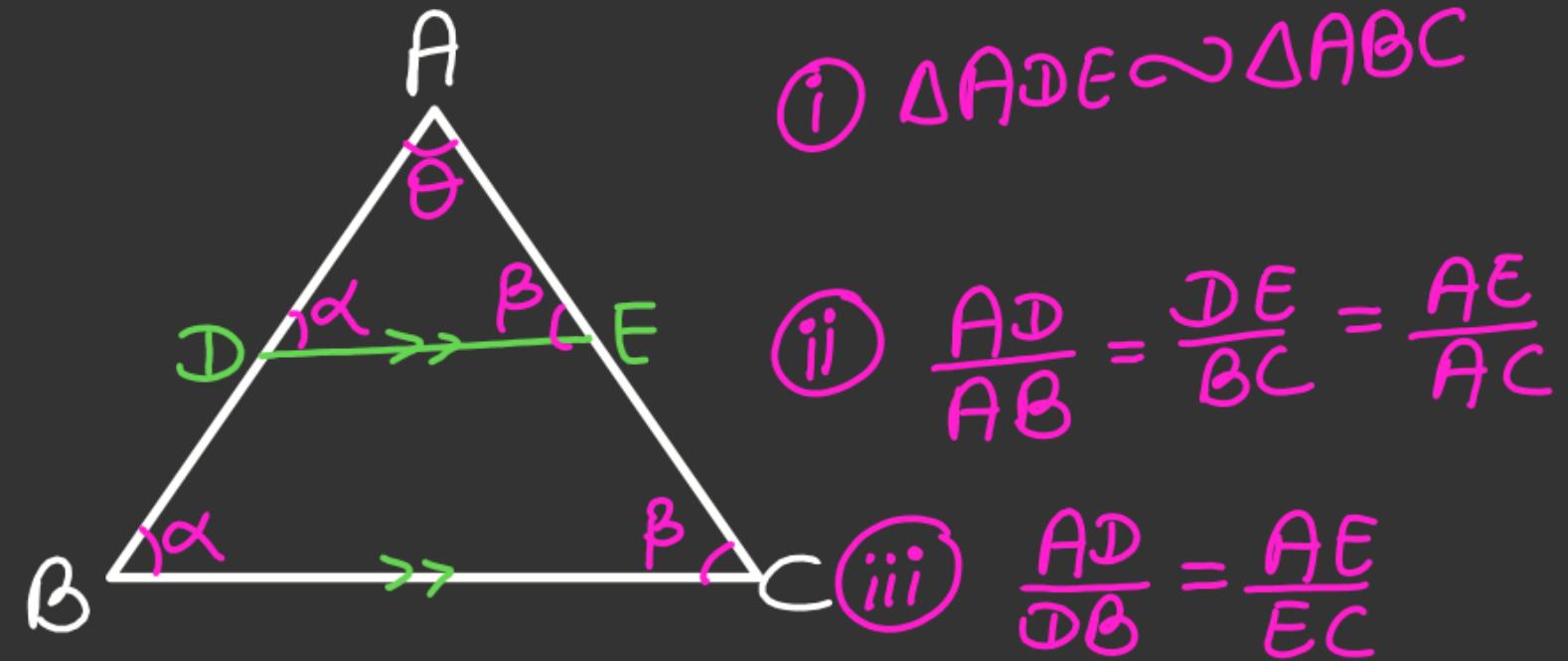


$$\frac{1}{z} = \frac{1}{x} + \frac{1}{y}$$

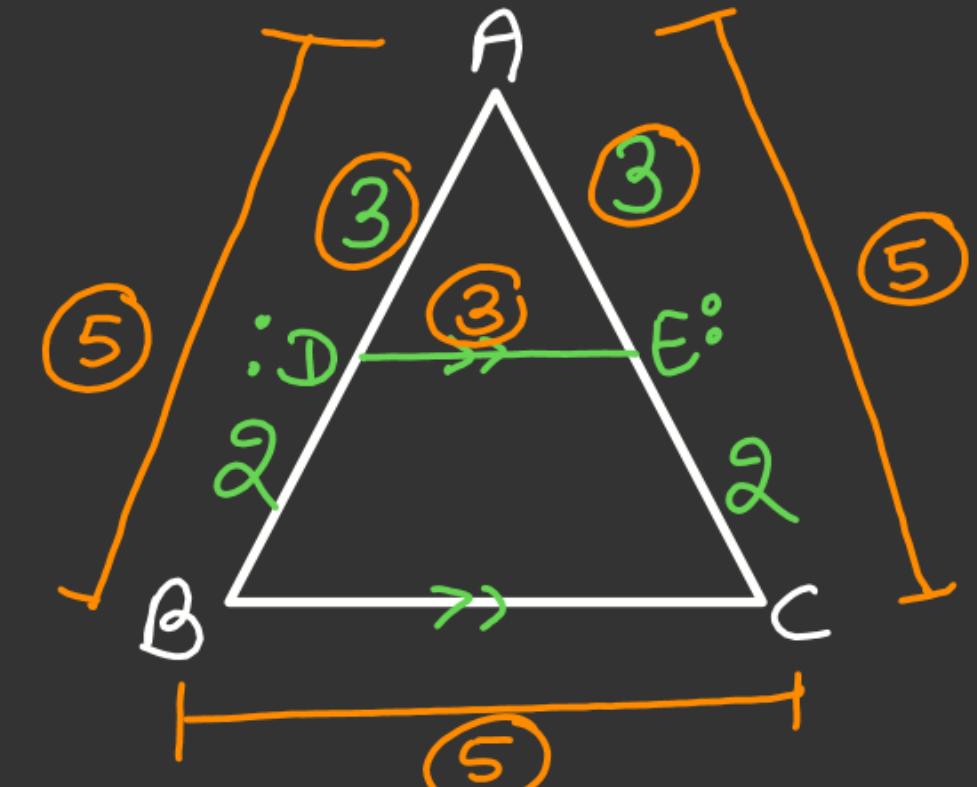
$$Z = \frac{xy}{x+y}$$

$$Z = \frac{8 \times 10}{8 + 10} = \frac{80}{18} = \frac{40}{9}$$

Thales Theorem

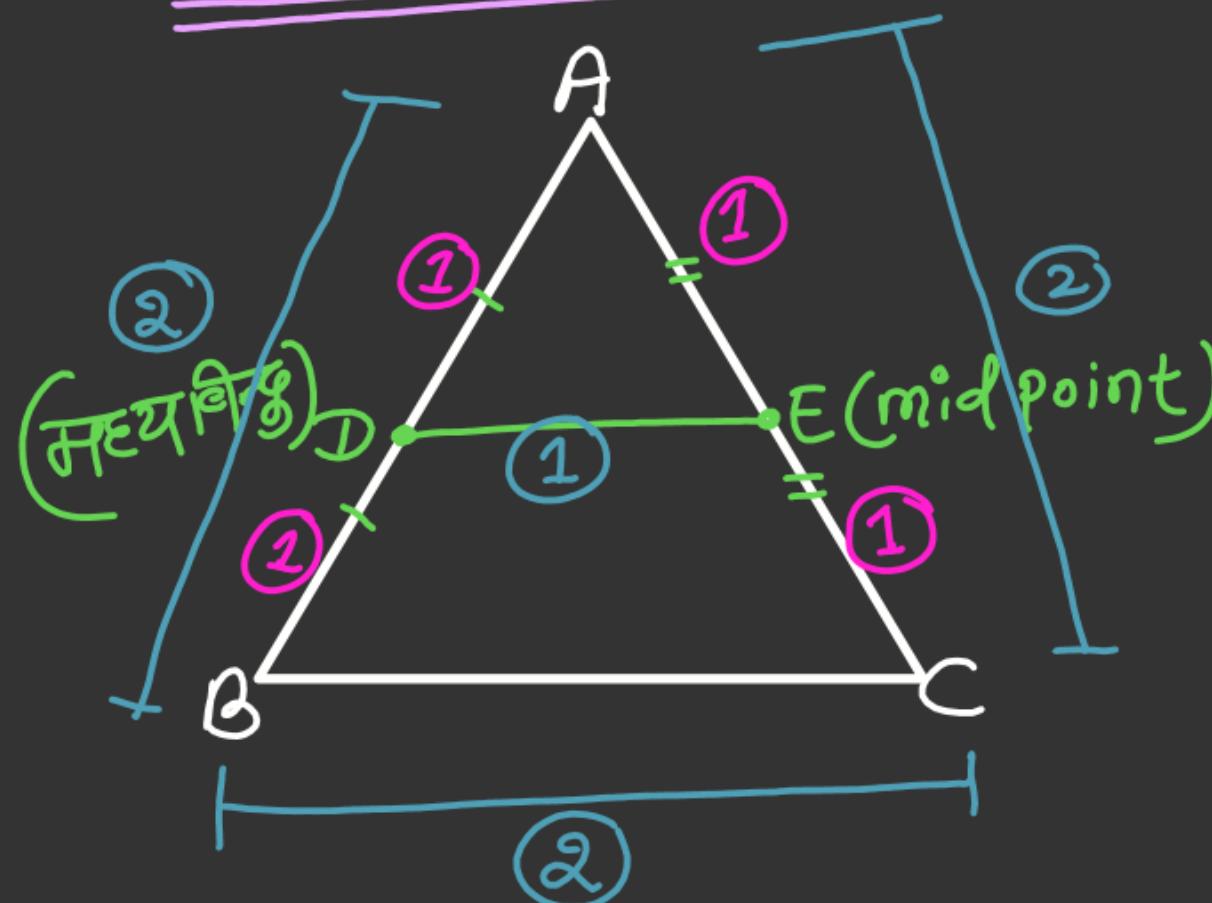


$$\begin{aligned}\text{Side } & \rightarrow 3 : 5 \\ \text{Area } & \rightarrow 3^2 : 5^2 \\ & 9 : 25\end{aligned}$$

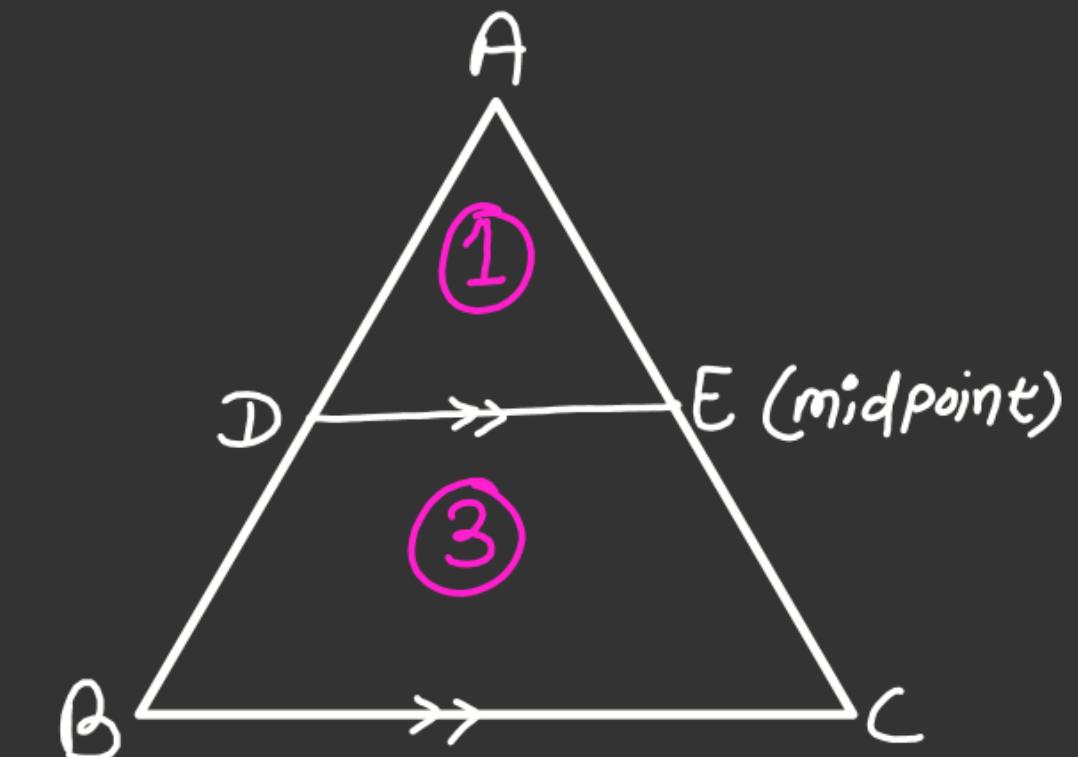


$$\begin{aligned}\text{as } & \triangle ADE : \triangle ABC \\ g & : (25-g) \\ g & : 16\end{aligned}$$

Mid point theorem



- i) $DE \parallel BC$
- ii) $\triangle ADE \sim \triangle ABC$
- iii) $DE = \frac{BC}{2}$



$\triangle ADE : \triangle ABC$

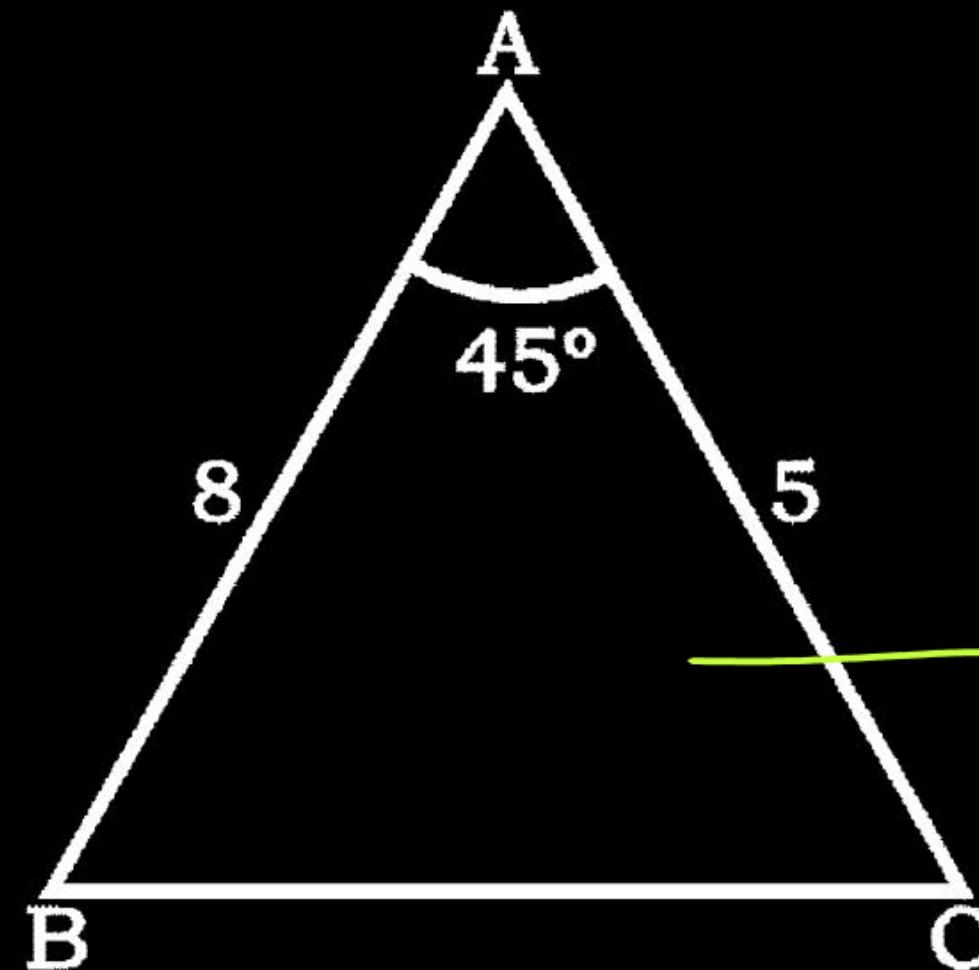
Side $\rightarrow 1 : 2$

Area $\rightarrow 1 : 4$

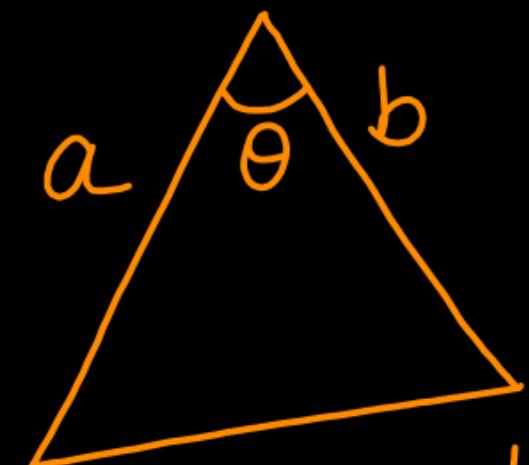
01.

In the given figure, find the area of ABC ?

दिये गये चित्र में ABC का क्षेत्रफल ज्ञात कीजिए ?



- (a) $10\sqrt{2}$
- (b) $15\sqrt{2}$
- (c) $20\sqrt{2}$
- (d) $25\sqrt{2}$



$$\text{Area} = \frac{1}{2} ab \sin \theta$$

$$\rightarrow \text{Area} = \frac{1}{2} \times 8 \times 5 \times \sin 45^\circ$$

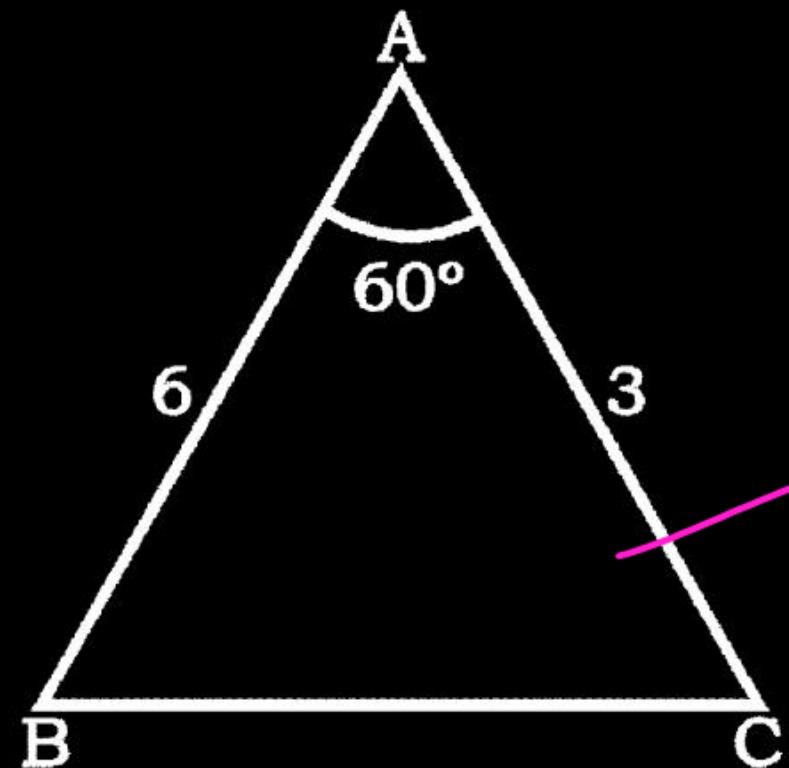
$$= \frac{1}{2} \times 8 \times 5 \times \frac{2\sqrt{2}}{4}$$

$$= 10\sqrt{2} \text{ cm}^2$$

02.

In the given, find the area of ABC ?

दिये गये चित्र में ABC का क्षेत्रफल ज्ञात कीजिए ?



$$\text{Area} = \frac{1}{2} \times 6 \times 3 \times \frac{\sqrt{3}}{2} = \frac{9\sqrt{3}}{2}$$

(a) $\frac{9\sqrt{3}}{2}$

(b) $\frac{10\sqrt{3}}{2}$

(c) $\frac{11\sqrt{3}}{2}$

(d) $\frac{12\sqrt{3}}{2}$

$$\sin 60^\circ = \frac{\sqrt{3}}{2}$$



KHAN SIR

03.

If three sides of a triangle are 8 cm, 17 cm and x cm, for what value of x, area of triangle is maximum?

$\sin \theta \rightarrow \max^m \text{ } ① \quad \min^m \text{ } -1$

एक त्रिभुज की तीन भुजायें 8 सेमी, 17 सेमी. और x सेमी. हैं,

$\sqrt{361}$

x के किस मान के लिये, त्रिभुज का क्षेत्रफल अधिकतम होगा?

$\sqrt{324}$
18 to 19

(a) 15 cm

(b) 17 cm

(d) 23.16 cm

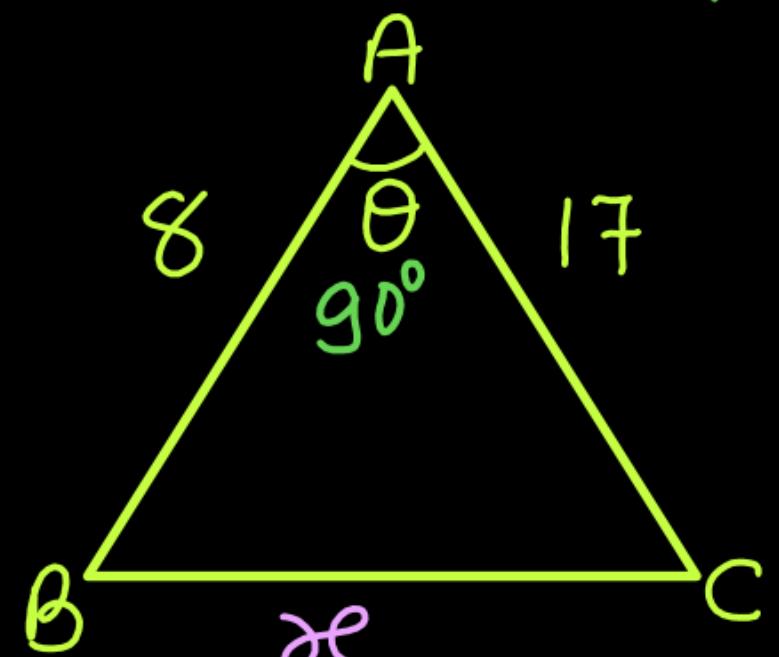
$\theta = 90^\circ$

$$\text{Area} = \frac{1}{2} \times 8 \times 17 \times \sin \theta = 68 \text{ cm}^2$$

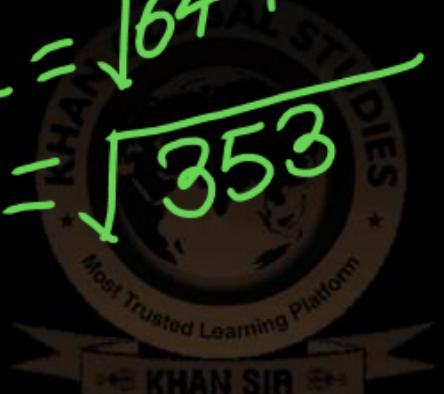
i) \max^m Area (अधिकतम क्षेत्रफल) $\rightarrow 68 \text{ cm}^2$

ii) x के किस मान के लिए क्षेत्रफल अधिकतम होता।

$x = 18.79$



$$x = \sqrt{8^2 + 17^2} = \sqrt{64 + 289} = \sqrt{353}$$



04.

In triangle ABC , $\angle A = 60^\circ$, $AB = 3 \text{ cm}$ and $AC = 4 \text{ cm}$.

Find the value of AD . If AD is an angle bisector.

त्रिभुज ABC में, $\angle A = 60^\circ$, $AB = 3$ सेमी. और $AC = 4$ सेमी.

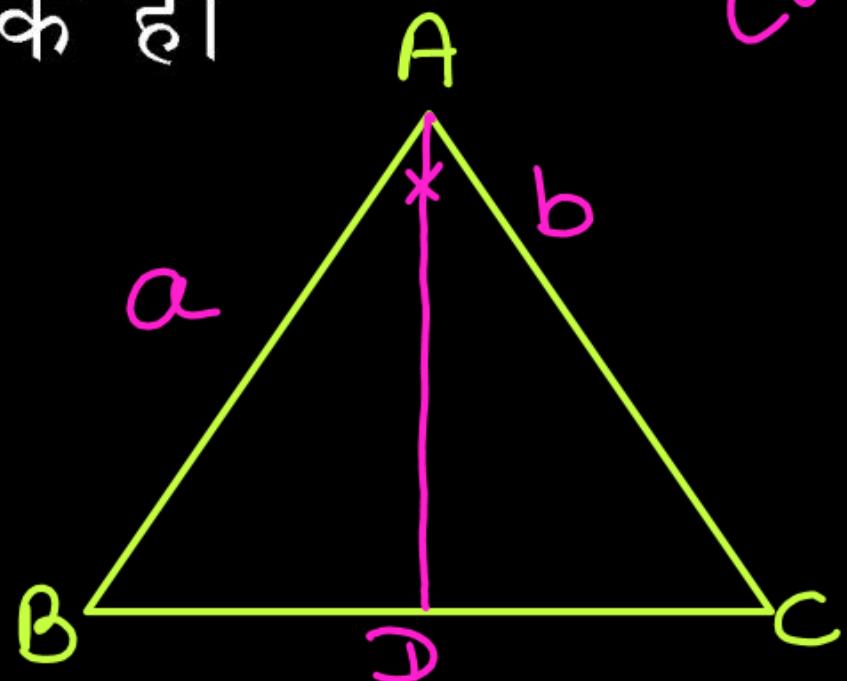
AD का मान ज्ञात कीजिए यदि AD कोण अर्धक है।

(a) $\frac{12\sqrt{3}}{7}$

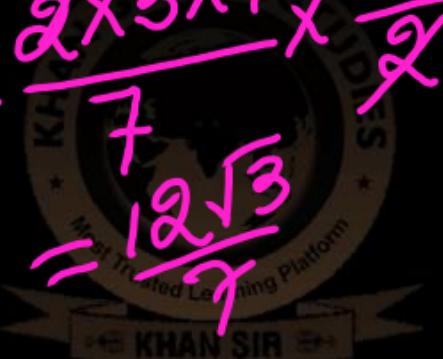
(c) $\frac{12\sqrt{11}}{7}$

(b) $\frac{12\sqrt{5}}{7}$

(d) $\frac{12\sqrt{7}}{7}$



$$AD = \frac{2ab}{a+b} \cos \frac{A}{2} = \frac{2 \times 3 \times 4 \times \frac{\sqrt{3}}{2}}{7} = \frac{12\sqrt{3}}{7}$$



$$\cos \frac{60^\circ}{2} = \cos 30^\circ = \frac{\sqrt{3}}{2}$$

05.

In triangle ABC , $\angle A = 120^\circ$, $AB = 3 \text{ cm}$ and $AC = 4 \text{ cm}$.

Find the value of AD. If AD is an angle bisector.

त्रिभुज ABC में, $\angle A = 120^\circ$, $AB = 3$ सेमी. और $AC = 4$ सेमी.

AD का मान ज्ञात कीजिए यदि AD कोण अर्धक है।

$$(a) \frac{12}{7}$$

$$(b) \frac{12\sqrt{5}}{7}$$

$$(c) \frac{12\sqrt{11}}{7}$$

$$(d) \frac{12\sqrt{7}}{7}$$

$$\cos 60^\circ = \frac{1}{2}$$

$$AD = \frac{2ab}{a+b} \cos \frac{\alpha}{2}$$

$$= \frac{2 \times 3 \times 4}{7} \times \frac{1}{2} = \frac{12}{7} \text{ cm}$$



06.

In a ABC, AB = 8cm, AC = 12 cm, AD is the angle bisector of BAC. Given that $\angle BAC = 60^\circ$. What is the length of AD.

त्रिभुज ABC में, AB = 8cm. AC = 12 cm, और AD कोण BAC का कोण समद्विभाजक है दिया गया है कि $\angle BAC = 60^\circ$ तो AD की लम्बाई क्या है ?

(a) $\frac{24\sqrt{3}}{5}$

(b) $\frac{24\sqrt{3}}{7}$

(c) $\frac{24\sqrt{3}}{11}$

(d) $\frac{24\sqrt{3}}{13}$

$$AD = \frac{2ab}{a+b} \cos \frac{A}{2}$$

$$= \frac{2 \times 8 \times 12}{8+12} \cos \frac{60}{2}$$

$$= \frac{2 \times 8 \times 12}{20} \times \frac{\sqrt{3}}{2}$$

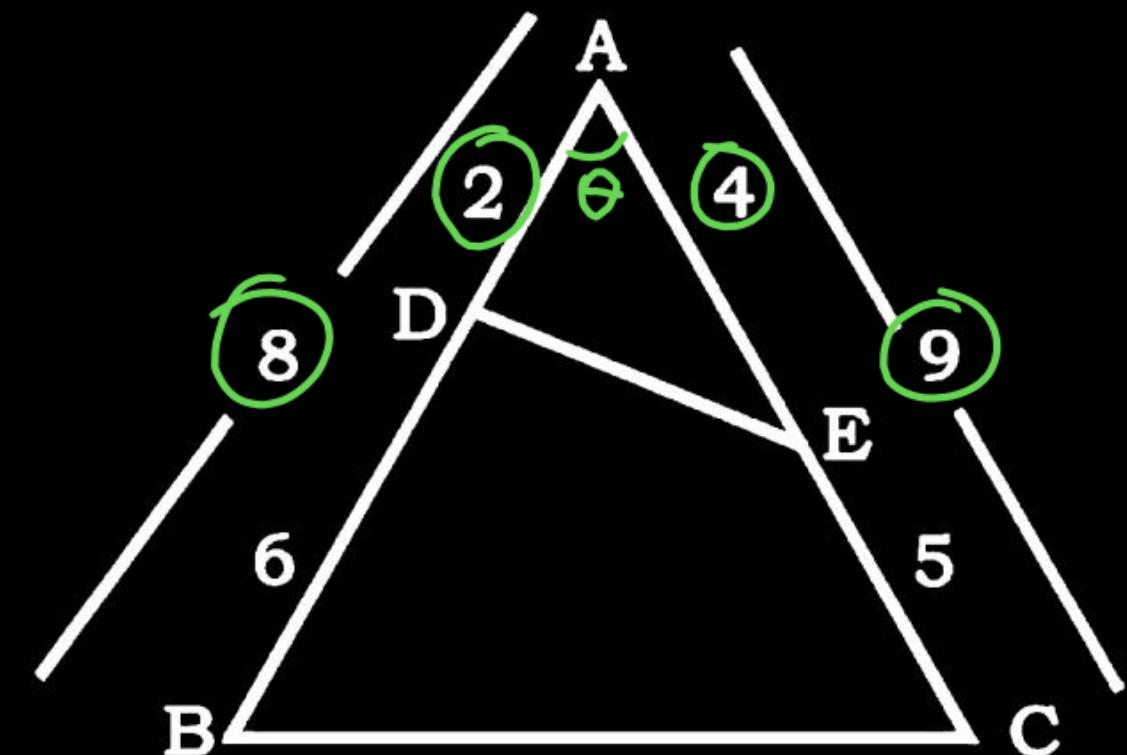
$$= \frac{24\sqrt{3}}{5}$$



07.

Area of ADE : Area of ΔABC = ?

ΔADE का क्षेत्रफल : ΔABC का क्षेत्रफल = ?



$$\frac{\text{Area of } \Delta ADE}{\text{Area of } \Delta ABC} = \frac{2 \times 4}{8 \times 9} = \frac{1}{9}$$

- (a) 1 : 9
- (c) 1 : 6

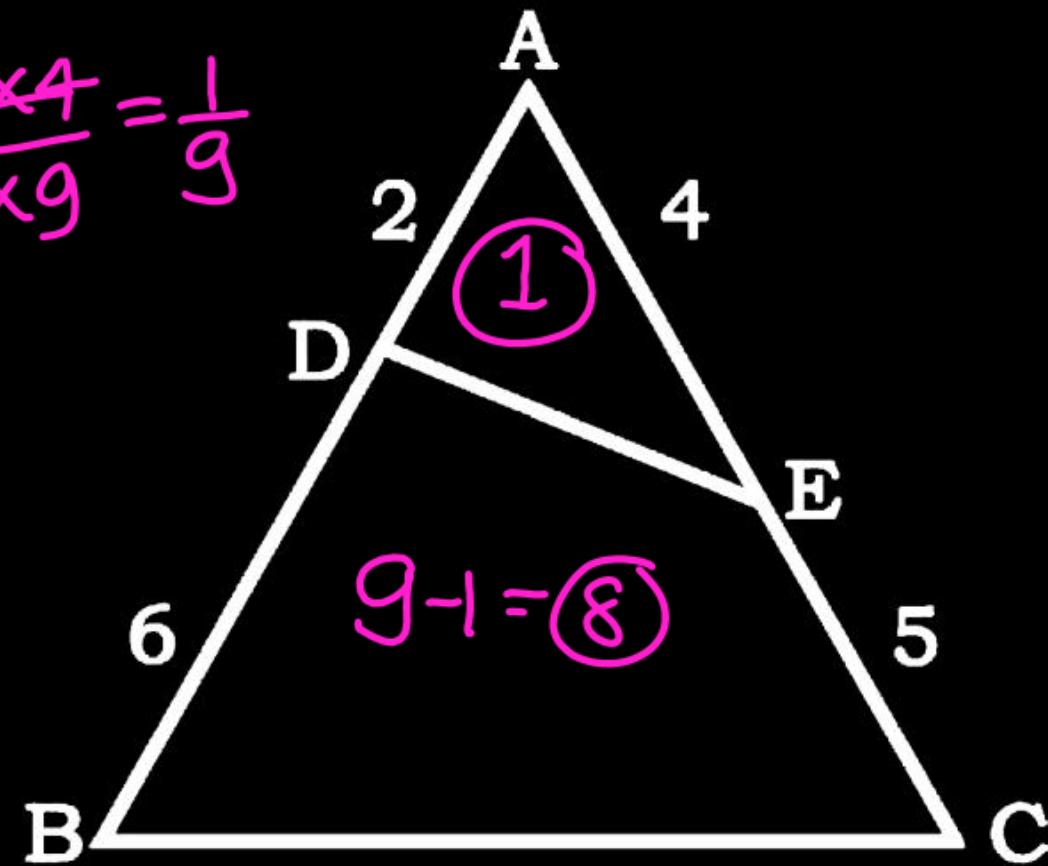
- (b) 1 : 8
- (d) 1 : 7

08.

Area of triangle ADE : Area of \square BCED = ?

ΔADE का क्षेत्रफल : \square BCED का क्षेत्रफल = ?

$$\frac{\text{ar } \Delta ADE}{\text{ar } \Delta ABC} = \frac{2 \times 4}{8 \times 9} = \frac{1}{9}$$



$$\Delta ADE : \square BCED$$

Area $\rightarrow 1 : 8$

- (a) 1 : 9
- (c) 1 : 6
- (b) 1 : 8
- (d) 1 : 7

09.

In the given figure, Triangle PQR. S and T are two points on side PQ and PR respectively such that PS: SQ = 3: 4 and PT: TR = 6: 5 if Area of $\square TRQS$ = 177 cm² Then find the area of A PQR?

दिये गये त्रिभुज PQR में S और T क्रमशः PQ तथा PR पर स्थित दो बिंदु हैं ताकि PS : SQ = 3 : 4 और PT : TR = 6 : 5 यदि $\square TRQS$ का क्षेत्रफल 177 सेमी.² है तो ? PQR का क्षेत्रफल ज्ञात करें?

