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Unit 3

lesson 1

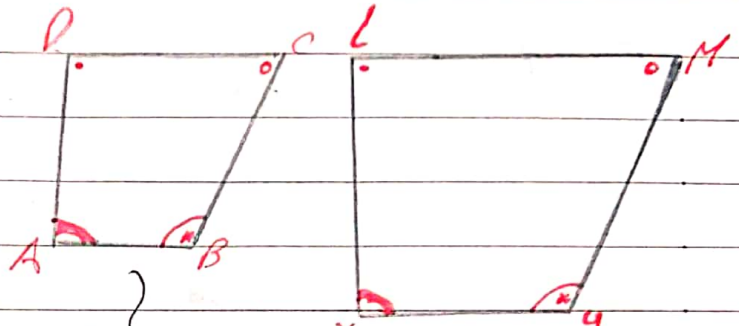
* $Z_1 \sim Z_2$ «ABCD ~ XYML» :

If ① $\angle A = \angle X$

$\angle B = \angle Y$

$\angle C = \angle M$

$\angle L = \angle D$



② $\frac{AB}{XY} = \frac{BC}{YM} = \frac{CD}{ML} = \frac{DA}{LX} = H$ ← Z_1 ↓ Z_2

If $H > 1$ → Z_2 enlargement Z_1 (Z_2 تكبير)

$0 < H < 1$ → Z_2 shrinking Z_1 (Z_2 تصغير)

$H = 1$ → Z_2 congruent Z_1 (Z_2 تطابق)

* $\frac{\text{Perimeter of } Z_1}{\text{Perimeter of } Z_2} = H$

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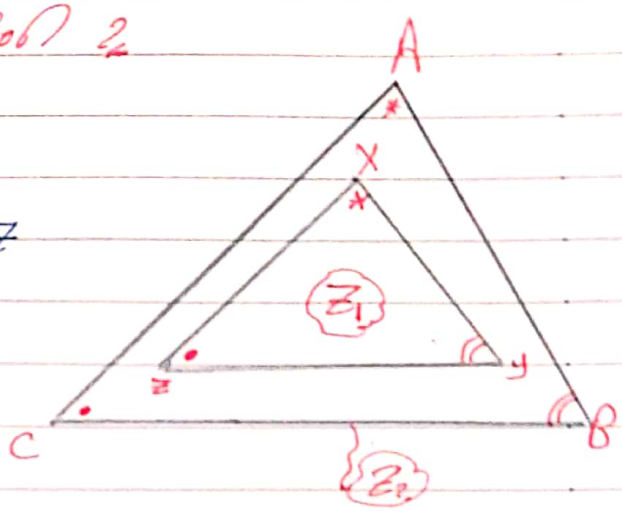
lesson 2

If $\angle A = \angle X$

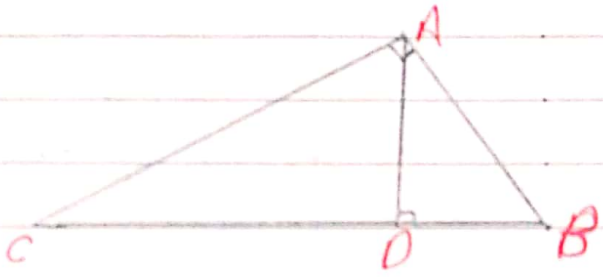
$\angle B = \angle Y$ $\therefore \Delta ABC \sim XYZ$

$$\frac{XY}{AB} = \frac{YZ}{BC} = \frac{ZX}{CA}$$



If $\Delta ABC \sim \Delta DAC \sim \Delta DBA$

$$(AB)^2 = DB * BC$$
$$(AC)^2 = DC * BC$$
$$(DA)^2 = DB * DC$$
$$AB * AC = AD * BC$$



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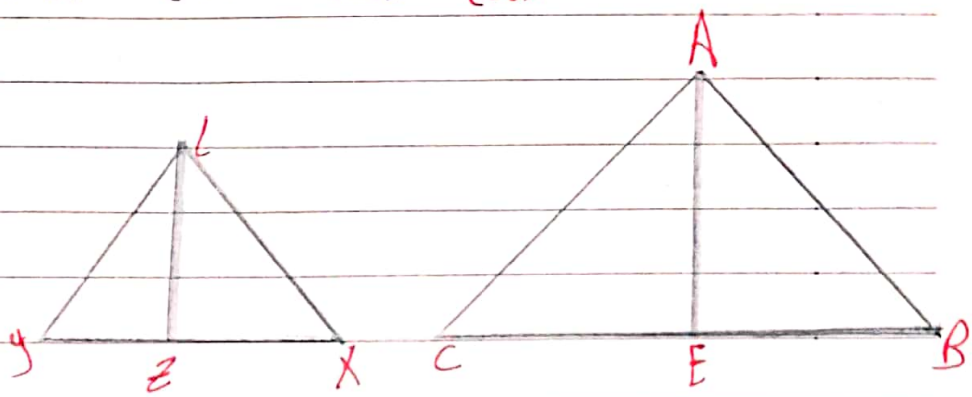
Lesson 3

* $\because \Delta ABC \sim \Delta LXY$

$\therefore \frac{\text{Area } ABC}{\text{Area } LXY} = \left(\frac{AB}{LX}\right)^2 = \left(\frac{BC}{XY}\right)^2 = \left(\frac{AC}{LY}\right)^2 = \frac{(AE)^2}{(LZ)^2}$

Area $\Delta = \frac{1}{2} BC \times AE$



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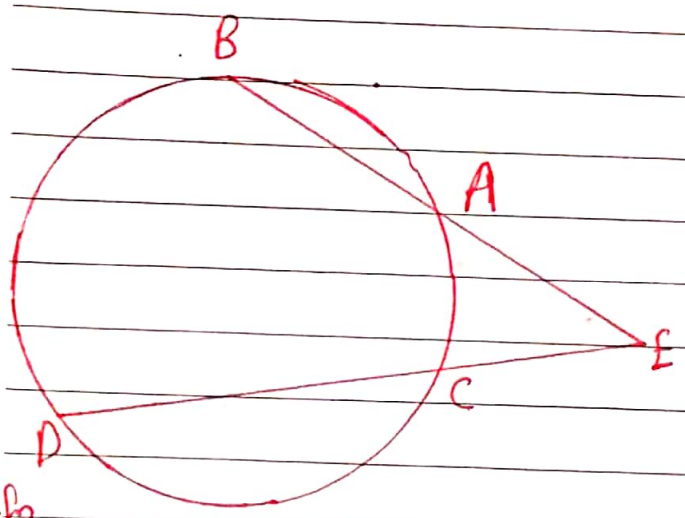
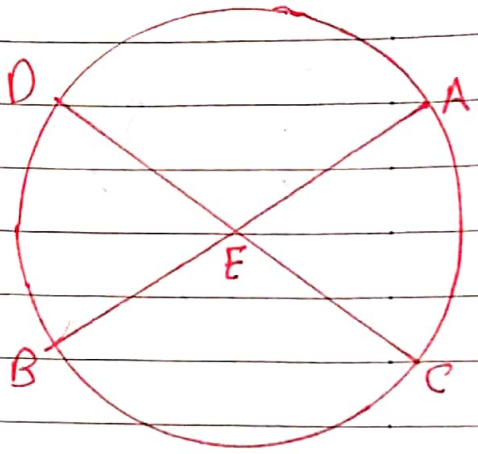
Lesson 4



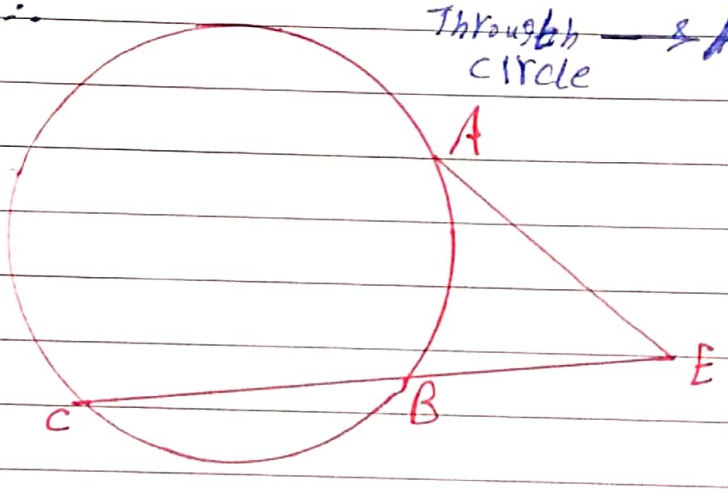
If → $AE * BE = CE * DE$

Through circle → $A'B'C'D'$ ∴



If → $AE * BE = CE * DE$

Through circle → $A'C'B'D'$ ∴



If → $(AE)^2 = BE * CE$

Tangent ← AE ∴