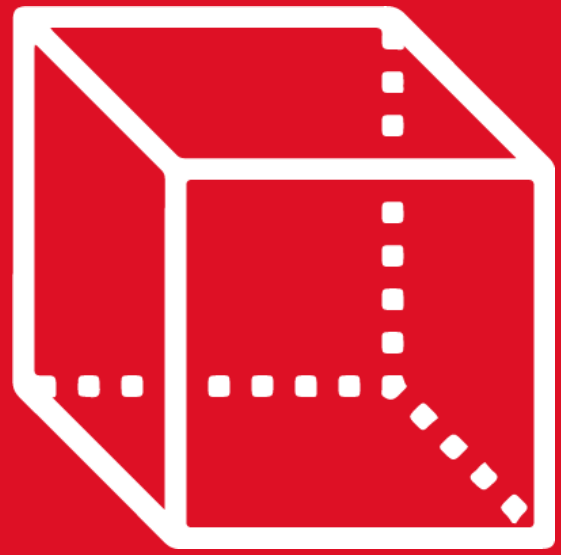
GEOMETRÍA

Capítulo 17



2 st

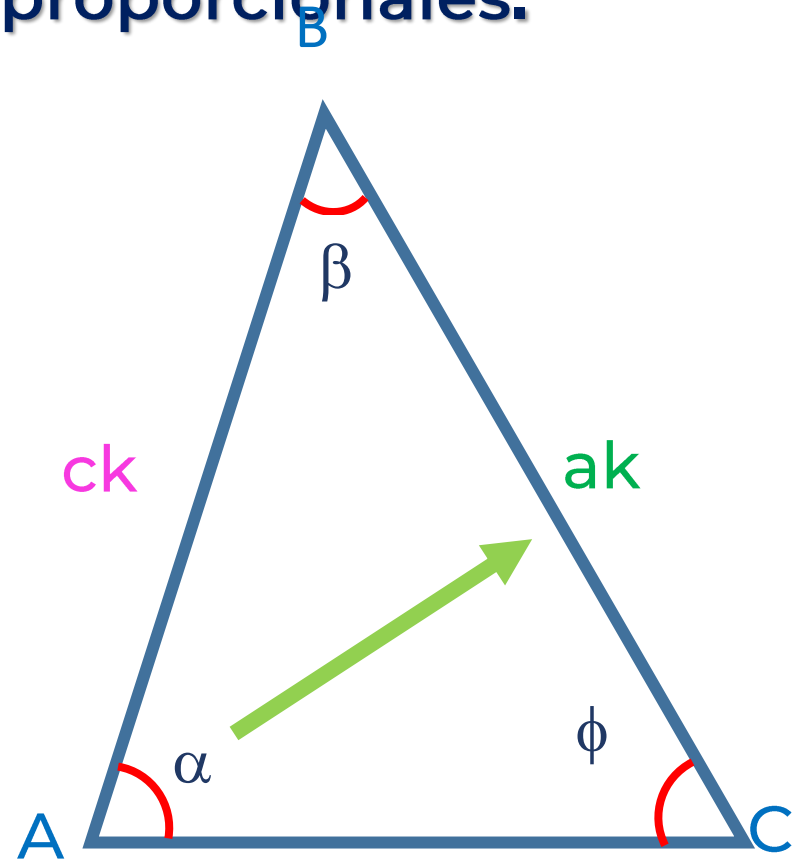
Triángulos Semejantes

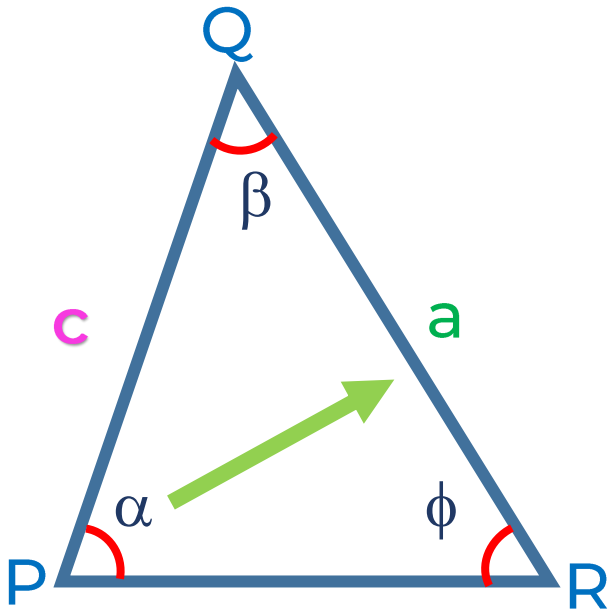
SACO OLIVEROS

MOTIVATING | STRATEGY

TRIÁNGULOS SEMEJANTES

Dos triángulos son semejantes si tienen tres pares de ángulos congruentes y sus lados homólogos son respectivamente proporcionales.





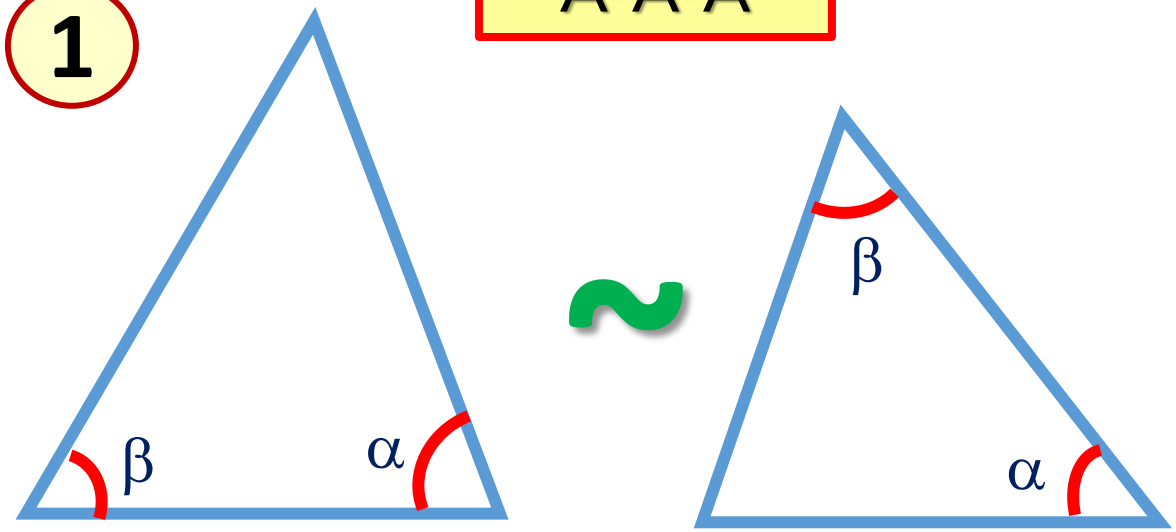
Si:

$\triangle ABC \sim \triangle PQR$

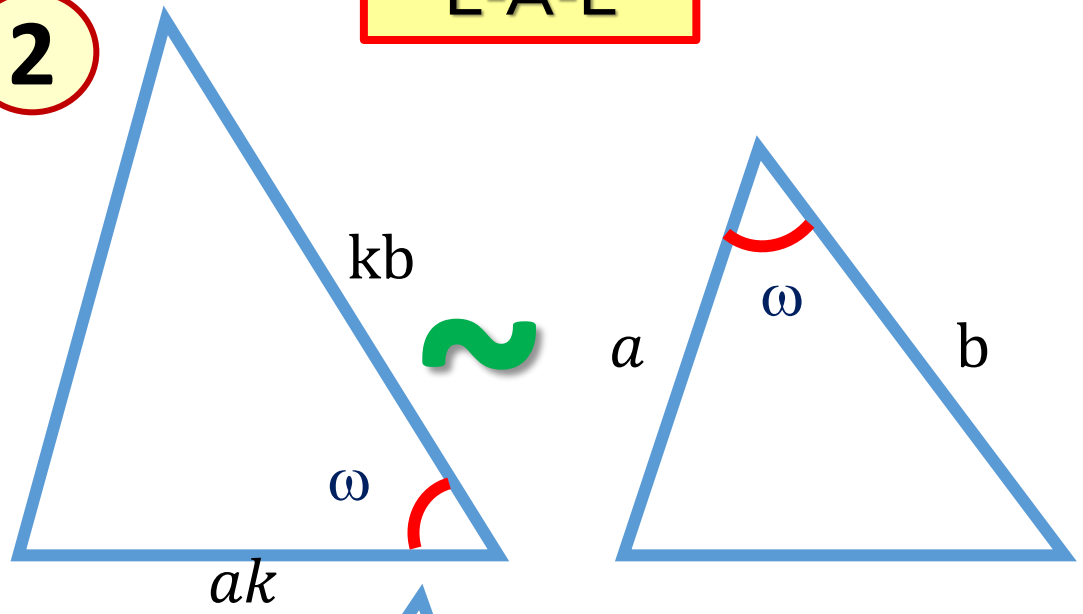
$$\frac{AC}{QR} = \frac{AB}{PR} = \frac{AB}{PQ} = K$$

Teoremas fundamentales de semejanza

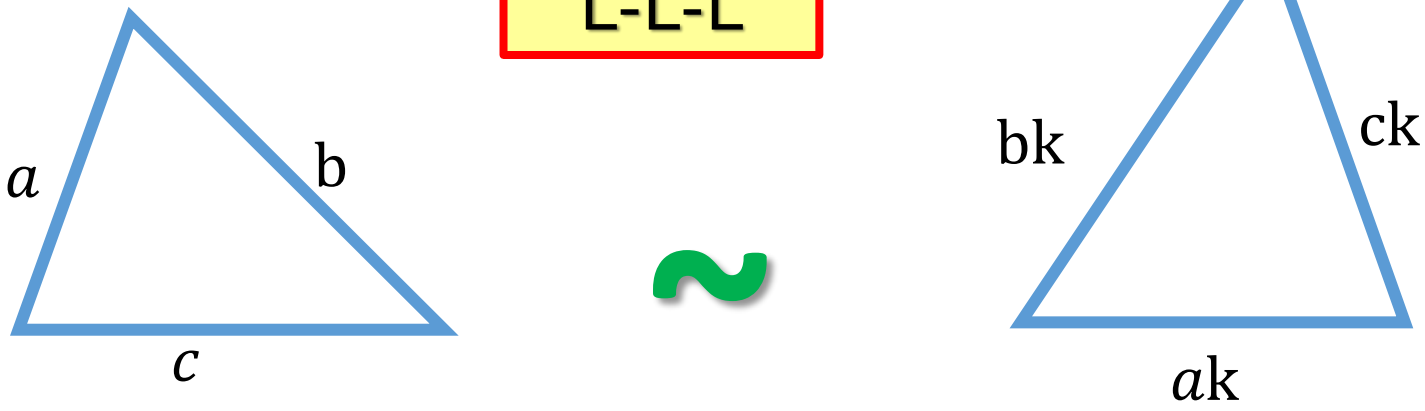
1 A-A-A



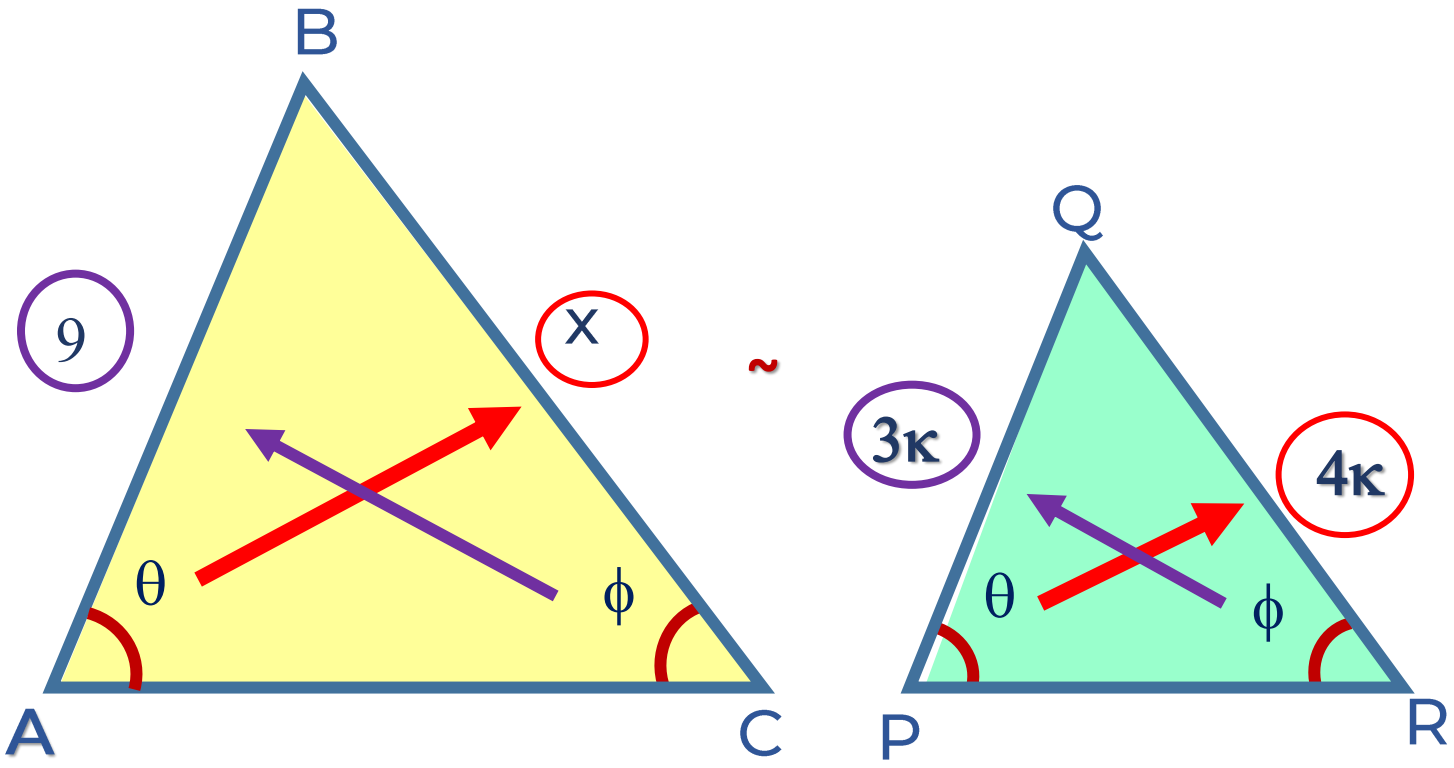
2 L-A-L



3 L-L-L



1.- Halle el valor de x.



Piden: x

$\triangle ABC \sim \triangle PQR$

A-A-A

$$\frac{x}{4k} = \frac{9}{3k}$$

$$x = 3(4)$$

$$x = 12$$

2. Halle el valor de x.

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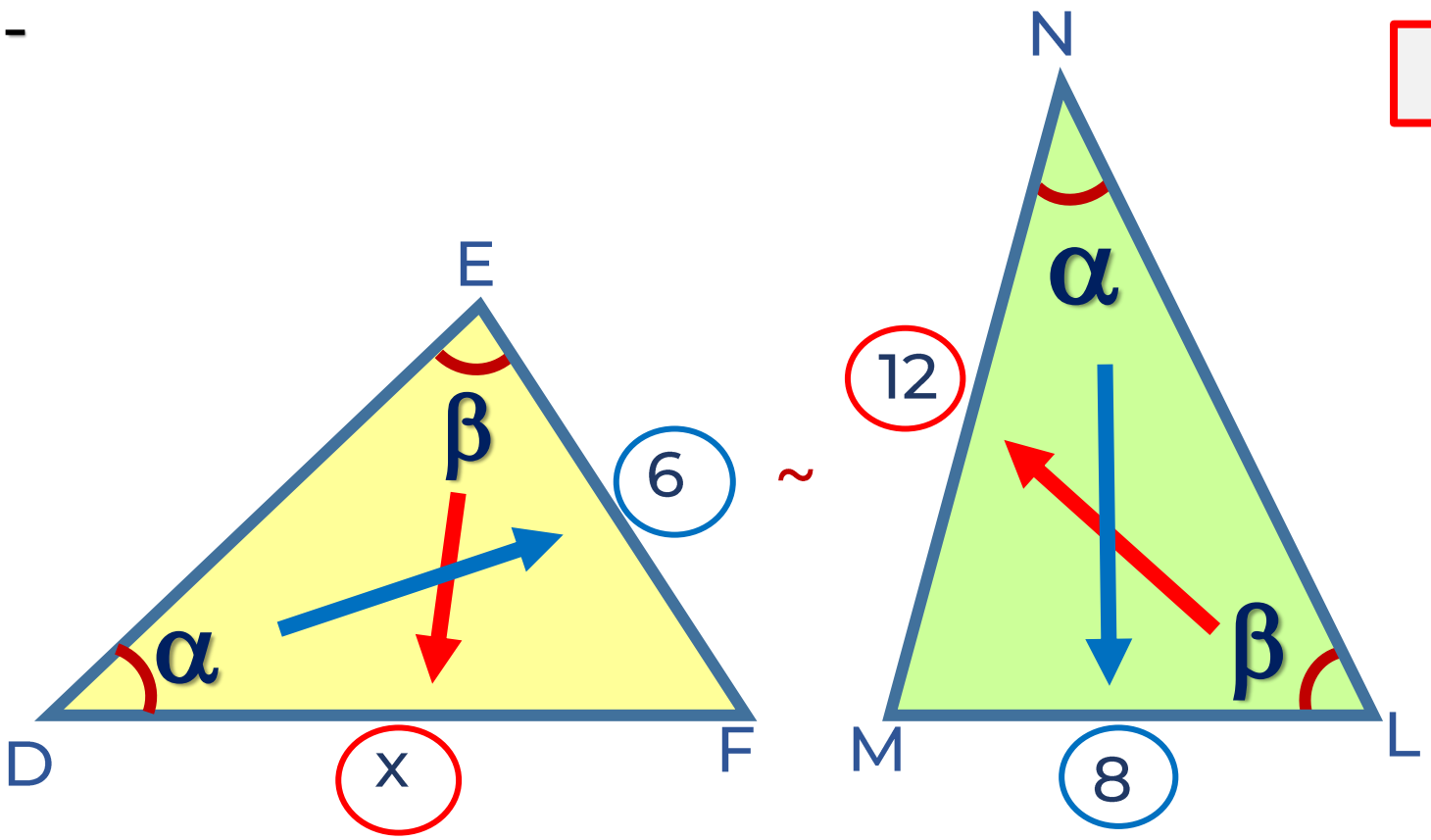


Piden: x

$\triangle DEF \sim \triangle NLM$

(A – A – A)

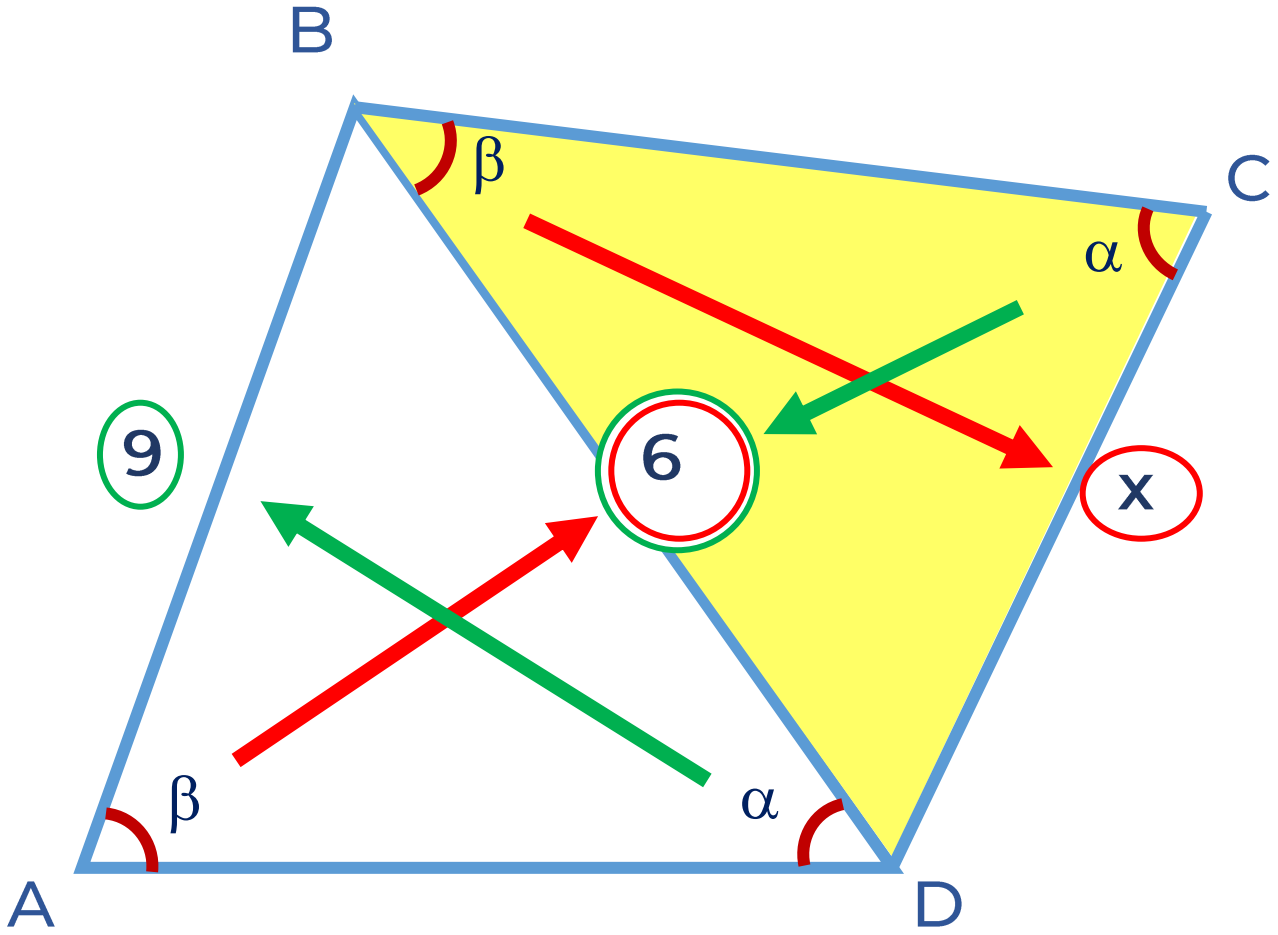
$$\frac{x}{12} = \frac{\cancel{6}^{3}}{\cancel{8}_{4}}$$

$$4x = 36$$

$$x = 9$$

3.- Se tiene los triángulos ABD y BCD. Si la m<BDA = m<BCD, m<BAD = m<CBD, AB = 9 y BD = 6; halle CD.

Piden: CD = x



△ABD ~ △BDC

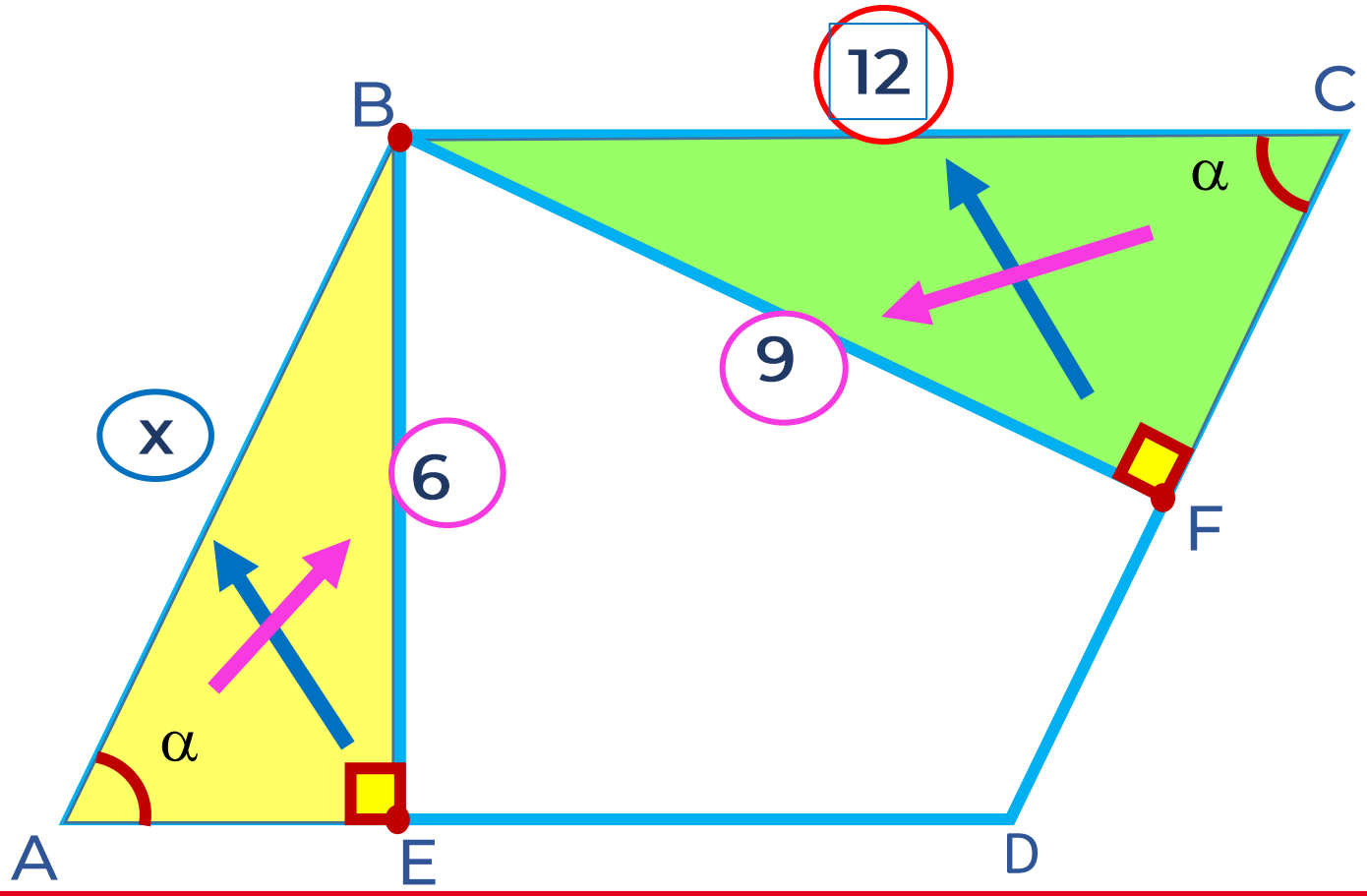
(A – A – A)

$$\frac{x}{6} = \frac{6}{9}$$

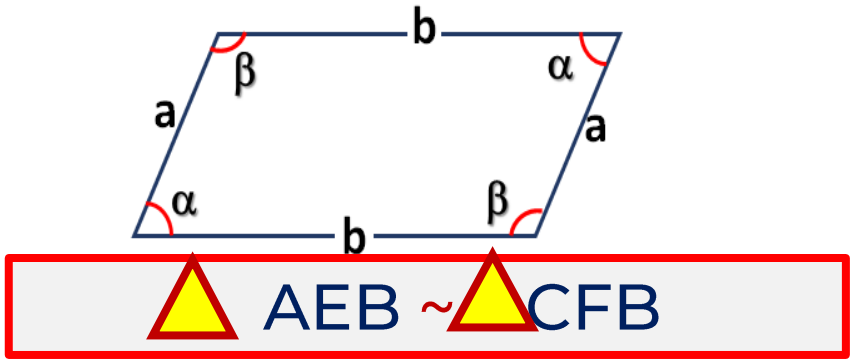
$$3x = 12$$

$$x = CD = 4$$

4.- Se tiene un paralelogramo ABCD. Si $\overline{BE} \perp \overline{AD}$, $\overline{BF} \perp \overline{CD}$ y BE = 6, BF = 9 y BC = 12; halle AB.



Piden: AB = x



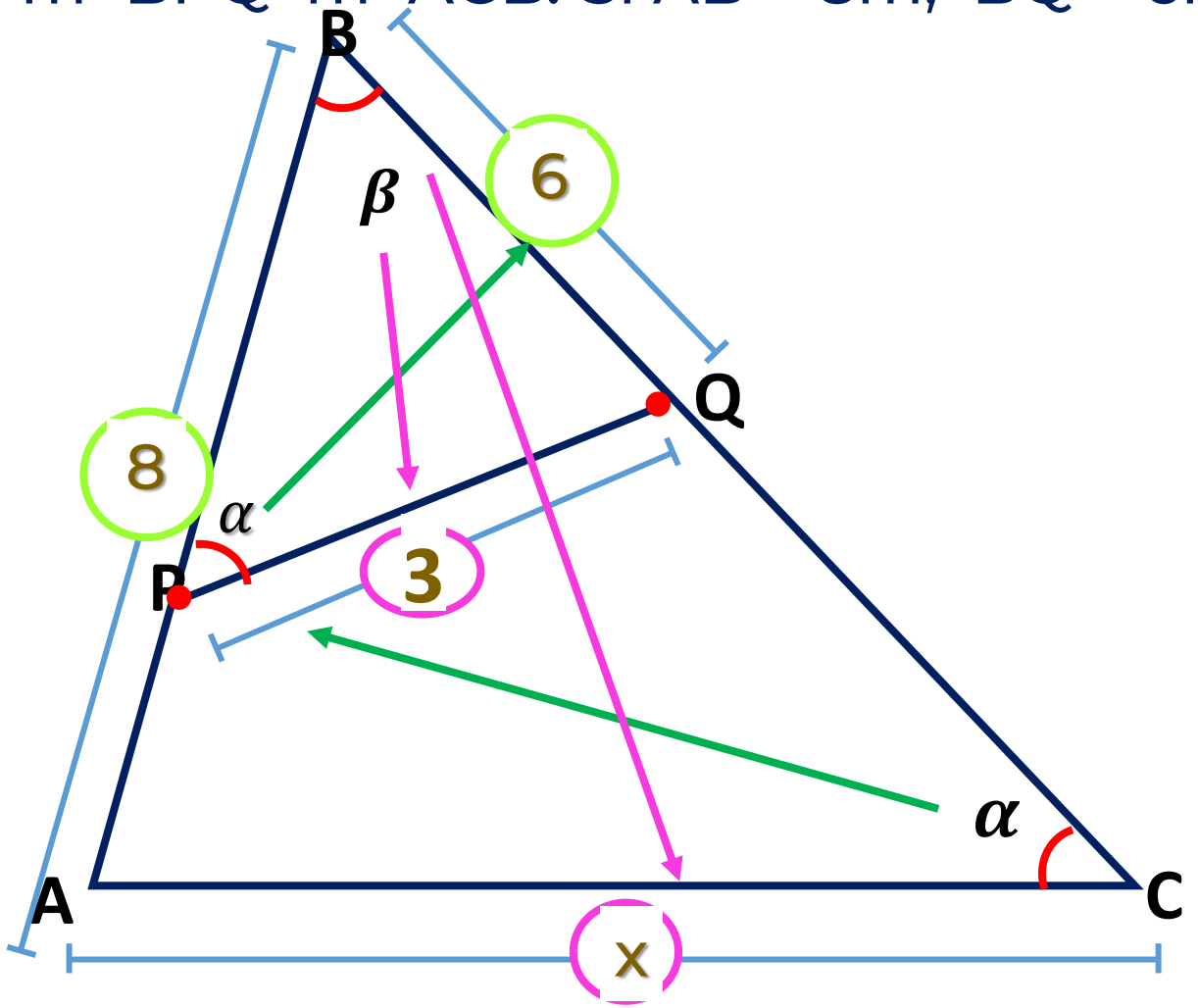
(A – A – A)

$$\frac{x}{12} = \frac{6}{9}$$

$$3x = 24$$

x = AB = 8

5.- Se tiene un triángulo ABC, donde P ∈ AB, Q ∈ BC y m<BPQ=m<ACB. Si AB = 8m, BQ = 6m y PQ = 3m; halle AC.



- Piden: AC = x

$\Delta PBQ \sim \Delta CBA$

(A – A – A)

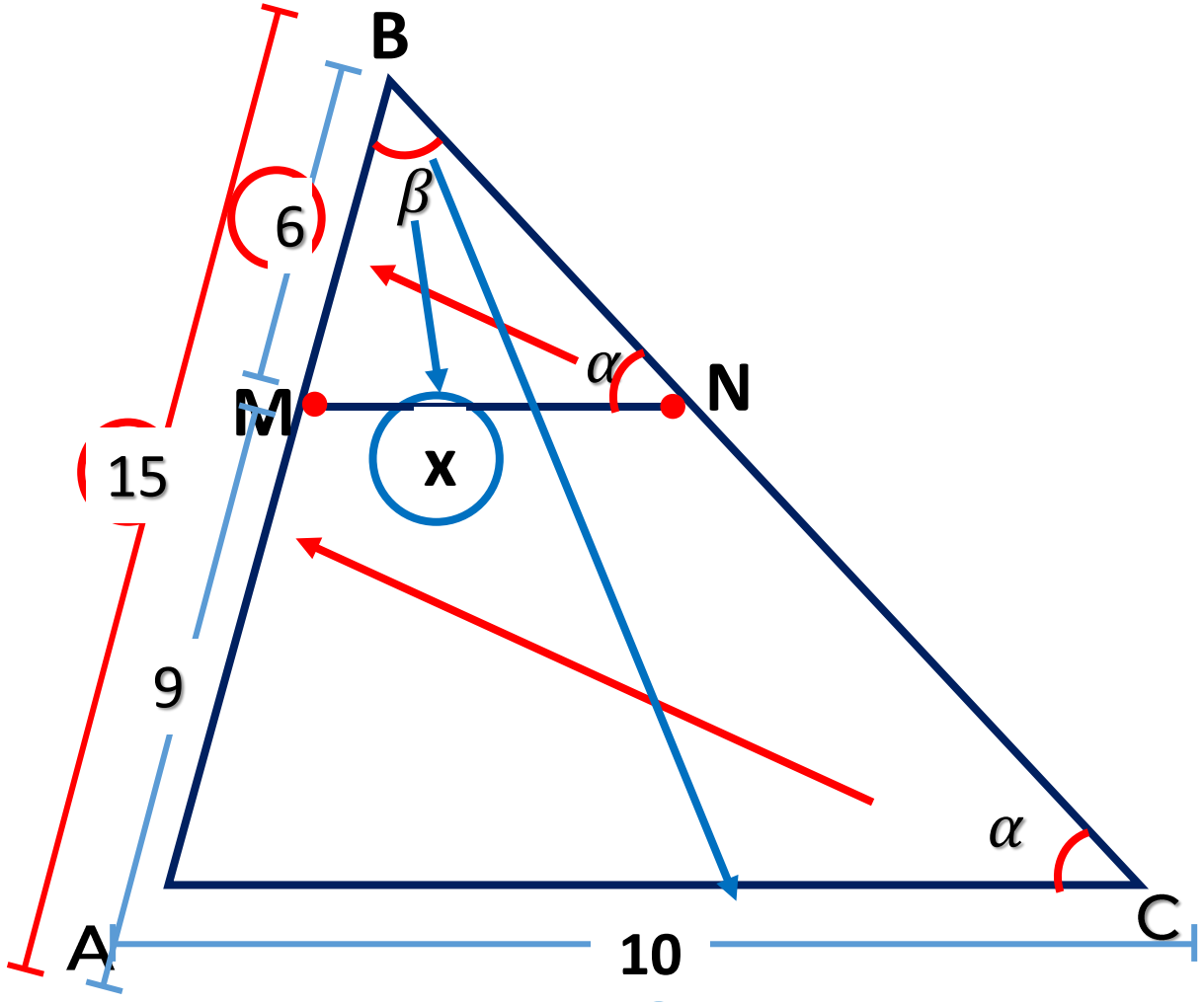
$$\frac{6}{8} = \frac{3}{x}$$

$$(6).(x) = (3).(8)$$

$$6x = 24$$

x = AC = 4

6.- Si MN // AC, halle el valor de *x*.



- **Piden: x**

$\Delta MBN \sim \Delta ABC$

(A – A – A)

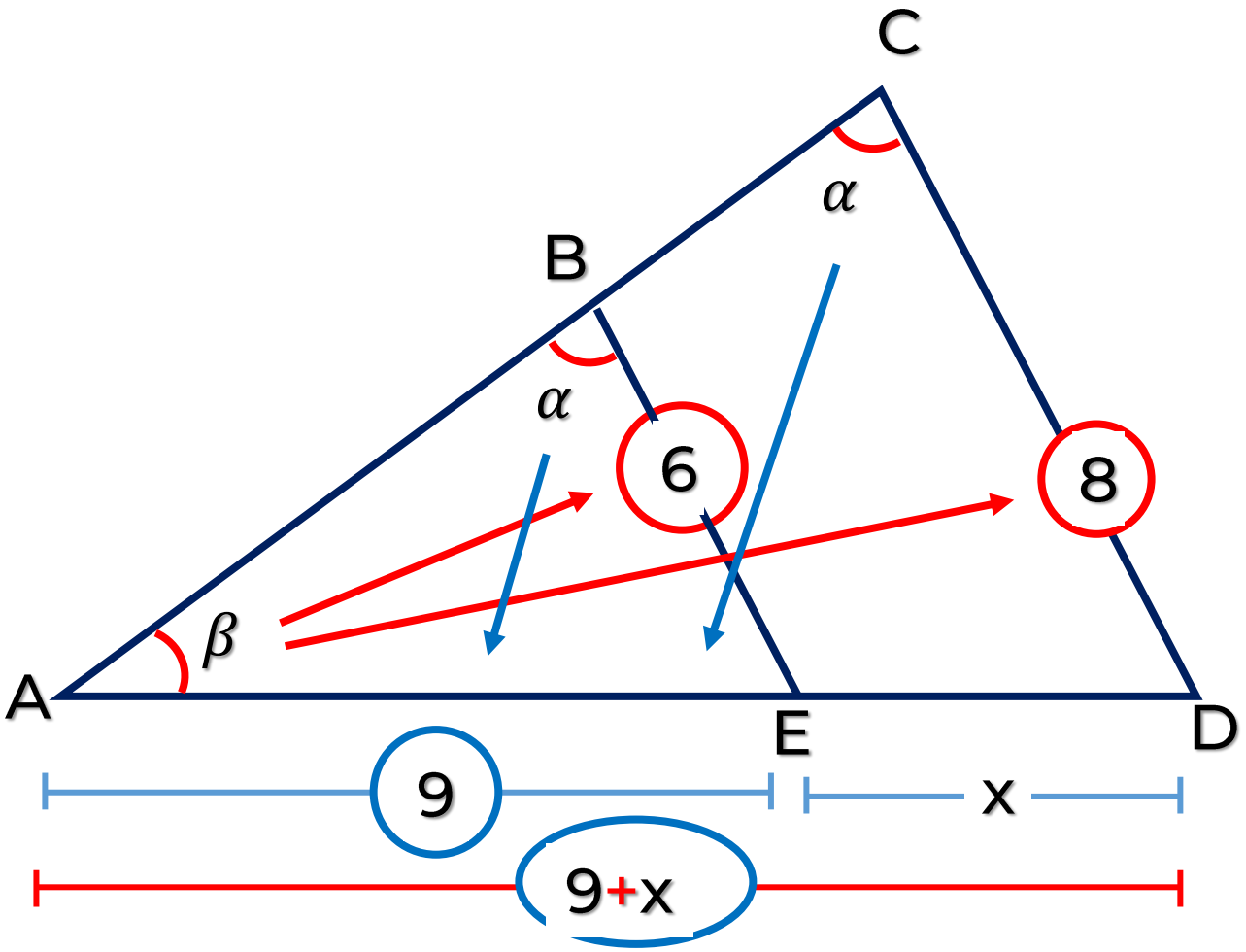
$$\frac{6}{15} = \frac{x}{10}$$

$$(15).(x) = (10).(6)$$

$$15x = 60$$

$$x = 4$$

7.- Halle el valor de *x*.



- Piden: x

$\Delta ABE \sim \Delta ACD$

(A – A – A)

$$\frac{6}{8} = \frac{9}{9+x}$$

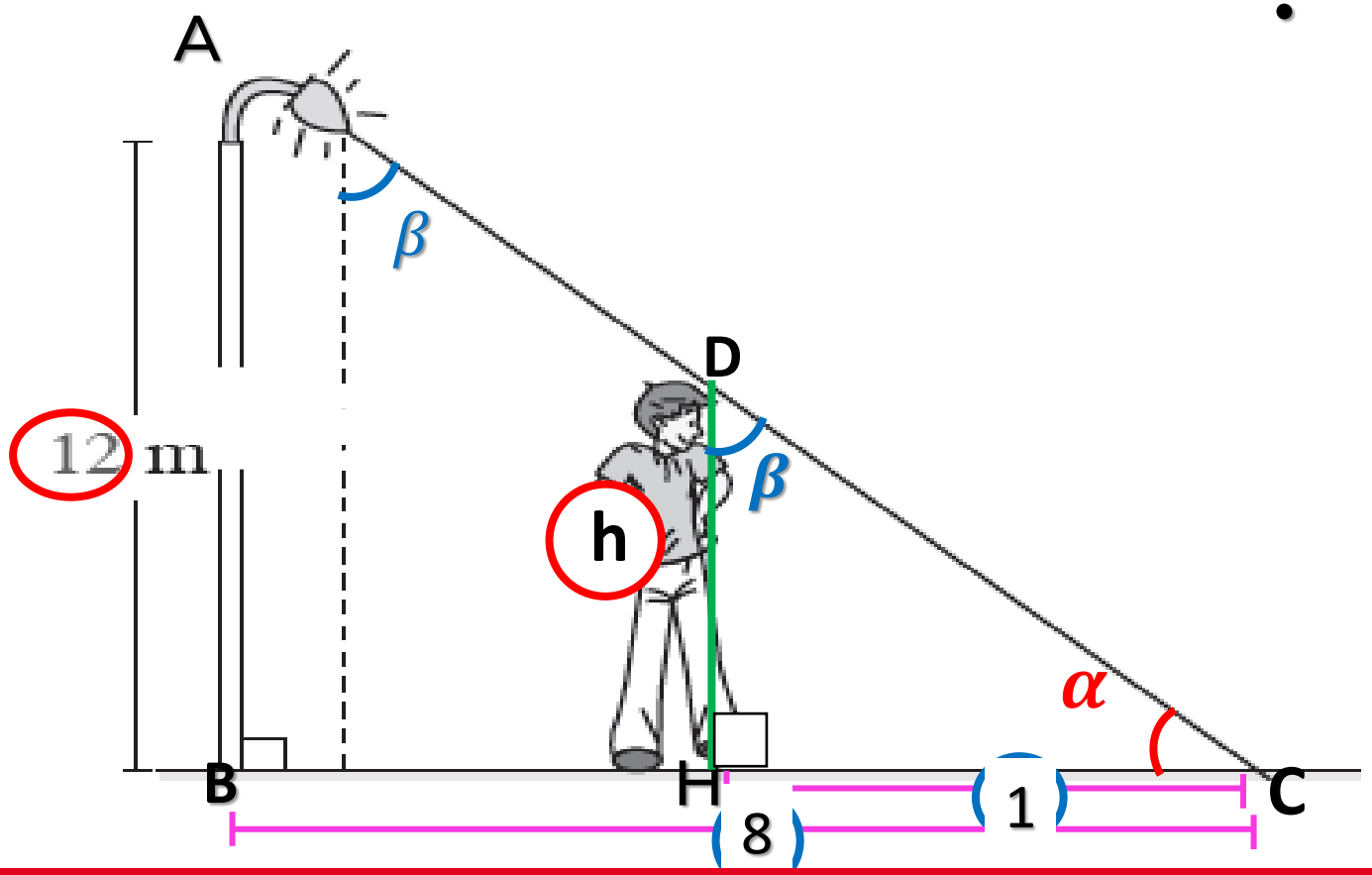
$(6).(9+x) = (8).(9)$

$54 + 6x = 72$

$3x = 18$

$x = 6$

8. Un poste de 12 m de altura, genera una sombra de 8 m.
- Determine la altura de una persona que genera una sombra de 1 m.



- Piden: La altura de la persona = h

$$\Delta ABC \sim \Delta DHC$$

(A – A – A)

$$\frac{12}{h} = \frac{8}{1}$$

$$(12).(1) = (8).(h)$$

$$12 = 8h$$

x = altura = $\frac{3}{2}$ m