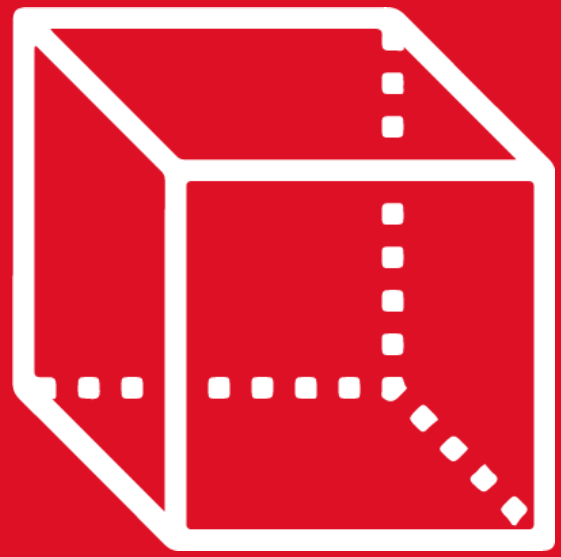
GEOMETRÍA

Chapter 6



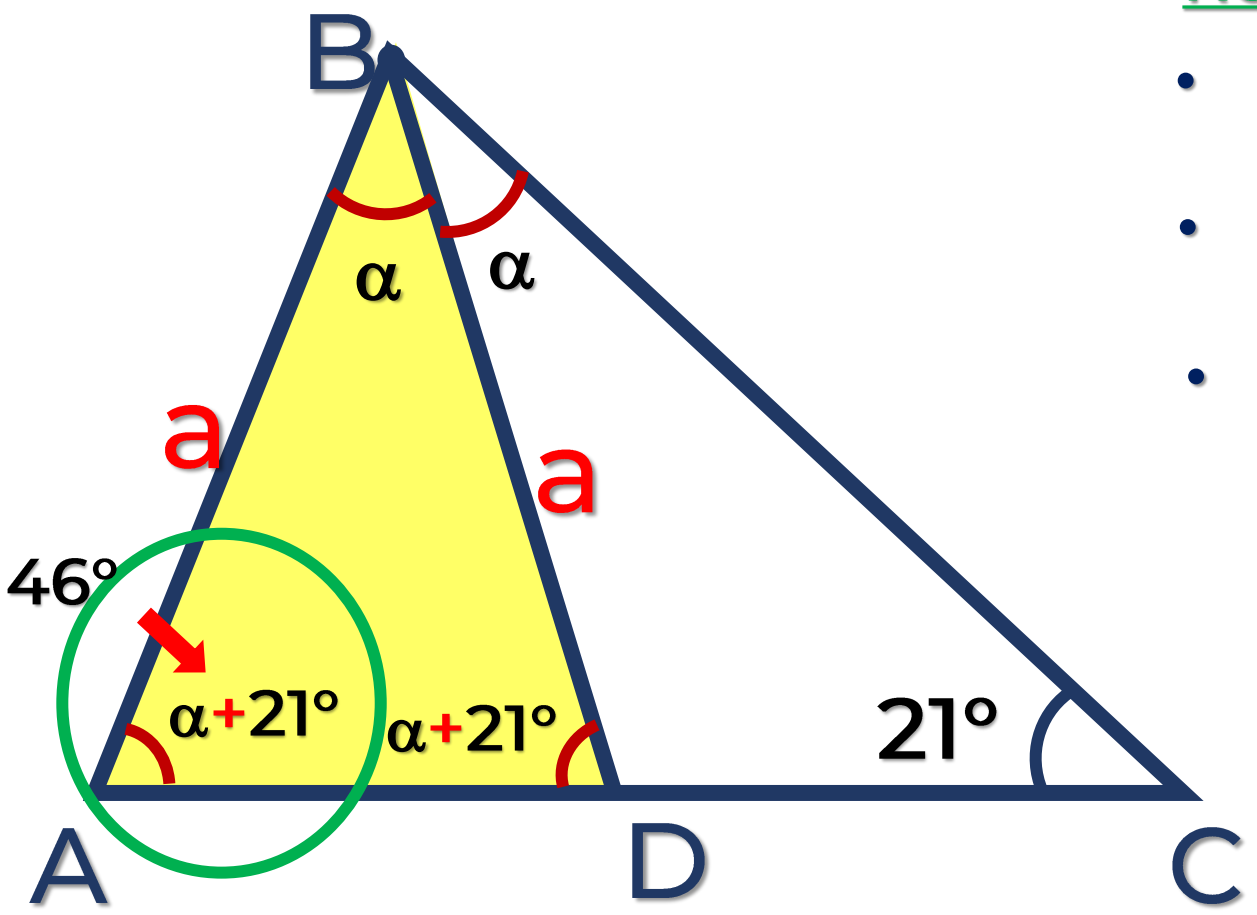
4th
SECONDARY

LÍNEAS NOTABLES ASOCIADAS AL TRIÁNGULO

SACO OLIVEROS

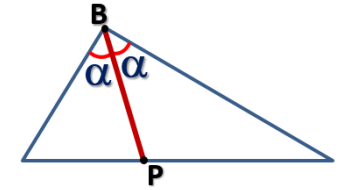
Session II

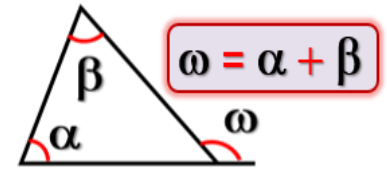
1. Calcule la m<BAC, si AB = BD; además $\overline{BD}$ es bisectriz del ΔABC.



Resolución

- Piden: m < BAC
- ΔABD : Isósceles
- ΔABD: Por teorema





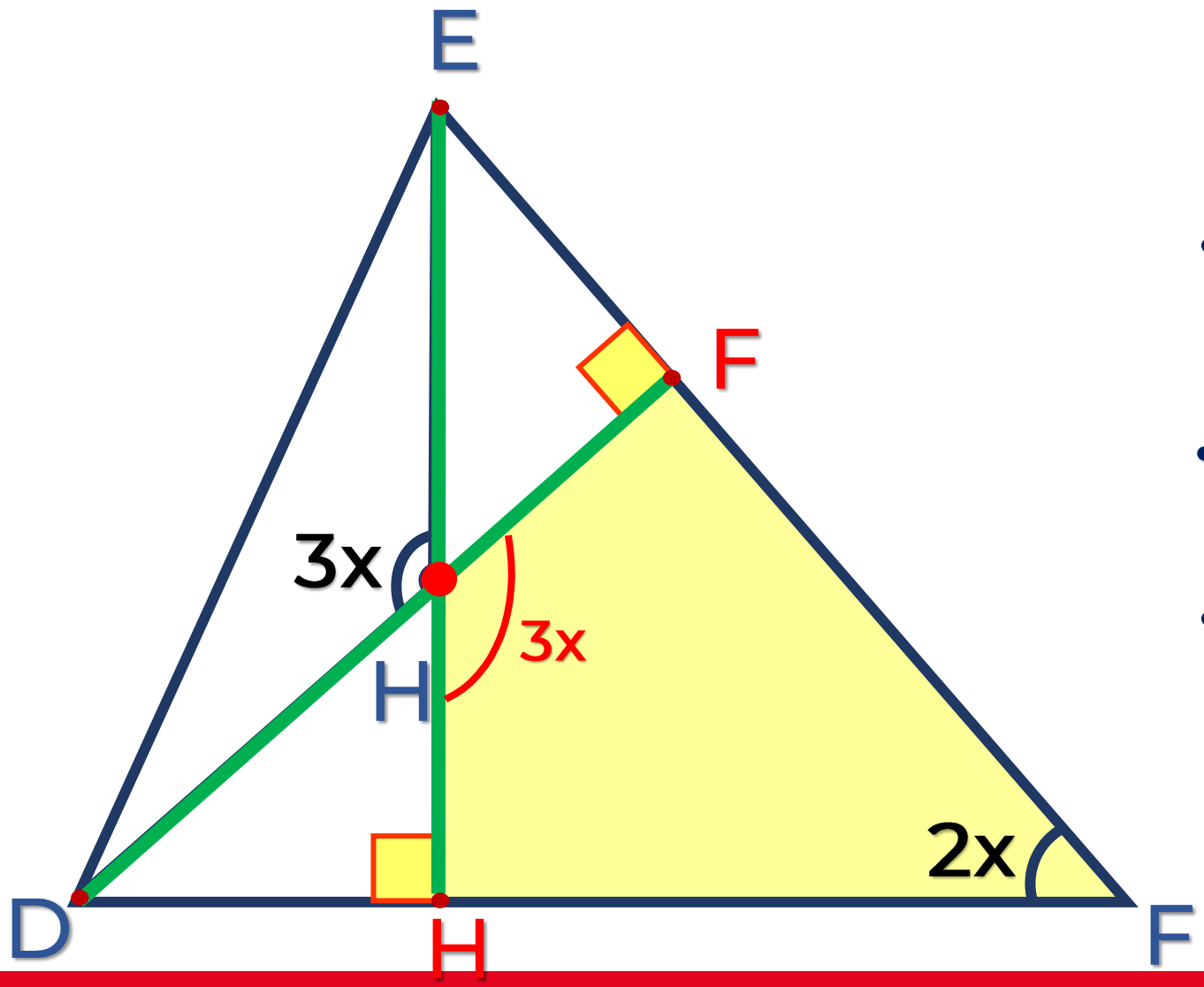
$$\alpha + \alpha + 21° + \alpha + 21° = 180°$$

$$3\alpha = 138°$$

$$\alpha = 46°$$

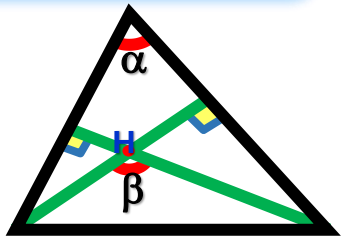
m<BAC = 67°

2. Halle el valor de x si H es ortocentro del triángulo DEF.



H : Ortocentro

$\alpha + \beta = 180°$



Resolución

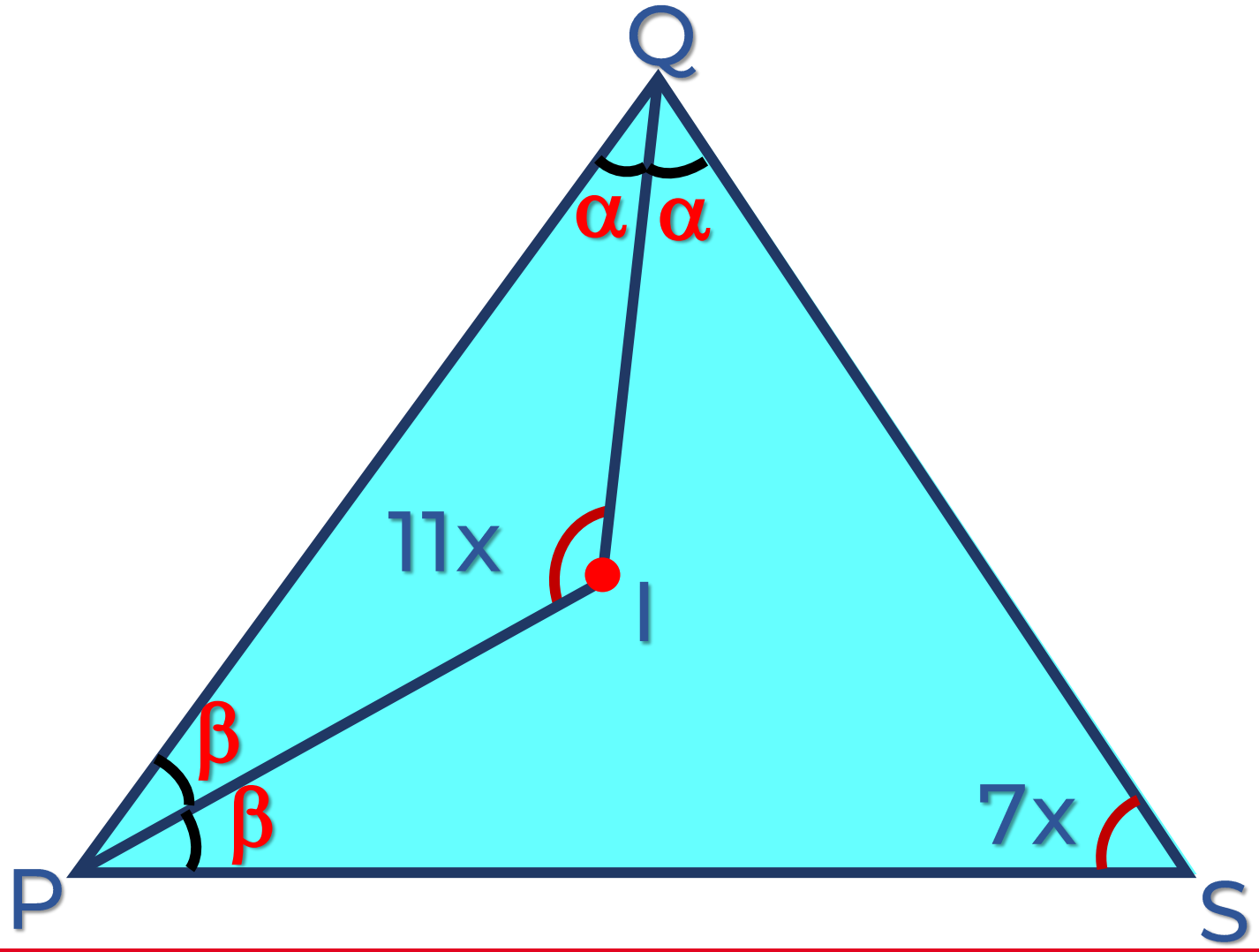
- Piden: x
- $\overline{DF}$ y $\overline{EH}$ son alturas del triángulo DEF
- Por teorema:

$$3x + 2x = 180°$$

$$5x = 180°$$

$$\boxed{x = 36°}$$

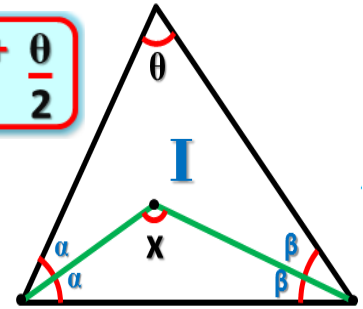
3. Halle el valor de x, siendo I incentro del triángulo PQS.



Resolución

I : Incentro

$$x = 90° + \frac{\theta}{2}$$



- Piden: x
- Por teorema:

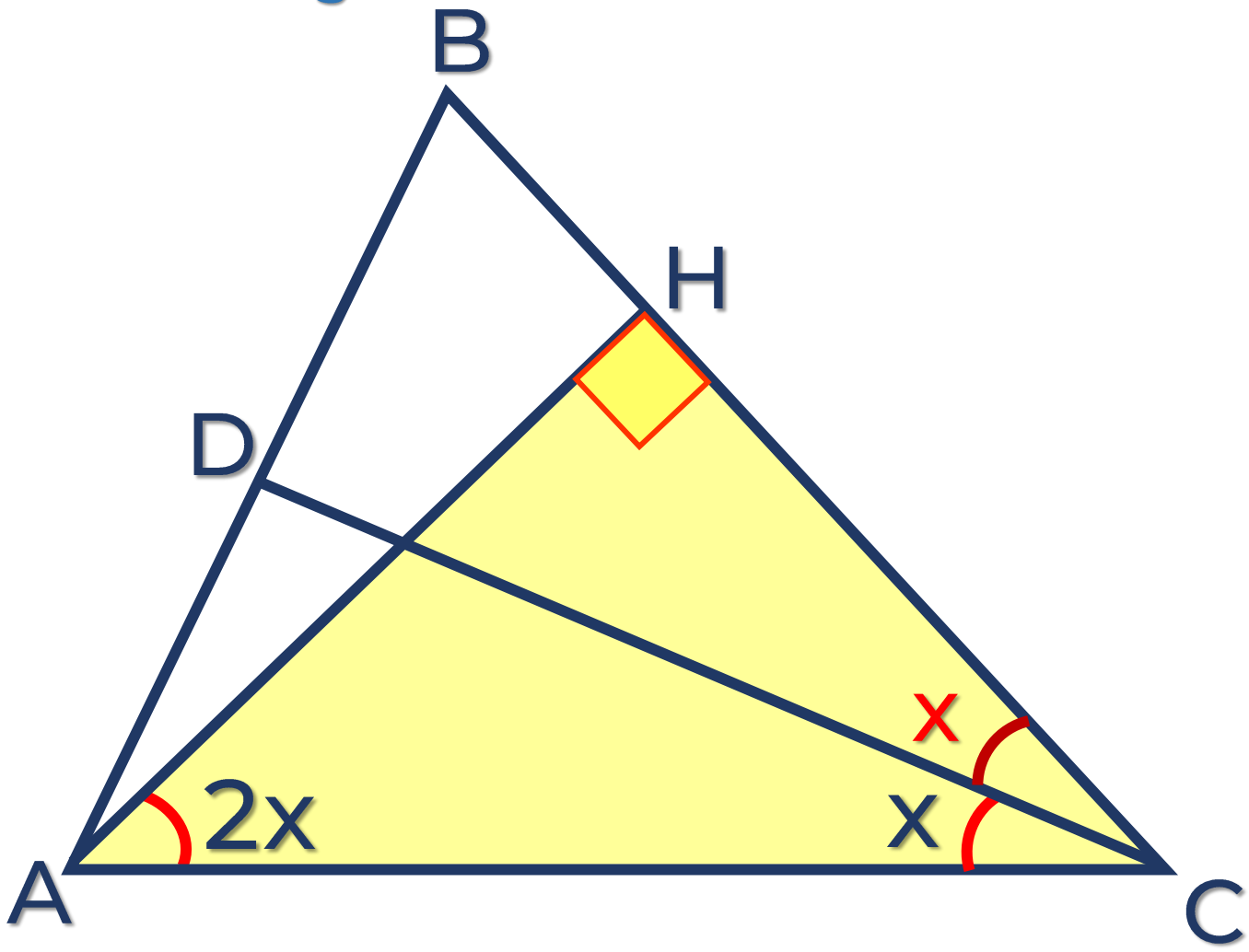
$$\left(11x = 90° + \frac{7x}{2}\right) \times 2$$

$$22x = 180° + 7x$$

$$15x = 180°$$

$$\boxed{x = 12°}$$

4. Halle el valor de 2x, si $\overline{AH}$ es altura y $\overline{CD}$ es bisectriz interior del triángulos ABC.



Resolución

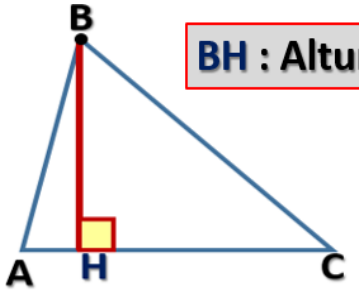
- Piden: 2x
- ΔAHC :

  Por teorema

$$2x + x + x = 90°$$

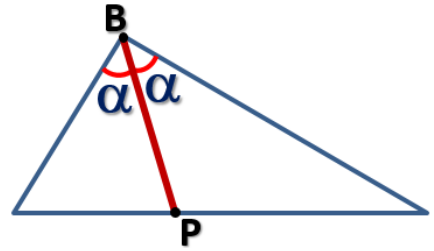
$$4x = 90°$$

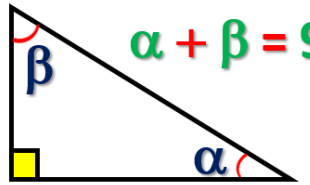
$$\boxed{2x = 45°}$$



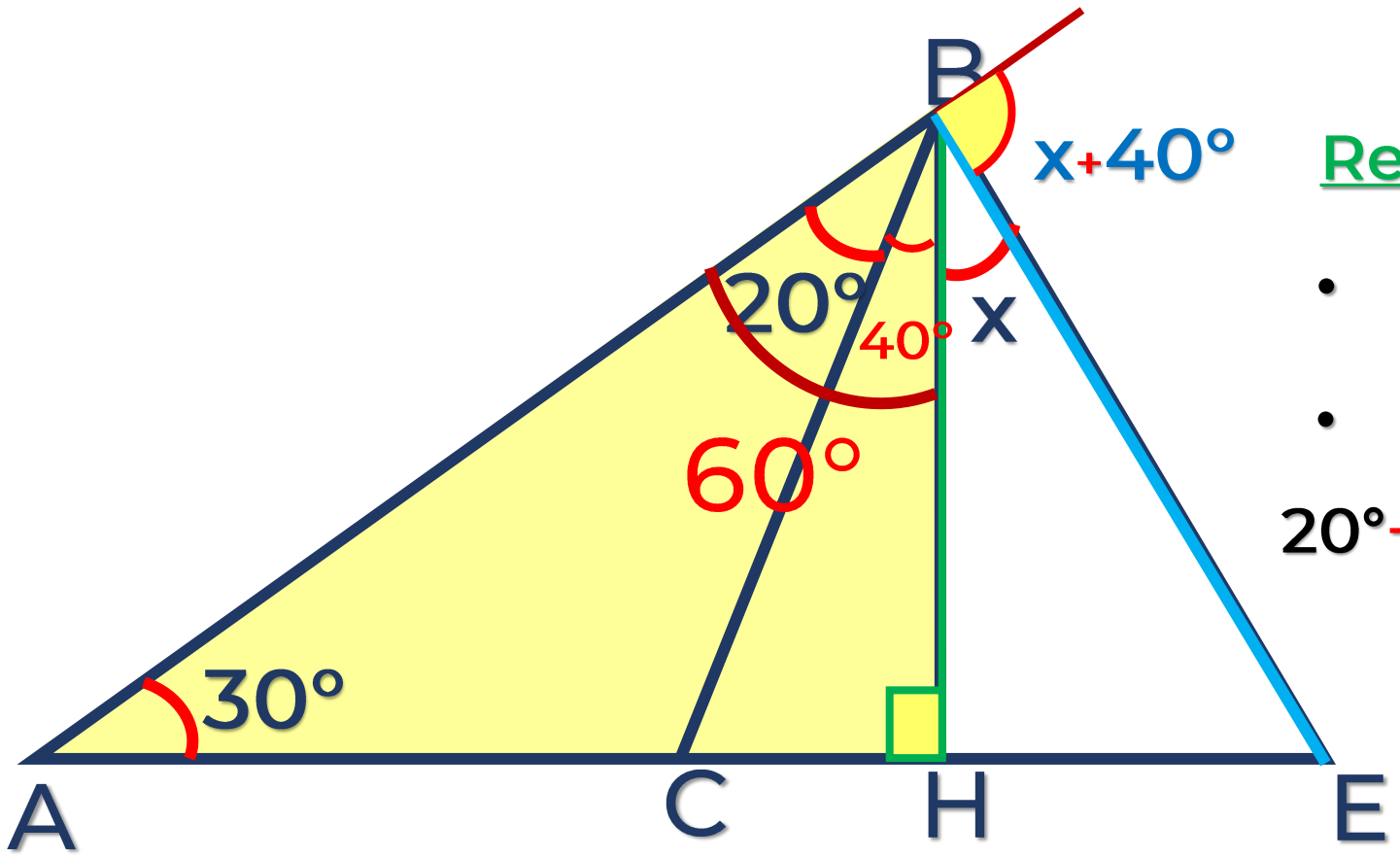
BH : Altura

$\overline{BP}$: Bisectriz Interior

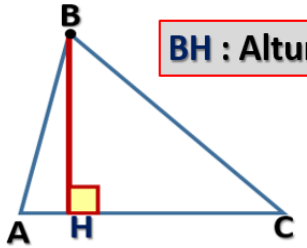




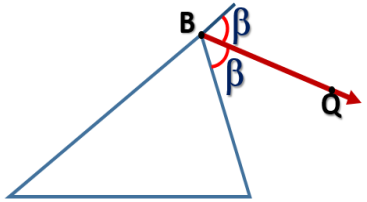
5. Según el gráfico, para el triángulo ABC, $\overline{BH}$ es altura y $\overline{BE}$ es bisectriz exterior. Halle el valor de x.



$\overrightarrow{BQ}$: Bisectriz Exterior

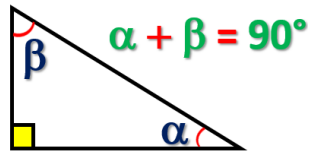


BH : Altura



Resolución

- Piden: x
- Por teorema:



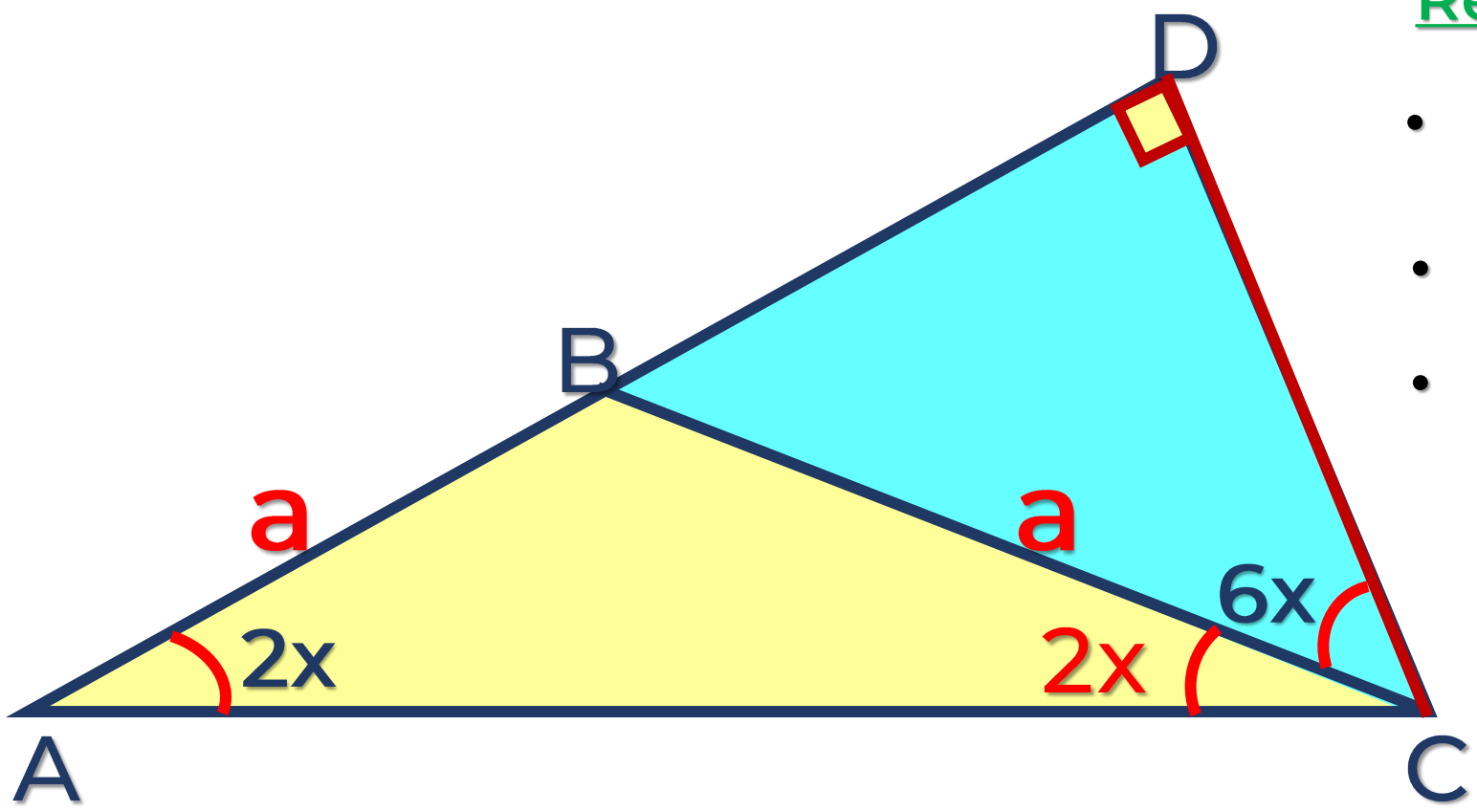
$$20° + (40° + x) + (40° + x) = 180°$$

$$2x + 100° = 180°$$

$$2x = 80°$$

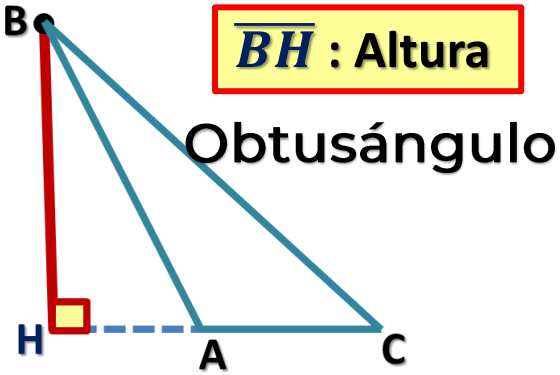
$$\boxed{x = 40°}$$

6. Si $\overline{CD}$ es altura del triángulo isósceles ABC, calcule el valor de x.



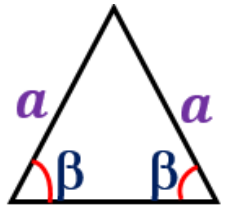
Resolución

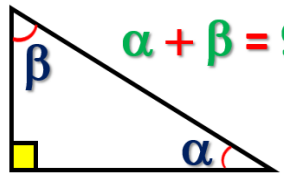
- Piden: x
- ΔABC : Isósceles
- ΔADC :



$\overline{BH}$: Altura

Obtusángulo



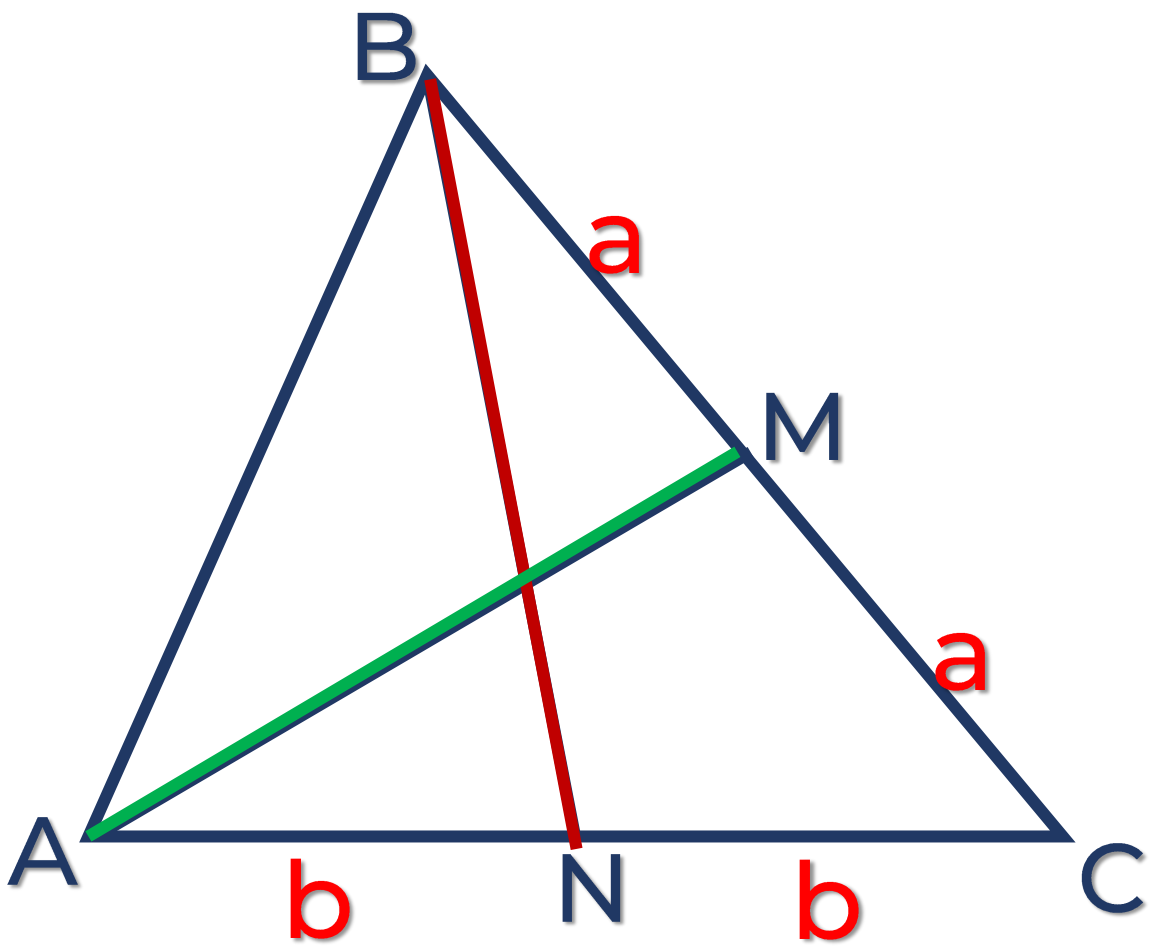


$2x + (2x + 6x) = 90°$

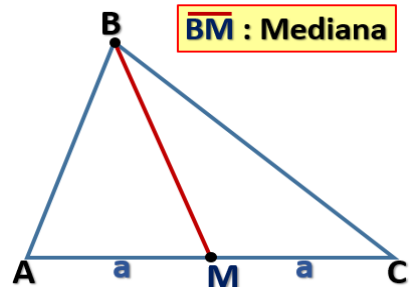
$10x = 90°$

$x = 9°$

7. Según el gráfico $\overline{AM}$ y $\overline{BN}$ son medianas del triángulo ABC, calcule AC/NC + MC/BM.



Resolución

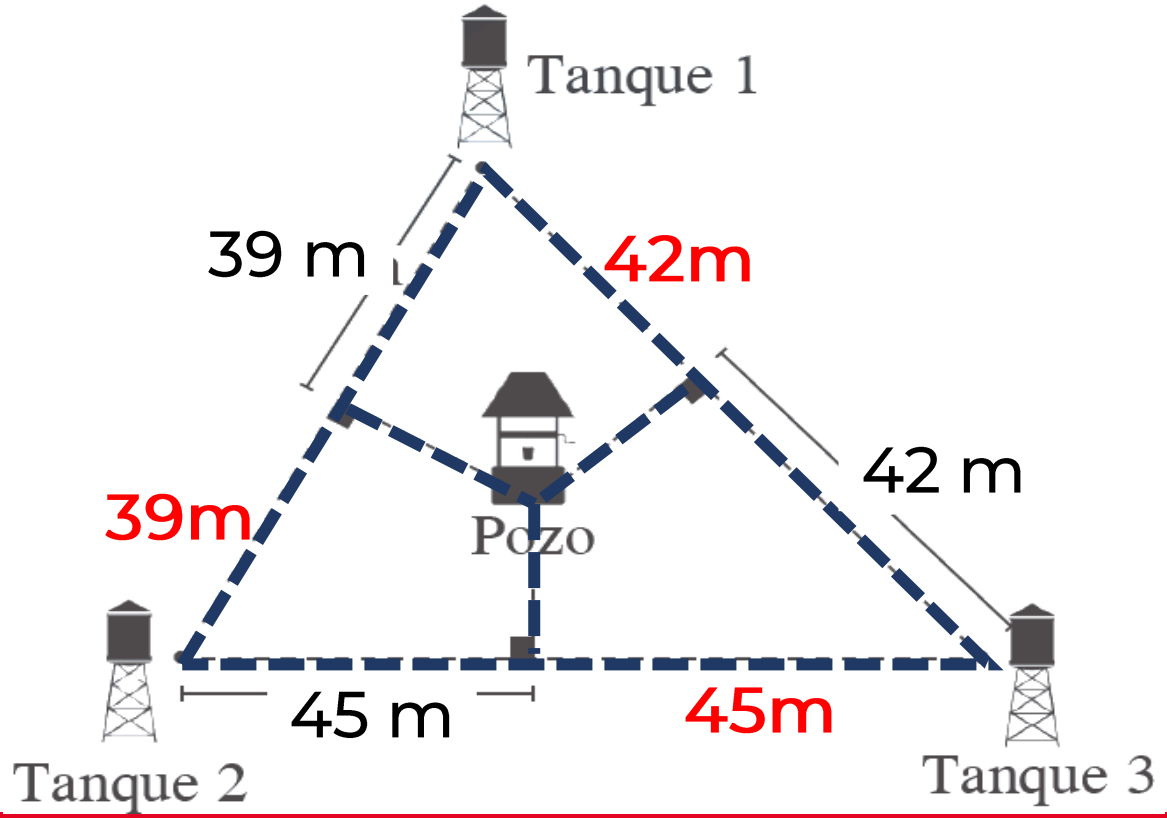


- Piden: $\frac{AC}{NC} + \frac{MC}{BM}$
- $\overline{AM}$ y $\overline{BN}$ son medianas.
- Nos piden :

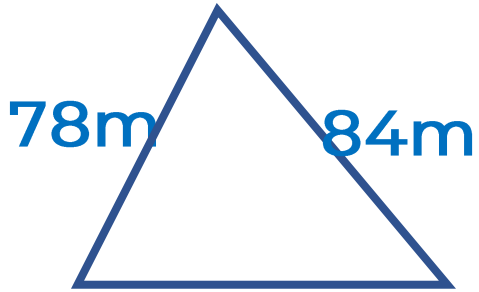
$$\frac{AC}{NC} + \frac{MC}{BM} = \frac{2b}{b} + \frac{a}{a} = 2 + 1$$

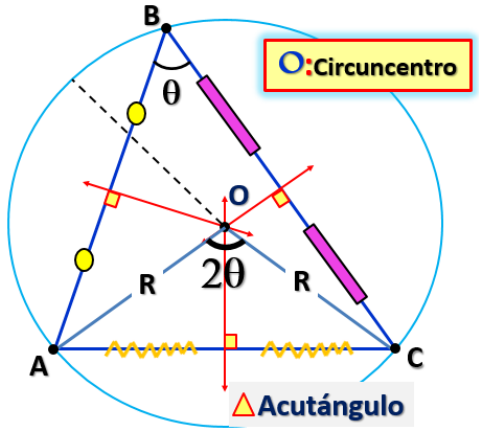
$$\frac{AC}{NC} + \frac{MC}{BM} = 3$$

8. Se quiere cavar un pozo de agua subterránea para abastecer 3 tanques destinados a suministrar un campo de cultivo. Calcule el perímetro de la región triangular formada por los 3 tanques; de tal manera que el pozo se ubique en el circuncentro de dicho triángulo.



Resolución





- Nos piden :

$$2p\,\Delta = 78 + 84 + 90$$

$$\boxed{2p\,\Delta = 252\ m}$$


SACO
OLIVEROS