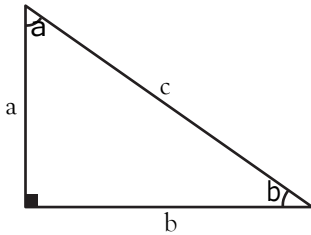


## Geometría

# TRIANGULOS RECTANGULOS NOTABLES

Recordemos el triángulo rectángulo.

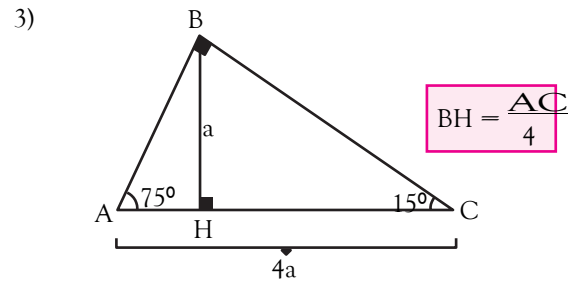
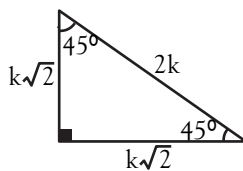
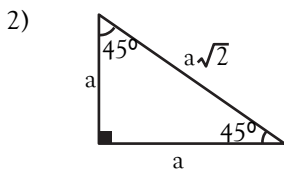
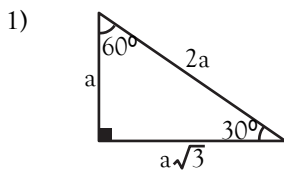


- Catetos: a y b
- Hipotenusa: c

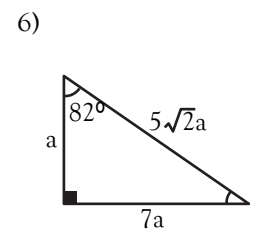
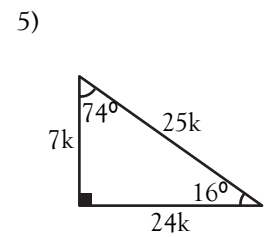
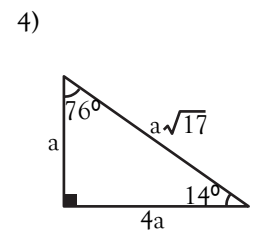
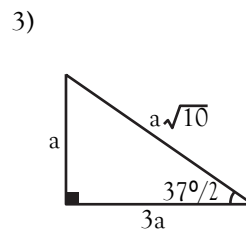
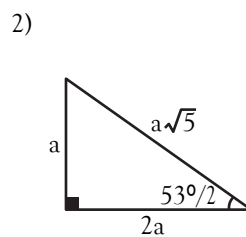
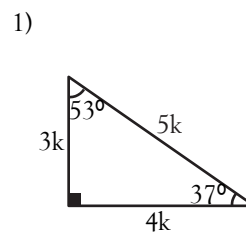
Se cumple:  $a^2 + b^2 = c^2$  T. Pitágoras

Además:  $a + b = 90^\circ$

### 1. PRINCIPALES TRIÁNGULOS RECTÁNGULOS NOTABLES

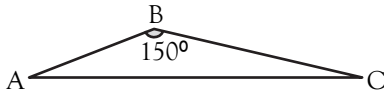


### 2. TRIÁNGULOS RECTÁNGULOS NOTABLES APROXIMADOS

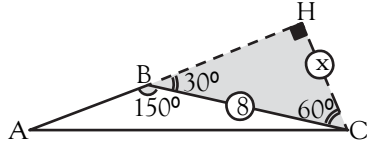


**EJERCICIOS RESUELTOS**

1. En la figura, calcule la distancia de "C" a  $\overline{AB}$  si  $BC=8u$ .

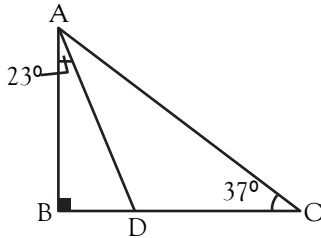


**Resolución:**

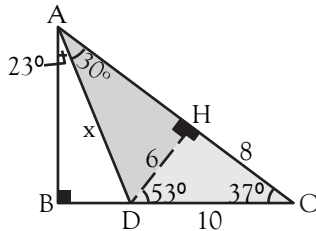


$\Delta BHC$ : notable de  $30^\circ$  y  $60^\circ$   
 $\neq x = 4u$

2. Calcule "AD" si:  $CD = 10u$ .

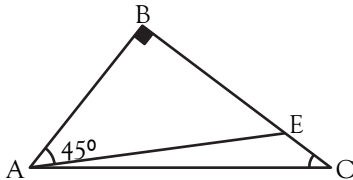


**Resolución:**

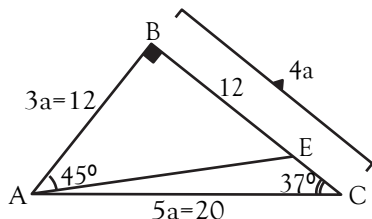


Trazamos la altura DH  
 $\Delta DHC$  notable de  $37^\circ$  y  $53^\circ$ :  
 $DH = 6u$   
 $\Delta AHD$  notable de  $30^\circ$  y  $60^\circ$   
 $\neq x = 12u$

3. Si:  $AC = 20u$ , calcule "EC".



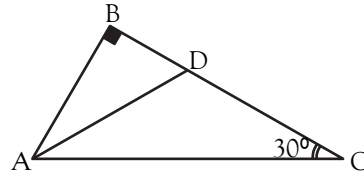
**Resolución:**



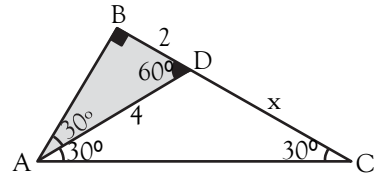
$\Delta ABC$ :  $5a = 20 \rightarrow a = 4$   
 luego:  $AB = 3(4) = 12$   
 $BC = 4(4) = 16$

$\Delta ABE$ :  $AB = BE = 12$   
 Finalmente:  $EC = BC - BE$   
 $\neq EC = 16 - 12 = 4u$

4. En la figura,  $\overline{AD}$  es bisectriz. Calcule "CD" si:  $BD = 2u$ .



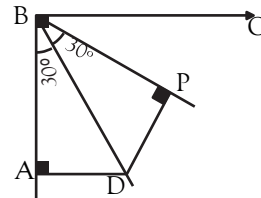
**Resolución:**



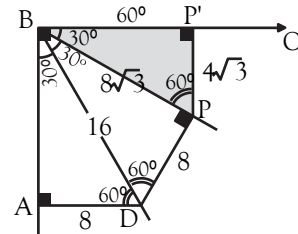
$\Delta ABD$ : notable de  $30^\circ$  y  $60^\circ$   
 $AD = 4u$

$\Delta ADC$ : isósceles  
 $\neq x = 4u$

5. En la figura,  $AD = 8u$ . Calcule la proyección de  $\overline{BP}$  sobre  $\overline{BC}$ .



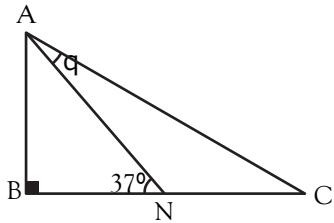
**Resolución:**



$\Delta BAD$ : notable de  $30^\circ$  y  $60^\circ$   
 $BD = 16u$   
 $\Delta BPD$ : notable de  $30^\circ$  y  $60^\circ$   
 $DP = 8u$  y  $BP = 8\sqrt{3}u$   
 $\Delta BP'P$ : notable de  $30^\circ$  y  $60^\circ$   
 $PP' = 4\sqrt{3}u$   
 $\neq BP' = 4\sqrt{3} \cdot \sqrt{3} = 12u$   
 $(\overline{BP'}$  proyección de  $\overline{BP}$  sobre  $\overline{BC}$ )

## Resolviendo en clase

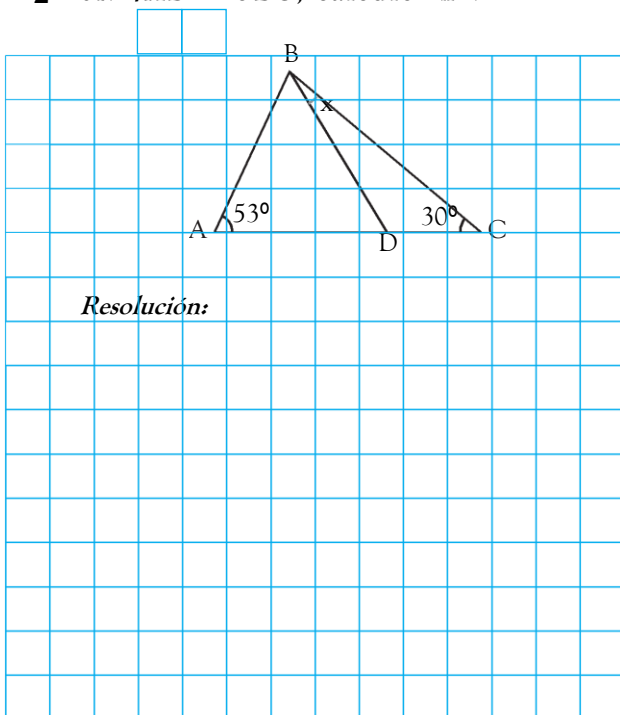
- 1 En la figura,  $AC = 12$  y  $BN = 8$ . Calcule "q".



Resolución:

Rpta:

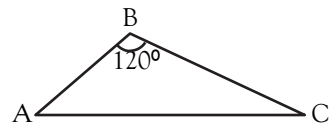
- 2 Si:  $4AD = 3BC$ , calcule "x".



Resolución:

Rpta:

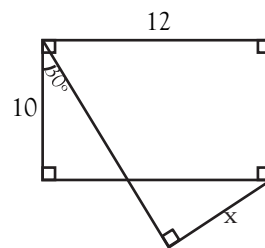
- 3 Si:  $BC = 18$ , calcule la distancia desde el vértice "C" hasta el  $\overline{AB}$ .



Resolución:

Rpta:

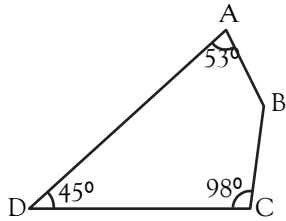
- 4 Calcule "x":



Resolución:

Rpta:

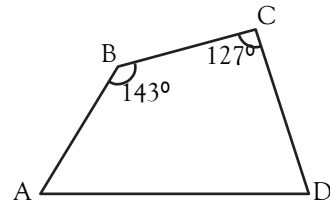
- 5 Si:  $CD = 11\sqrt{2}$  y  $AB = 10$ , calcule "AD".



Resolución:

**Rpta:**

- 6 En el cuadrilátero  $AB = 2$ ,  $BC = 10$  y  $CD = 4$ . Calcule "AD".

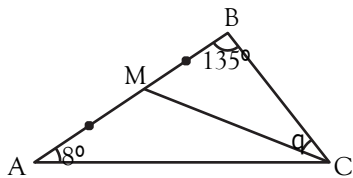


Resolución:

**Rpta:**

## Ahora en tu cuaderno

7. En la figura, calcule "q".



8. Se tiene un triángulo ABC, de modo que  $m\angle A = 37^\circ$ ,  $m\angle C = 45^\circ$  y  $AC = 14$ . Calcule AB.

9. En un triángulo ABC, se ubica el punto D en  $\overline{AC}$ , tal que:  $AD = 2BC$ ,  $m\angle DBC = 15^\circ$  y  $m\angle C = 30^\circ$ . Calcule  $m\angle A$ .

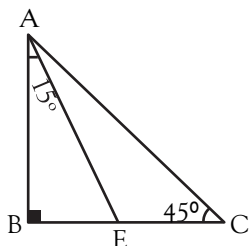
10. Se tiene un triángulo ABC, de modo que:  $6AB = 5AC$  y  $m\angle A = 7^\circ$ . Calcule  $m\angle C$ .

11. Se tiene el triángulo ABC, recto en B, en la región interior se ubica el punto P, de tal manera que:  $PB = PC$  y  $PA = BC$ . Calcule  $m\angle PAB$ .

12. En un triángulo ABC se sabe que  $m\angle A = 76^\circ$ ,  $m\angle C = 23^\circ$  y  $AB + BC = 28u$ . Calcule "AB".

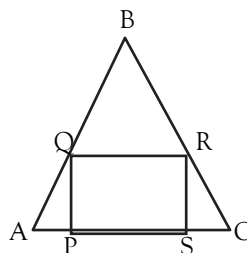
## Para reforzar

1. En la figura, calcule "AE" si:  $EC = 6$ .



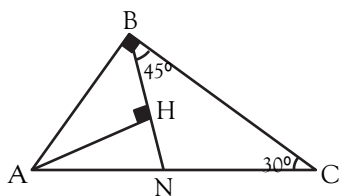
- a)  $9\sqrt{2}$       b)  $6\sqrt{2}$       c) 9  
d)  $6\sqrt{3}$       e)  $4\sqrt{2}$

3. Calcule la longitud del cuadrado PQRS si el lado del triángulo equilátero mide 3 m.



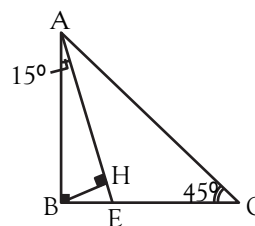
- a)  $3\sqrt{2}(2 - \sqrt{3})$  m  
b)  $3\sqrt{3}(2 + \sqrt{3})$  m  
c)  $3\sqrt{3}(2 - \sqrt{3})$  m  
d)  $3\sqrt{2}(4 - \sqrt{3})$  m  
e)  $3\sqrt{3}(4 + \sqrt{3})$  m

2. En la figura,  $AC = 20$ . Calcule "BH".



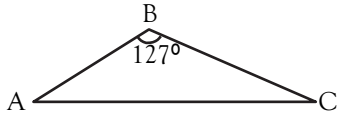
- a)  $5\sqrt{2}$       b)  $3\sqrt{2}$       c)  $5\sqrt{2}/2$   
d)  $4\sqrt{2}$       e)  $5\sqrt{3}$

4. Calcule "BH" de la figura si:  $EC = 4\sqrt{2}$ .



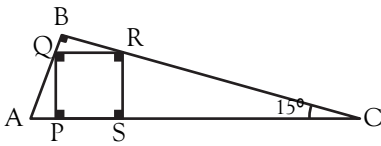
- a) 1      b) 2      c) 3  
d) 1,5      e) 2,5

5. Calcule "AC" del gráfico si:  $AB = 4$  y  $BC = 10$ .



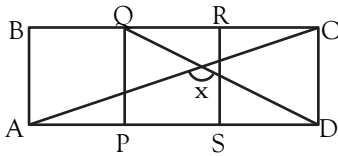
- a)  $\sqrt{41}$       b)  $2\sqrt{41}$       c)  $3\sqrt{41}$   
 d)  $4\sqrt{41}$       e)  $5\sqrt{41}$

6. Calcule el lado del cuadrado PQRS si:  $AC = 40$ .



- a) 6      b) 8      c) 10  
 d) 14      e) 12

7. La figura se muestra tres cuadrados consecutivos. Calcule "x".

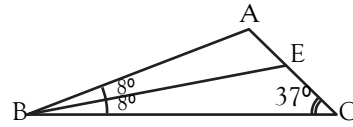


- a)  $100^\circ$       b)  $120^\circ$       c)  $135^\circ$   
 d)  $145^\circ$       e)  $150^\circ$

8. Se tiene un cuadrado ABCD, sobre  $\overline{AC}$  se ubica un punto E, tal que  $AE = 7EC$ . Calcule  $m \angle CBE$ .

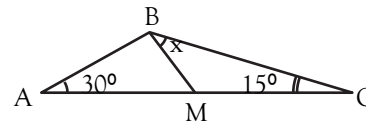
- a)  $8^\circ$       b)  $10^\circ$       c)  $12^\circ$   
 d)  $15^\circ$       e)  $18^\circ$

9. De la figura, calcule "AE" si:  $BC = 20$ .



- a) 2      b) 3      c) 4  
 d) 5      e) 8

10. En la figura, calcule la medida del ángulo "x" si  $AM = MC$ .

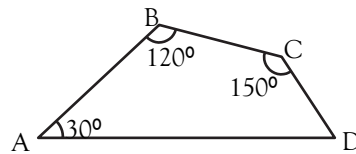


- a)  $15^\circ$       b)  $20^\circ$       c)  $30^\circ$   
 d)  $45^\circ$       e)  $37^\circ$

11. En un  $\triangle ABC$ ,  $m \angle A = 15^\circ$  y  $m \angle C = 30^\circ$ . Si  $AB = 8$ , calcule AC.

- a) 16      b)  $8\sqrt{2}$       c) 24  
 d) 15      e)  $8\sqrt{3}$

12. En la figura,  $BC = 6$  y  $CD = 3\sqrt{3}$ . Calcule AB.



- a) 15      b) 10      c)  $15\sqrt{3}$   
 d) 30      e) 20