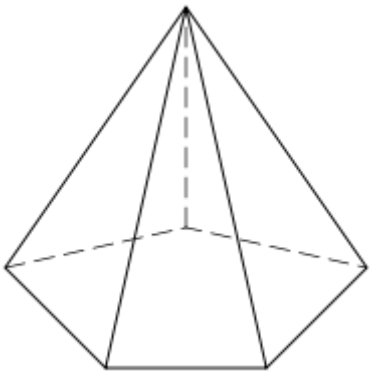
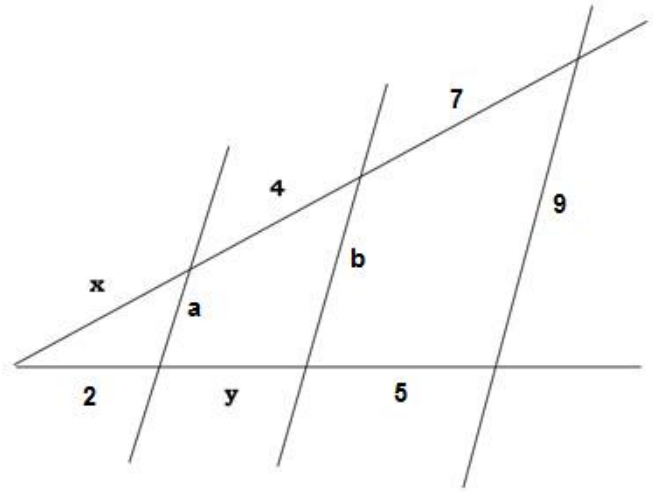
GEOMETRY - 4º ESO

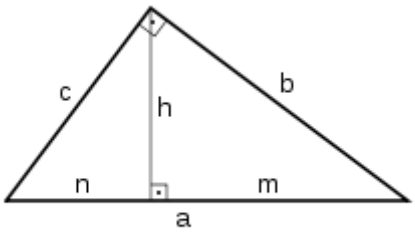
1) Work out the value of the area of a pentagonal pyramid with height 10cm if the length of the side of the base is 7cm and the length of its edge is 12cm. **(2 points)**



2) Find the values of the indeterminates in the following figure **(1 point)**



3) Knowing that you are not allowed to use Pythagoras' theorem, find the value of all the indeterminates in the following triangle knowing that a=20cm and c=12cm. Indicate what theorem you are using in each step **(1 point)**



4) Given the vectors $\vec{u}=(3,2)$, $\vec{v}=(\sqrt{3},\sqrt{2})$, $\vec{w}=(4,-6)$ and $\vec{z}=(5,-1)$ **(1 point)**

a) Find the magnitude of the vector $\vec{v}$

b) Express $\vec{w}$ as a linear combination of $\vec{u}$ and $\vec{z}$

c) Are $\vec{u}$ and $\vec{z}$ perpendicular vectors?

d) Indicate the coordinates of the vector $\vec{u}+3\vec{w}-2\vec{z}$

5) (1 point)

a) If $\vec{u}=(2,-1)$ and $\vec{v}=(3,5)$ find a third vector $\vec{w}$ so that $\vec{w}\cdot\vec{u}=1$ and $\vec{w}\perp\vec{v}$

b) Indicate a direction vector and a point of the straight line $3x-y+4=0$

6) Given the straight line **(1.5 points)**

$$r\equiv\begin{cases}4+3t\\2t-1\end{cases}$$

a) Find the general equation of a parallel line r' that passes through the point $A(-2,5)$

b) Find the general equation a perpendicular line r'' that passes through the point $B(-4,1)$

c) Find the point where r and r'' cross

7) (1.5 points)

a) Determine if the points $A(3,6)$, $B(-3,2)$ and $C(0,4)$ are aligned. If the answer is *yes*, find the continuous equation of the straight line they belong to.

b) Work out the coordinates of the symmetric point of $P(3,1)$ with respect to $Q(-3,7)$

c) Find the value of *k* so that the point $R(k,-2)$ belongs to the straight line

$$r\equiv\begin{cases}2-3t\\-1+4t\end{cases}$$

8) Los puntos $A(1,1)$, $B(5,4)$ y $C(5,-1)$ son los tres vértices de un triángulo. **(1 pto)**

a) Calcula la altura del triángulo tomando como base el lado $\overline{AC}$

b) Halla el perímetro y el área de dicho triángulo.