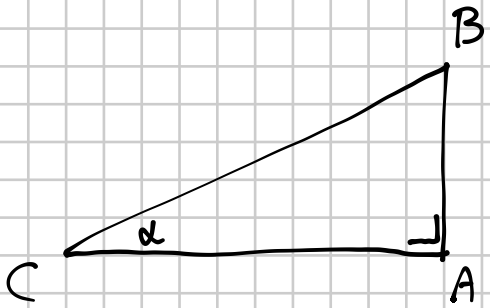
2/2/2022

32 In un triangolo rettangolo, l'ipotenusa misura 14 cm e un cateto misura 9,0 cm.

- Quanto vale il coseno dell'angolo adiacente a quel cateto?
- Quanto vale il seno dello stesso angolo?

[0,64; 0,79]



$BC = 14\ cm$

$AC = 9{,}0\ cm$

$AC = BC \cdot \cos\alpha$

$\Downarrow$

$\cos\alpha = \frac{AC}{BC} = \frac{9{,}0\ cm}{14\ cm} = 0{,}64285\ldots$

$\simeq 0{,}64$

Col TH. DI PITAGORA troviamo AB

$AB = \sqrt{BC^2 - AC^2} = \sqrt{(14\ cm)^2 - (9{,}0\ cm)^2} = \sqrt{115}\ cm$

$\sqrt{14^2 - (9{,}0)^2}\ cm$

$AB = BC \cdot \sin\alpha \Rightarrow \sin\alpha = \frac{AB}{BC} = \frac{\sqrt{115}\ cm}{14\ cm} = 0{,}765986\ldots$

$\simeq 0{,}77$

REGOLA

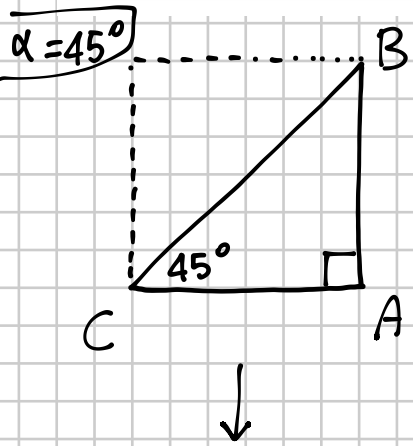
$(\cos\alpha)^2 + (\sin\alpha)^2 = 1$

$(\sin\alpha)^2 = 1 - (\cos\alpha)^2$

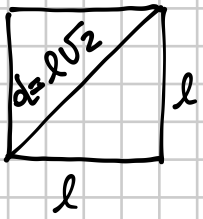
$\sin\alpha = \pm\sqrt{1-(\cos\alpha)^2}$ $\begin{pmatrix} + \text{ se } \alpha < 180° \\ - \text{ se } \alpha > 180° \end{pmatrix}$

ANGOLO	0°	30°	45°	60°	90°
SENO	0	1/2	$\sqrt{2}/2$	$\sqrt{3}/2$	1
COSENO	1	$\sqrt{3}/2$	$\sqrt{2}/2$	1/2	0

$\alpha = 45°$



BC = DIAGONALE DI UN QUADRATO DI LATO AB



$$d = \sqrt{l^2+l^2} = \sqrt{2l^2} = \sqrt{2}\cdot\sqrt{l^2} = l\sqrt{2}$$

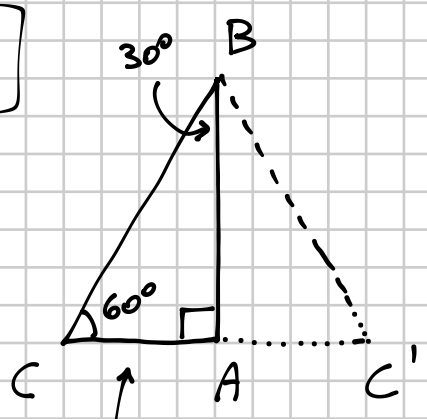
$$BC = AB\cdot\sqrt{2} \Rightarrow \frac{AB}{BC} = \frac{1}{\sqrt{2}} \qquad \frac{AB}{BC} = \sin 45°$$

$$\sin 45° = \frac{1}{\sqrt{2}} = \frac{1}{\sqrt{2}}\cdot\frac{\sqrt{2}}{\sqrt{2}} = \frac{\sqrt{2}}{2}$$

analogamente

$$\cos 45° = \frac{AC}{BC} = \frac{1}{\sqrt{2}} = \frac{\sqrt{2}}{2}$$

$\alpha = 60°$



$CC'B$ è equilatero

$$CA = \frac{1}{2}BC \Rightarrow \frac{CA}{BC} = \frac{1}{2} \quad \text{ma} \quad \frac{CA}{BC} = \cos 60°$$

$$\cos 60° = \frac{1}{2}$$

$$\sin 60° = \sqrt{1-(\cos 60°)^2} = \sqrt{1-\left(\frac{1}{2}\right)^2} = \sqrt{1-\frac{1}{4}} = \sqrt{\frac{3}{4}} = \frac{\sqrt{3}}{\sqrt{4}} = \frac{\sqrt{3}}{2}$$