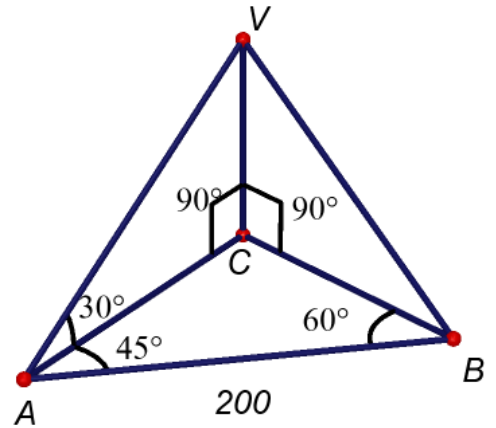


Problema

Siga el tetràedre ABCD tal que $\overline{AB} = 200$,
 $\angle CAB = 45^\circ$, $\angle CBA = 60^\circ$, $\angle CAV = 30^\circ$,
 $\angle ACV = 90^\circ$, $\angle BCV = 90^\circ$.

Determineu la mesura de l'altura del tetràedre \overline{CV} i la mesura de l'angle $\alpha = \angle CBV$.



Solució:

$$\angle ACB = 75^\circ$$

Aplicant el teorema dels sinus al triangle $\triangle ABC$:

$$\frac{\overline{AC}}{\sin 60^\circ} = \frac{200}{\sin 75^\circ}$$
$$\overline{AC} = \frac{\sin 60^\circ}{\sin 75^\circ} 200.$$

Aplicant raons trigonomètriques al triangle rectangle $\triangle ACV$:

$$\overline{CV} = \overline{AC} \cdot \operatorname{tg} 30^\circ$$

Amb ajut de la calculadora:

```
Math Deg Norm1 d/c a+bi
sin 60 / sin 75 x 200
179.3150944
Ans x tan 30
103.527618
DEL-LINE DEL-ALL
```

Aleshores,

$$\overline{CV} = \overline{AC} \cdot \operatorname{tg} 30^\circ = 103.527618$$

Aplicant el teorema dels sinus al triangle $\triangle ABC$:

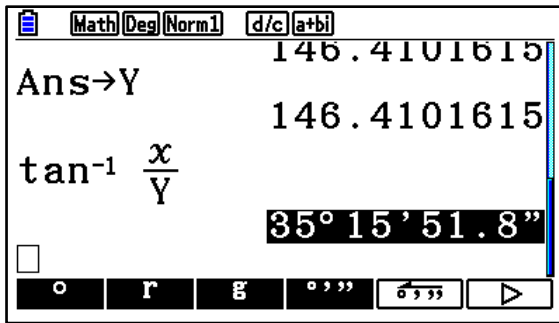
$$\frac{\overline{BC}}{\sin 45^\circ} = \frac{200}{\sin 75^\circ}$$
$$\overline{BC} = \frac{\sin 45^\circ}{\sin 75^\circ} 200.$$

Aplicant raons trigonomètriques al triangle rectangle $\triangle BCV$:

$$\alpha = \arctg \frac{\overline{CV}}{\overline{BC}}$$

```
Math Deg Norm1 d/c a+bi
103.527618
Ans -> x
103.527618
sin 45 / sin 75 x 200
146.4101615
DEL-LINE DEL-ALL
```

```
Math Deg Norm1 d/c a+bi
146.4101615
Ans -> Y
146.4101615
tan^-1 X/Y
35.26438968
DEL-LINE DEL-ALL
```



Aleshores,

$$\alpha = \arctg \frac{\overline{CV}}{\overline{BC}} = 35^{\circ}15'52''$$