

Nafn: kennaralausa

Í dæmi 1 – 4 á gefa stærðfræðilega nákvæmt svar (Nota kvaðratrót).

1. Reiknaðu hliðarnar a og d. (10%)

sérstakur þríhyrningur $30^\circ - 90^\circ - 60^\circ$

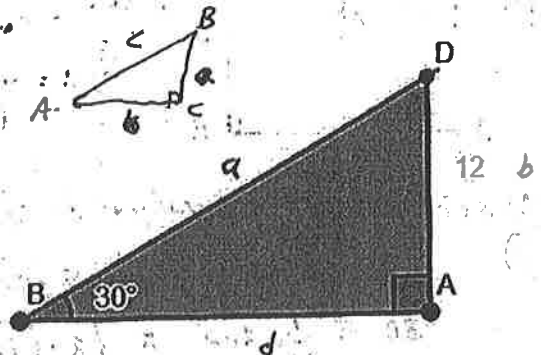
þá gildir:

$$\begin{cases} c = 2a \\ b = \sqrt{3}a \end{cases}$$

$$\begin{cases} a = b \\ c = a \\ b = d \end{cases}$$

$$a = 2b = 2 \cdot 12 = 24$$

$$d = \sqrt{3}b = \sqrt{3} \cdot 12 = 12\sqrt{3}$$



2. Reiknaður hliðarnar f og e. (10%)

sérstakur þríhyrningur $45^\circ - 90^\circ - 45^\circ$

jafnarma þríhyrningur

$$e = g = 5$$

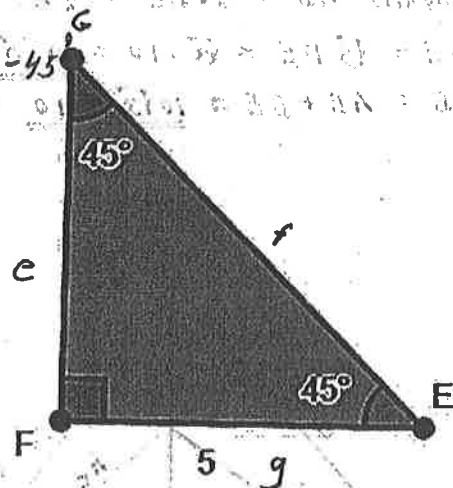
$$\text{Pýþagóras: } g^2 + e^2 = f^2$$

$$2e^2 = f^2 \rightarrow 2 \cdot 5^2 = f^2 \rightarrow$$

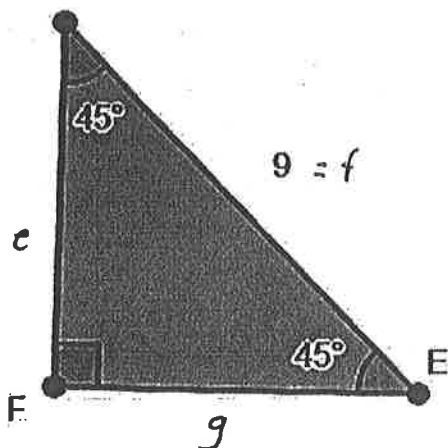
$$f^2 = 2 \cdot 25 = 50$$

$$f = \sqrt{50} = \sqrt{2 \cdot 25} = \sqrt{2} \cdot \sqrt{25} = \sqrt{2} \cdot 5$$

$$f = 5\sqrt{2}$$



3. Reiknaðu skammhliðarnar. (20%)

sérstakur þríhyrningur $45^\circ - 90^\circ - 45^\circ$

jafnarma þríhyrningur

skammhliðarnar eru jafnstórar $e = g$

$$\text{Pýþagóras: } e^2 + g^2 = f^2$$

$$e^2 + e^2 = 9^2$$

$$\frac{2e^2}{2} = \frac{81}{2} \rightarrow$$

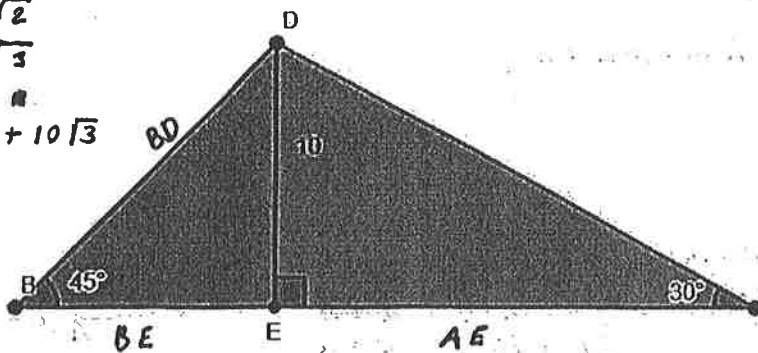
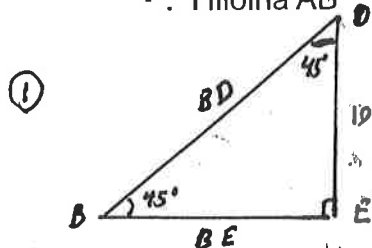
$$e^2 = \frac{81}{2}$$

$$e = \sqrt{\frac{81}{2}} = \frac{\sqrt{81}}{\sqrt{2}} = \frac{9}{\sqrt{2}}$$

4. Í þríhyrningnum ABD er $h_d = 10$ cm. Reiknaðu (40%):

$$DE = 10 = BE$$

- Hliðina $BD = 10\sqrt{2}$
- Hliðina $AE = 10\sqrt{3}$
- Hliðina $AD = 20$
- Hliðina $AB = 10 + 10\sqrt{3}$



② sérstakur þríhyrningur ① -jafnarma þríh. með $45^\circ - 90^\circ - 45^\circ \rightarrow BE = DE = 10$

③

$$BD^2 = 10^2 + 10^2 = 100 + 100 = 200 \rightarrow$$

$$BD = \sqrt{200} = \sqrt{2 \cdot 100} = \sqrt{2} \cdot \sqrt{100} = \sqrt{2} \cdot 10 = 10\sqrt{2}$$

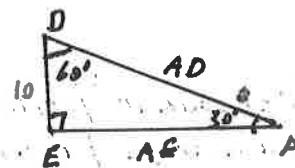
④ sérstakur þríhyrningur ② þríh. með $30^\circ - 90^\circ - 60^\circ \rightarrow$ þá gildir
langhlíð $AD = 2 \cdot DE = 2 \cdot 10 = 20$

⑤

$$AE = \sqrt{3} DE = \sqrt{3} \cdot 10 = 10\sqrt{3}$$

⑥

$$AB = AE + BE = 10\sqrt{3} + 10 = 10(\sqrt{3} + 1)$$



5. Teiknaðu hvasshyrndan þríhyrning (ABC) með eitt hornið 50° .
Teiknaðu síðan hæðir (h_x) á allar hliðir hans (20%).

