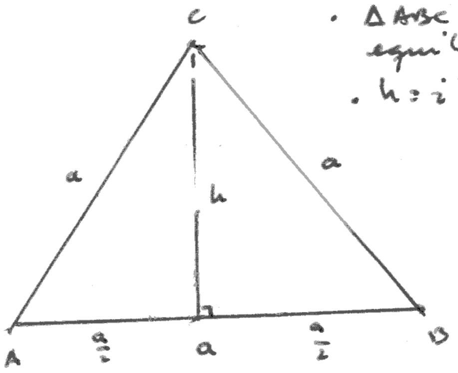
*



· Δ ABC equilátero
· h = ¿?

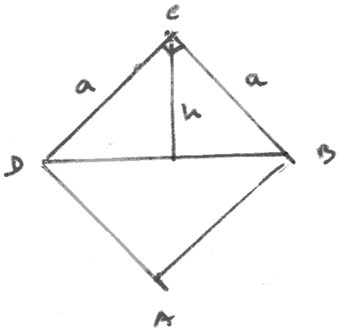
$$a^2 = \left(\frac{a}{2}\right)^2 + h^2$$

$$h^2 = a^2 - \left(\frac{a}{2}\right)^2 = a^2 - \frac{a^2}{4}$$

$$= \frac{3a^2}{4}$$

$$h = \sqrt{\frac{3a^2}{4}} = \frac{a}{2}\sqrt{3}$$

*

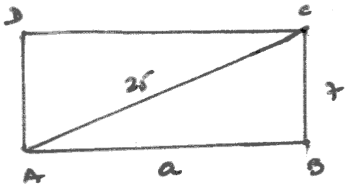


DB = ¿?
h = ¿?

$$DB^2 = a^2 + a^2 = 2a^2$$

$$DB = \sqrt{2a^2} = a\sqrt{2}$$

$$h = \frac{DB}{2} = \frac{a}{2}\sqrt{2}$$

1) 

¿Cuál es el perímetro de ABCD.?

sol

$P = a + 7 + a + 7 = 2a + 14.$

donde

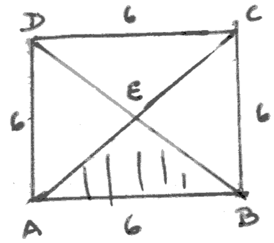
$a^2 + 7^2 = 25^2$

$a^2 = 625 - 49 = 576$

$\underline{a = 24}$

entonces

$P = 2 \cdot 24 + 14 = 62$ (C)

2) 

ABCD cuadrado de lado 6

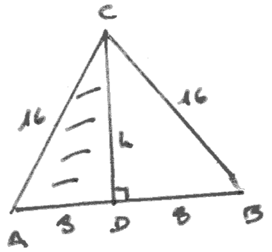
$P_{\triangle ABE} = ¿?$

$AE = EB = 3\sqrt{2}$

$P = 6 + 2 \cdot 3\sqrt{2} = 6 + 6\sqrt{2}$

$= 6(\sqrt{2} + 1)$ (E)

3)



· $\triangle ABC$ equilátero lado 16

· CD altura

$P_{\triangle ADC} = ¿?$

Sol.

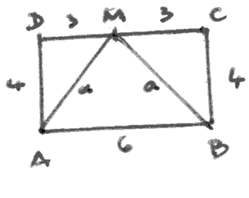
$h = 8\sqrt{3}$

$\Rightarrow P = 8 + 8\sqrt{3} + 16$

$= 24 + 8\sqrt{3}$

(C)

4)



· ABCD rectángulo

· M pto medio de AC

· $P_{\triangle ABM} = ¿?$

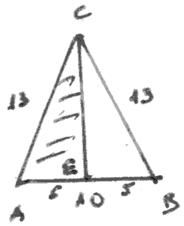
Sol.

$a = 5$

$P = 5 + 5 + 6 = 16$

(D)

5)



· $\triangle ABC$ isósceles base AB

· CE altura

$P_{\triangle ACE} = ¿?$

Sol

$5^2 + CE^2 = 13^2$

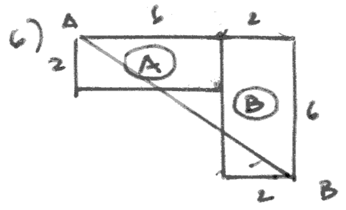
$25 + CE^2 = 169$

$CE^2 = 144$

$CE = 12$

$P = 5 + 12 + 13 = 30$

(C)

6) 

· los rectángulos A y B tienen lados 2 y 6 cm

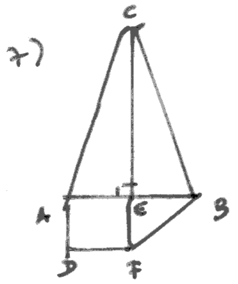
· AB = ¿?

Sol

$AB^2 = 6^2 + (6+2)^2$

$= 6^2 + 8^2 = 36 + 64 = 100$

$AB = 10$ (B)

7) 

· ΔABC isósceles base AB

· AEFD cuadrado

· $CF = 7$ $BF = 3\sqrt{2}$

$P_{\Delta ABC} = $ ¿?

Sol

$BF = 3\sqrt{2} \Rightarrow$

· $AE = AD = DF = EF = 3 = EB = EF$

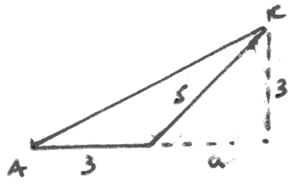
$\Rightarrow CE = 4$

$AC^2 = AE^2 + 4^2 = 3^2 + 4^2 = 25$

$AC = 5$

$P = 6 + 5 + 5 = 16$ (E)

8)



$AC = ¿?$

Sol $AC^2 = (3+a)^2 + 3^2$

donde

$a^2 + 3^2 = 5^2$

$\underline{a = 4}$

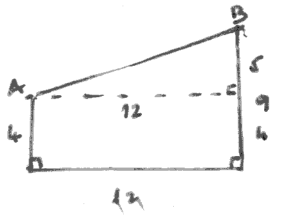
entonces:

$AC^2 = 7^2 + 3^2 = 49 + 9$

$= 58$

$AC = \sqrt{58}$ D

9) Un poste mide 4 m y otro mide 5 m más que él. Si la separación entre ellos es 12 m ¿Cuál es la distancia entre sus cúspides?



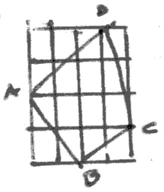
$AB = ¿?$

Sol $12^2 + 5^2 = AB^2$

$144 + 25 = AB^2$

$169 = AB^2$

$\underline{AB = 13}$ B

10) 

Los cuadraditos son de lado 1 cm. ¿Cuánto mide el mayor de los lados del cuadrilátero ABCD

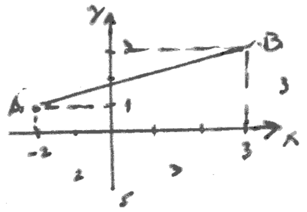
$AB = 2\sqrt{2}$

$BC = \sqrt{5}$

$CD = \sqrt{10}$

$\boxed{AD = \sqrt{13}}$

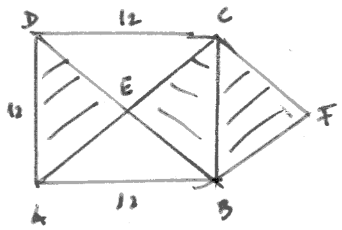
(D)

11) 

$AB^2 = 5^2 + 3^2 = 25 + 4 = 29$

$AB = \sqrt{29}$

(E)

13) 

· ABCD cuadrado de lado 12

BF // CE

BE // CF

¿Perímetro Área achurada?

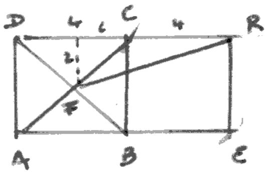
Sol

$AE = EC = CF = BF = BE = 6\sqrt{2}$

entonces

$P = 12 + 6 \cdot 6\sqrt{2} = 12 + 36\sqrt{2}$

(C)

14) 

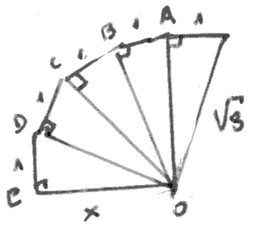
- ABCD y BERC cuadrados de lado 4.

$FR = ¿?$

Sol

$FR^2 = 2^2 + 6^2 = 4 + 36 = 40$

$FR = \sqrt{40}$ (D)

15) 

Sol:

- $\overline{AO}^2 = (\sqrt{8})^2 - 1 = 7$

$AO = \sqrt{7}$

- $BO^2 = (\sqrt{7})^2 - 1 = 6$

$BO = \sqrt{6}$

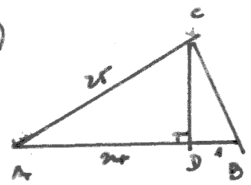
- $CO = \sqrt{5}$

- $DO = 2$

- $EO^2 = x = 4 - 1 = 3$

$EO = \sqrt{3}$ (C)

16)



• CD altura del $\triangle ABC$ isósceles de base BC
• AC = AB = 25
• DB = 1
BC = ¿?

$CD^2 + 24^2 = 25^2$

$CD^2 = 625 - 576$
$= 49$

$CD = 7$

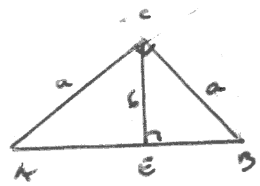
entonces

$7^2 + 1^2 = BC^2$

$BC^2 = 49 + 1 = 50$

$BC = \sqrt{50}$ (E)

17)



• $\triangle ABC$ rectángulo isósceles.
• CE = 6
$P_{\triangle ABC}$ = ¿?

• $6 = \frac{a}{2}\sqrt{2}$

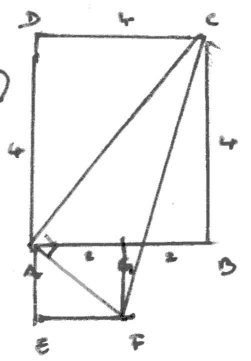
$a\sqrt{2} = 12$

$a = \frac{12}{\sqrt{2}} = \frac{12 \cdot \sqrt{2}}{2} = 6\sqrt{2}$

• AB = 12

$P = 12 + 2 \cdot 6\sqrt{2} = 12 + 12\sqrt{2}$ (C)

18)



- ABCD y AEFG cuadrados
- $AB = 4 = 2AE$

$P_{\triangle AFC} = ¿?$

Sol

$AF = 2\sqrt{2}$

$AC = 4\sqrt{2}$

$FC^2 = AF^2 + AC^2$

$= (2\sqrt{2})^2 + (4\sqrt{2})^2$

$= 4 \cdot 2 + 16 \cdot 2 = 40$

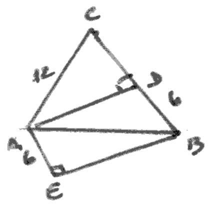
$FC = \sqrt{40}$

entonces

$P = 2\sqrt{2} + 4\sqrt{2} + \sqrt{40}$

$= 6\sqrt{2} + \sqrt{40}$ C

19)



- $\triangle ABC$ equilátero de lado 12
- AEBD rectángulo

$P_{AEBD} = ¿?$

$AD = 6\sqrt{3}$

entonces

$P = 2 \cdot 6\sqrt{3} + 2 \cdot 6$

$= 12\sqrt{3} + 12$ D

20)

sol

$\measuredangle A = 60$ y $\measuredangle B = 90$

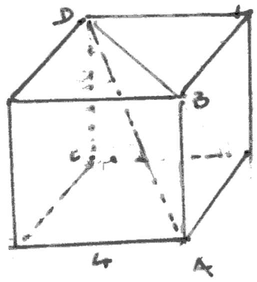
$\Rightarrow \triangle ABC$ es la mitad de un $\triangle$ equilátero.

entonces.

$x = 3\sqrt{3}$

(c)

21)



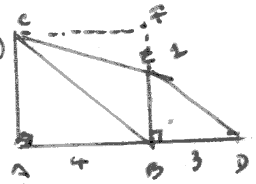
$AD = ¿?$

sol AD es diagonal del $\square$ ABDC

$AD = 4\sqrt{2}$

(c)

22)



. $\triangle ABC$ y $\triangle BDE$ isósceles - rectangulos de lados 4 y 3

. $CE = ¿?$

sol

$EF = 1$

$CF = 4$

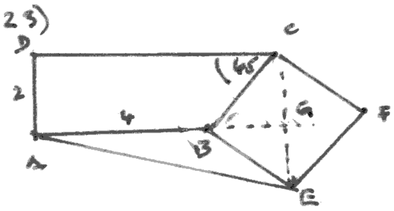
$CE^2 = 1^2 + 4^2 = 1 + 16$

$= 17$

$CE = \sqrt{17}$

(c)

23)



- $AB \parallel CD$
- $AD = 2$
- $AB = 4$
- $EFCB$ cuadrado.

AE : ¿?

Sol

$BC = 2\sqrt{2}$

$GE = 2$

$AG = 4 + 2 = 6$

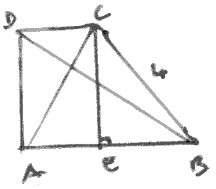
entonces

$$AE^2 = 2^2 + 6^2 = 4 + 36 = 40$$

$$AE = \sqrt{40}$$

(D)

24)



- $\triangle ABC$ equilátero de lado 4
- $AECD$ rectángulo

DB = ¿?

Sol

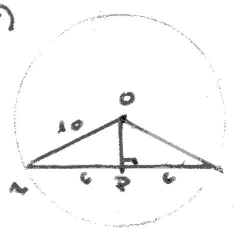
$DA = CE = 2\sqrt{3}$

$$DB^2 = AB^2 + DA^2$$
$$= 4^2 + (2\sqrt{3})^2$$
$$= 16 + 12 = 28$$

$$DB = \sqrt{28}$$

(D)

25)



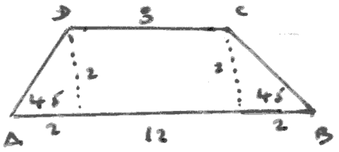
- radio = 10
- AB = 12
- OP = ¿?

$OP^2 + 6^2 = 10^2$

$OP^2 = 100 - 36 = 64$

$OP = 8$ (B)

26)



- $AB \parallel CD$

$P_{ABCD} = ¿?$

sol

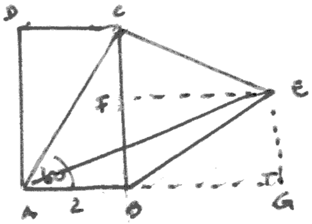
AD = CD (por los ángulos de 45°)

$AD = 2\sqrt{2}$

entonces $P = 12 + 2\sqrt{2} + 8 + 2\sqrt{2}$

$= 20 + 4\sqrt{2}$ (B)

27)



- ABCD rectángulo
- AB = 2
- $\measuredangle BAC = 60$
- $\triangle BEC$ equilátero

AE = ¿?

sol

$AC = 4$

$BC = 2\sqrt{3}$

$FE = \frac{2\sqrt{3}}{2} \cdot \sqrt{3} = 3$

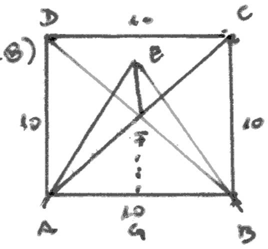
$GE = \sqrt{3}$

$AE^2 = (2+3)^2 + (\sqrt{3})^2$

$= 5^2 + (\sqrt{3})^2 = 25 + 3$

$= 28$

$AE = \sqrt{28}$ (D)

28) 

- $\triangle ABE$ equilátero
- $ABCD$ cuadrado de lado 10
- F intersección de las diagonales

$EF = ¿?$

Sol

$EF = EG - FG.$

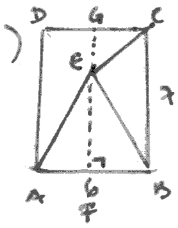
$EG = 5\sqrt{3}$

$FB = 5\sqrt{2}$

$FG = \dfrac{5\sqrt{2}\cdot\sqrt{2}}{2} = 5$

entonces

$EF = 5\sqrt{3} - 5 = 5(\sqrt{3}-1)$ (C)

29) 

- $\triangle ABE$ isósceles base AB, con perímetro 16

$EC = ¿?$

Sol.

$P_{ABE} = 16 \Rightarrow AE = EB = 5$

$EF^2 + 3^2 = 5^2$

$EF^2 = 16$

$EF = 4$

$EG = 3$

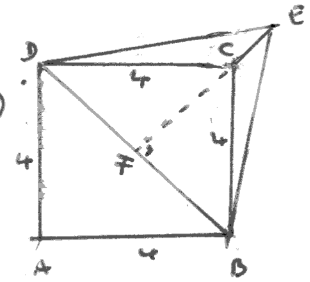
entonces

$EC^2 = EG^2 + GC^2$

$= 3^2 + 3^2 = 9 + 9 = 18$

$EC = \sqrt{18}$

$= \sqrt{9\cdot 2} = 3\sqrt{2}$ (B)

30) 

- ABCD cuadrado de lado 4
- $\triangle DEB$ equilátero

$CE = ¿?$

sol

$CE = FE - FC.$

$FC = \frac{4\sqrt{2}}{2} = 2\sqrt{2}$

$DB = 4\sqrt{2}$

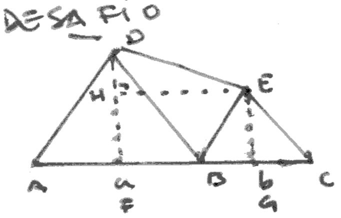
$FE = \frac{4\sqrt{3}}{2} = 2\sqrt{3}$

entonces

$CE = 2\sqrt{3} - 2\sqrt{2} = 2(\sqrt{3} - \sqrt{2})$

D

DESAFÍO



- $\triangle ABD$ y $\triangle BCE$ equiláteros

$DE = ¿?$

sol

$DE^2 = HE^2 + HD^2$

$HD = DF - HF$; $HF = EG$

$EG = \frac{b}{2}\sqrt{3}$

$DF = \frac{a}{2}\sqrt{3}$ entonces

$HD = \frac{\sqrt{3}}{2}(a-b)$

$DE^2 = \left(\frac{a}{2} + \frac{b}{2}\right)^2 + \left(\frac{\sqrt{3}}{2}(a-b)\right)^2$

$= a^2 - ab + b^2$

$DE = \sqrt{a^2 - ab + b^2}$