

a II-a era

PROF. SCHNAROVSKI C.

PROBLEME - TEOREMA ÎNĂLȚIMII

7/60 alegere:

Ip: ABCD - dreptunghi

DE ⊥ AC

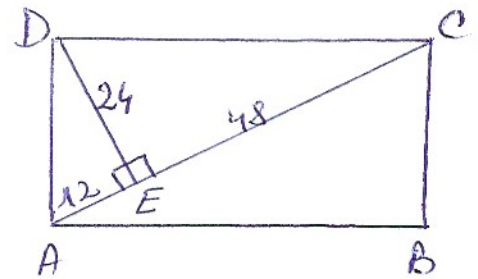
E ∈ (AC)

AE = 12 cm

CE = 48 cm

Cl: DE = ?

S_{ABCD} = ?



Dem:

AC = AE + EC = 12 + 48 = 60 cm

In ΔADC, m(∠D) = 90° $\xrightarrow{T.Î.}$ DE² = AE · EC

DE² = 12 · 48

DE = √(12 · 48)

DE = √(12 · 12 · 4) = 12 · 2 = 24 cm

S_{ΔADC} = $\frac{b \cdot h}{2} =$
 $= \frac{AC \cdot DE}{2} = \frac{60 \cdot 24}{2} = 720 \text{ cm}^2$

S_{ABCD} = 2 · S_{ΔADC} = 2 · 720 = 1440 cm².

8/60 alegere

Ip: ABCD = romb

AC ⊥ BD, AC ∩ BD = {O}

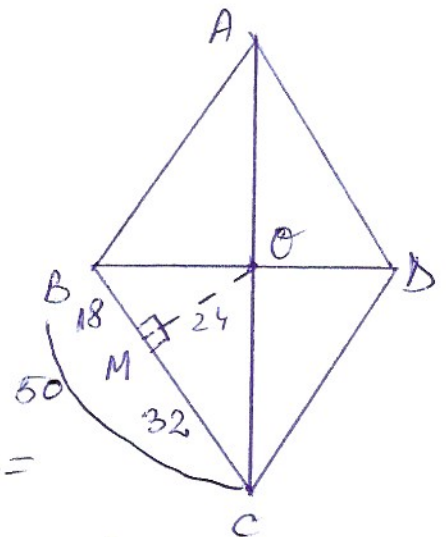
OM ⊥ BC, M ∈ (BC)

BM = 18 cm

MC = 32 cm

Cl: OM = ?

S_{ABCD} = ?



Dem:

BC = BM + MC = 18 + 32 = 50 cm

In ΔBOC, m(∠O) = 90° $\xrightarrow{T.Î.}$ OM² = BM · MC

OM² = 18 · 32

OM = √(18 · 32)

OM = √(9 · 2 · 16 · 2)

OM = 3 · 4 · 2 = 24 cm

S_{ΔBOC} = $\frac{BC \cdot OM}{2} = \frac{50 \cdot 24}{2} = 600 \text{ cm}^2$

S_{ABCD} = 4 · S_{ΔBOC} = 4 · 600 = 2400 cm²

(2)

9/60 end.

Ip: ABCD - trap. dr.

$$AB \parallel CD$$

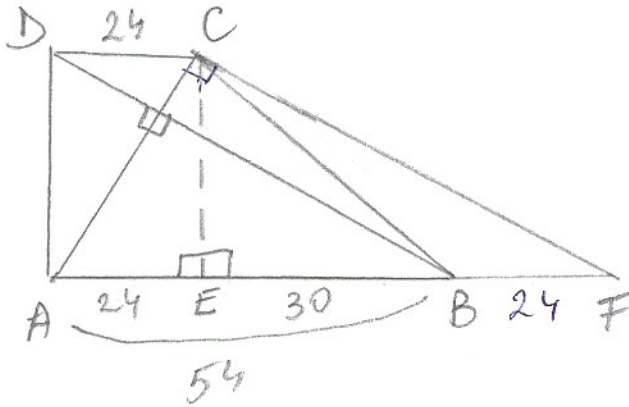
$$AB > CD$$

$$m(\hat{A}) = m(\hat{D}) = 90^\circ$$

$$AC \perp BD$$

$$AB = 54 \text{ cm}$$

$$CD = 24 \text{ cm}$$



- Cl: a) AD = ?
b) A_{ABCD} = ?

Dem:

Tie $CE \perp AB \Rightarrow$ ~~AD~~ $AD \parallel CD$ } \Rightarrow
 $DC \parallel AE$ }

\Rightarrow AECD - dreptunghi \Rightarrow AE = DC = 24 cm \Rightarrow
 \Rightarrow EB = AB - AE = 54 - 24 = 30 cm

$\overline{CE} \perp AB \leftarrow AD = CE$

Tie $CF \parallel DB$ } \Rightarrow $CF \perp AC \Rightarrow \Delta ACF$ dreptunghic cu
 $DB \perp AC$ } $m(\hat{C}) = 90^\circ$

Dim $CF \parallel DB$ } \Rightarrow BFC - dreptunghi \Rightarrow BF = DC = 24
 $DC \parallel BF$ } \Rightarrow EF = EB + BF = 30 + 24 = 54 cm

In ΔACF , $m(\hat{C}) = 90^\circ$ T. \hat{A} , $CE^2 = AE \cdot EF$

$$CE^2 = 24 \cdot 54$$

$$CE = \sqrt{24 \cdot 54} = \sqrt{6 \cdot 4 \cdot 6 \cdot 9} = 6 \cdot 2 \cdot 3$$

$$CE = 36 \text{ cm} \Rightarrow |AD| = 36 \text{ cm}$$

$$b) A_{ABCD} = \frac{(B+b) \cdot h}{2} = \frac{(AB+CD) \cdot AD}{2} = \frac{(54+24) \cdot 36}{2} = 78 \cdot 18 = 1404 \text{ cm}^2$$

③-

10/60 cel

I_p : ABCD - trap. is.

$AD \parallel BC$, $AD < BC$

$AC \perp AB$

$[AB] = [DC]$

$AM \perp BC$

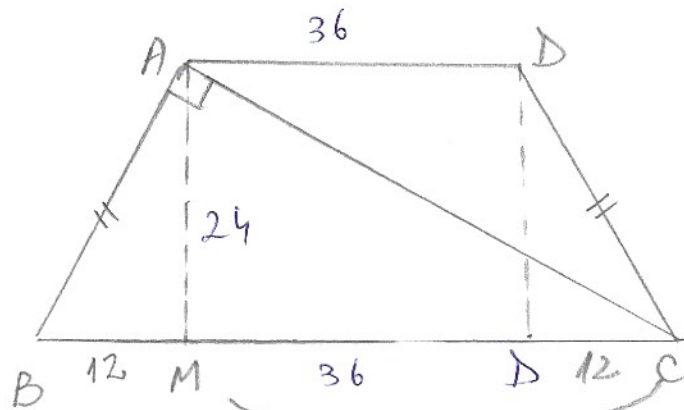
$M \in (BC)$

$BM = 12 \text{ cm}$

$CM = 48 \text{ cm}$

cl: a) $AM = ?$

b) $A_{ABCD} = ?$



Dem: 48

In $\triangle ABC$, $m(\hat{A}) = 90^\circ \xrightarrow{T. \uparrow} AM^2 = BM \cdot MC$

$$AM^2 = 12 \cdot 48$$

$$AM = \sqrt{12 \cdot 48} = \sqrt{12 \cdot 12 \cdot 4}$$

$$AM = 12 \cdot 2 = 24 \text{ cm}$$

$$A_{ABCD} = \frac{(B+b) \cdot h}{2} = \frac{(BC+AD) \cdot AM}{2} = \frac{(60+36) \cdot 24}{2}$$

$$= 84 \cdot 12 = 1008 \text{ cm}^2$$

$$BC = BM + MC = 12 + 48 = 60 \text{ cm}$$

$$\text{Fie } DE \perp BC \Rightarrow DC = BM = 12 \text{ cm} \Rightarrow MD = MC - DC = 48 - 12 = 36 \text{ cm}$$

$$\Rightarrow AD = MD = 36 \text{ cm}$$

TEMĂ :culegere pag 60 / et: 4, 11, 13, 14, 15, 16.