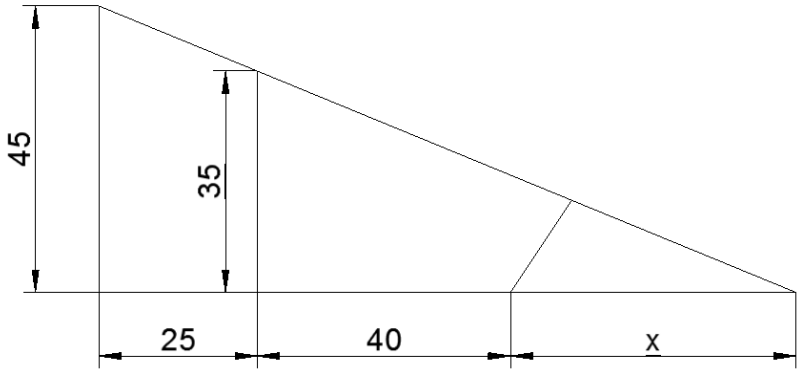
Aufgaben:

1. Berechne x!



2. Westermann 9II S. 107 Nr. 6

3. Westermann 9II S. 109 Nr. 4

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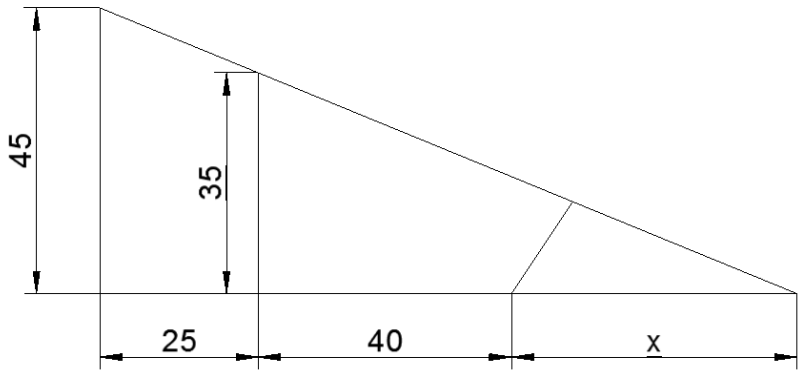
1. Lösung: Berechne x



$$\frac{25+40+x}{45}=\frac{40+x}{35}$$

x in den Zähler

$$(65+x)\cdot 35=45\cdot(40+x)$$

$$2275+35x=1800+45x$$

$$475=10x$$

$$x=47{,}5$$

2. Lösung: Westermann 9II S. 107 Nr. 6

6a)

$$\frac{\overline{CM_1}}{\overline{M_1B_1}} = \frac{\overline{CM_2}}{\overline{M_2B_2}}$$

$$\frac{\overline{CM_1}}{3} = \frac{\overline{CM_1} + 8}{5}$$

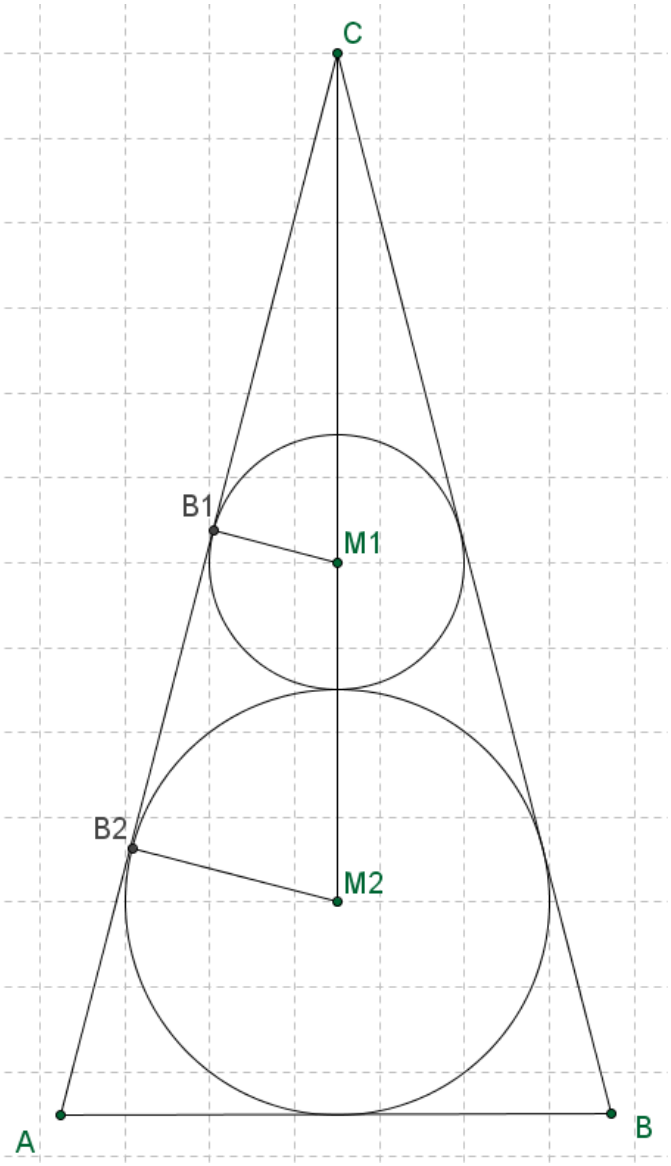
$$\overline{CM_1} \cdot 5 = \left(\overline{CM_1} + 8\right) \cdot 3$$

$$5 \cdot \overline{CM_1} = 3 \cdot \overline{CM_1} + 24$$

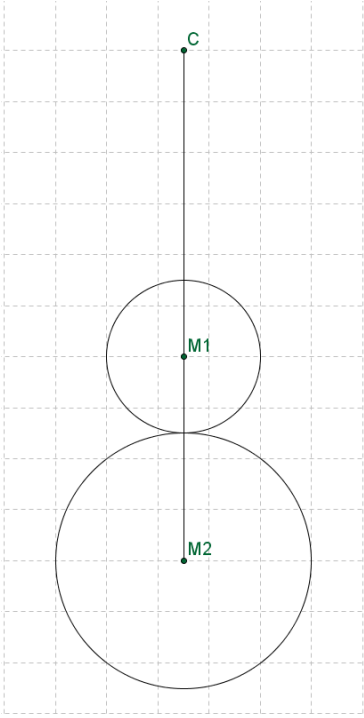
$$2 \cdot \overline{CM_1} = 24$$

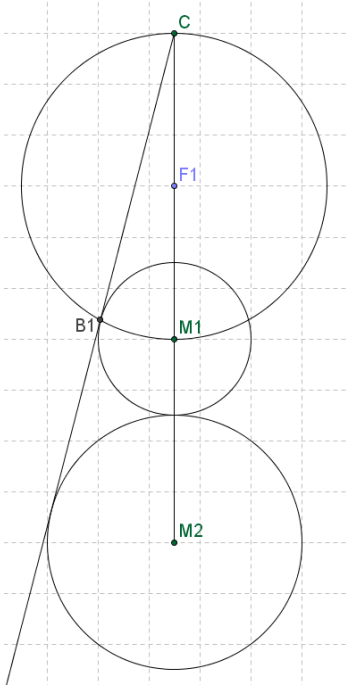
$$\overline{CM_1} = 12$$

$$\overline{CM_1} = 12 \text{ cm}$$

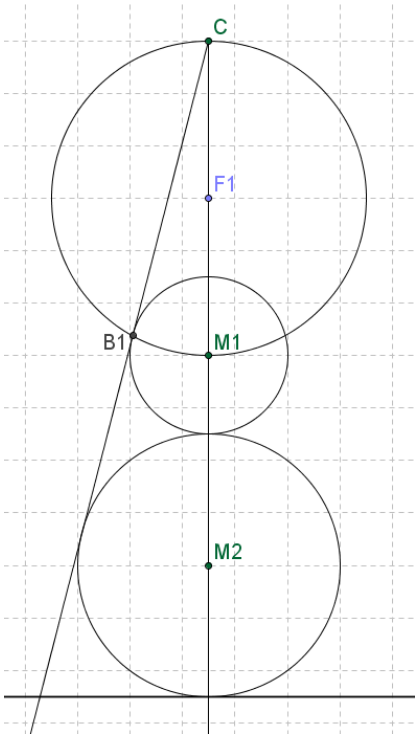


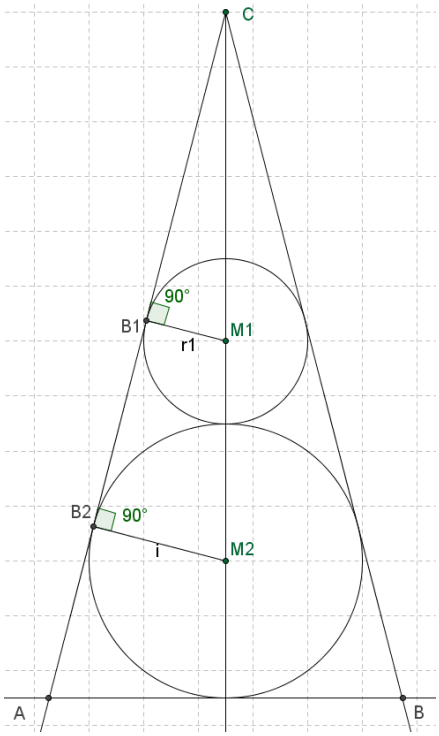
6b)





Tangente an Kreis
Thaleskreis über
Strecke $[CM_1]$





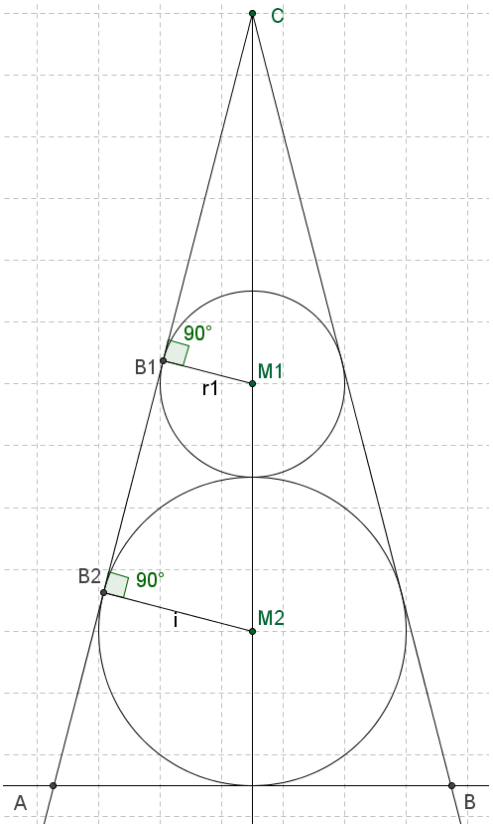
6c)

Flächeninhalte berechnen

$A_{\Delta ABC} = 0{,}5 \cdot 12{,}9 \cdot 25\ cm^2 = 161{,}25\ cm^2$

$A_{O\,K_1} = 3{,}14 \cdot 3^2\ cm^2 = 28{,}26\ cm^2$

$A_{O\,K_2} = 3{,}14 \cdot 5^2\ cm^2 = 78{,}50\ cm^2$



Prozentrechnung

$A_{gesucht} = A_{\Delta ABC} - A_{O\,K_1} - A_{O\,K_2}$

$A_{gesucht} = 161{,}25\ cm^2 - 28{,}26\ cm^2 - 78{,}50\ cm^2$

$A_{gesucht} = 54{,}49\ cm^2$

Verhältnisgleichung

$161{,}25\ cm^2 \mathrel{\hat{=}} 100\%$

$54{,}49\ cm^2 \mathrel{\hat{=}} x\%$

fdMzg:

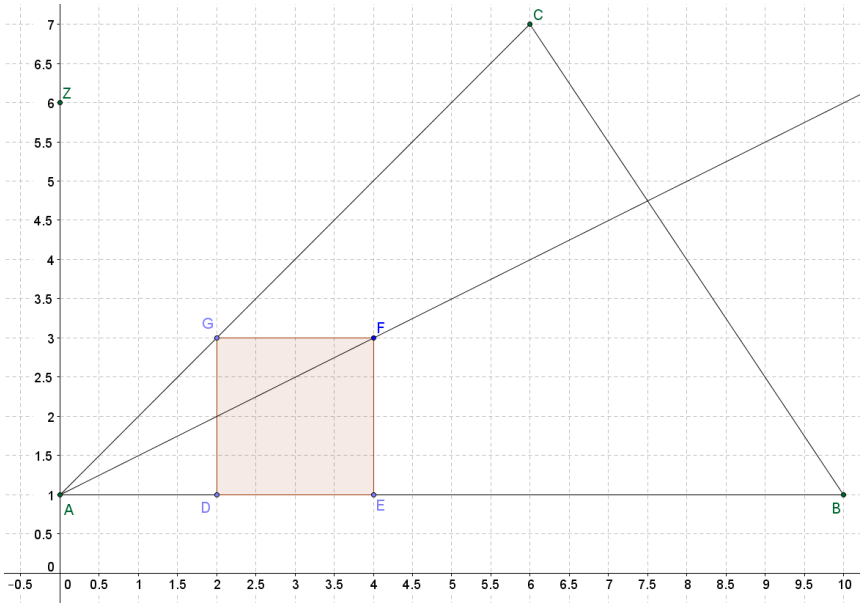
$$\frac{x}{54{,}49} = \frac{100}{161{,}25}$$

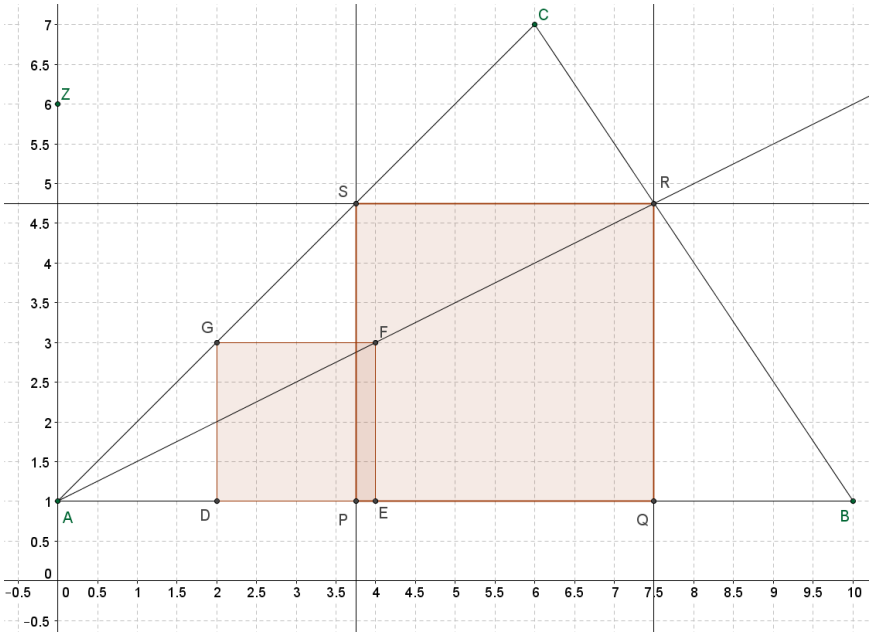
$$x = \frac{100 \cdot 54{,}49}{161{,}25} = 34$$

34% der Dreiecksfläche ist nicht von Kreisflächen bedeckt.

3. Lösung: Westermann 9II S. 109 Nr. 4

4a)



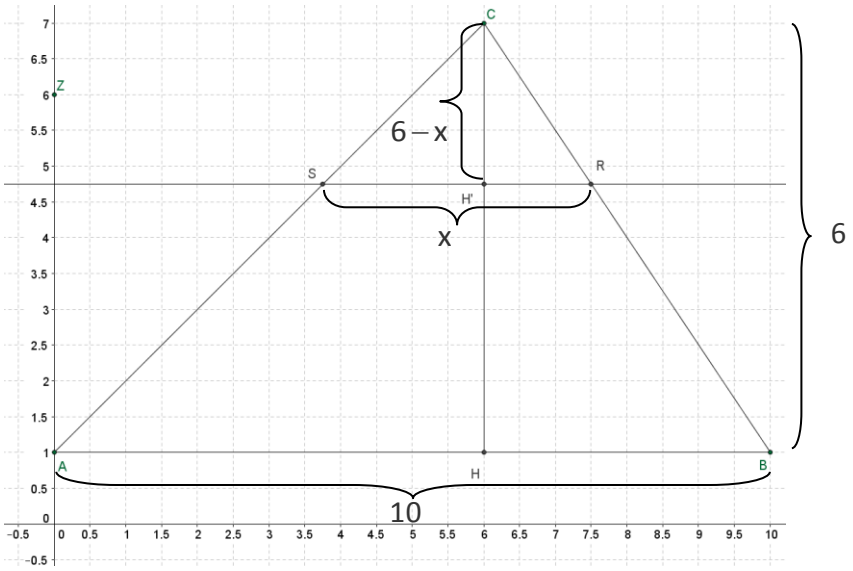


Beliebiges Quadrat DEFG einzeichnen

Dann Halbgerade [AF einzeichnen

Schnittpunkt von [AF mit der Strecke ergibt den ersten Punkt des Quadrats PQRS

4b)



Betrachte die Dreiecke ABC und CSR

Berechne zunächst $\overline{RS}$ (= $\overline{PQ}$)

$$\frac{\overline{CH'}}{\overline{SR}} = \frac{\overline{CH}}{\overline{AB}}$$

$$\frac{6-x}{x} = \frac{6}{10}$$

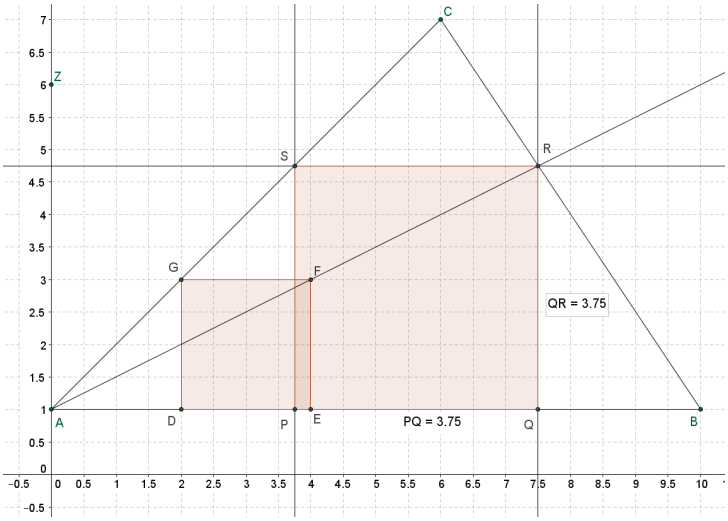
$$\Leftrightarrow (6-x)\cdot 10 = 6x$$

$$\Leftrightarrow 60 - 10x = 6x$$

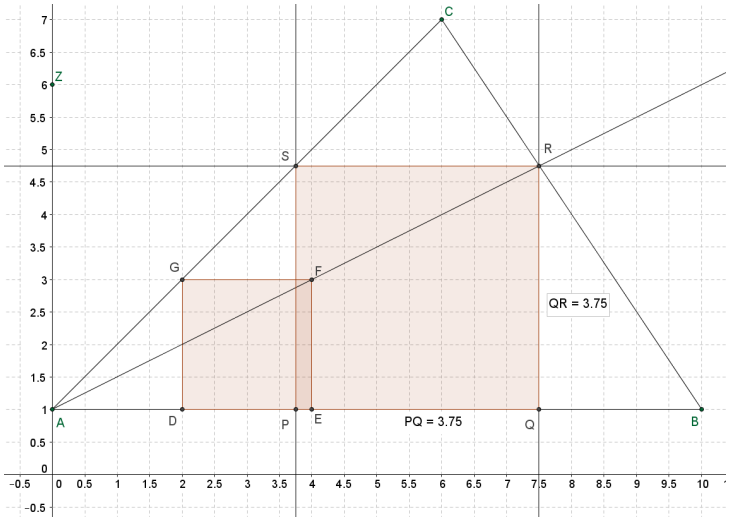
$$\Leftrightarrow 60 = 16x$$

$$\Leftrightarrow x = 3{,}75$$

$$\overline{PQ} = 3{,}75\text{LE}$$



4c)



$\overline{PQ} = 3{,}75$ LE also auch $\overline{PS} = 3{,}75$ LE (Quadrat!!)

Zudem gilt:

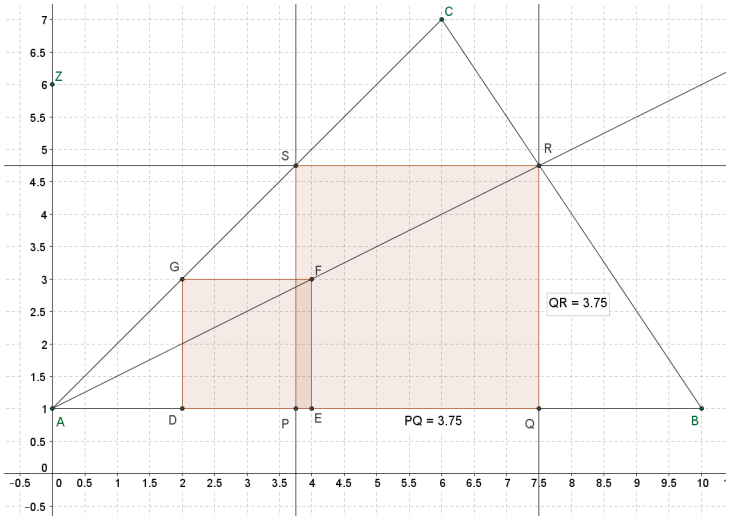
P liegt auf der Strecke [AB]

Somit gilt:

$S\left(x_s \middle| 3{,}75 + 1\right)$

$S\left(x_s \middle| 4{,}75\right)$

4d)



Geradengleichung AC:

m berechnen:

$m=\frac{7-1}{6-0}=1$

t berechnen:

$y=mx+t$

Koordinate von A einsetzen:

$1=1\cdot 0+t$

$t=1$

also gilt für AC: y=x+1

x_s berechnen:

Dazu die y-Koordinate von S einsetzen

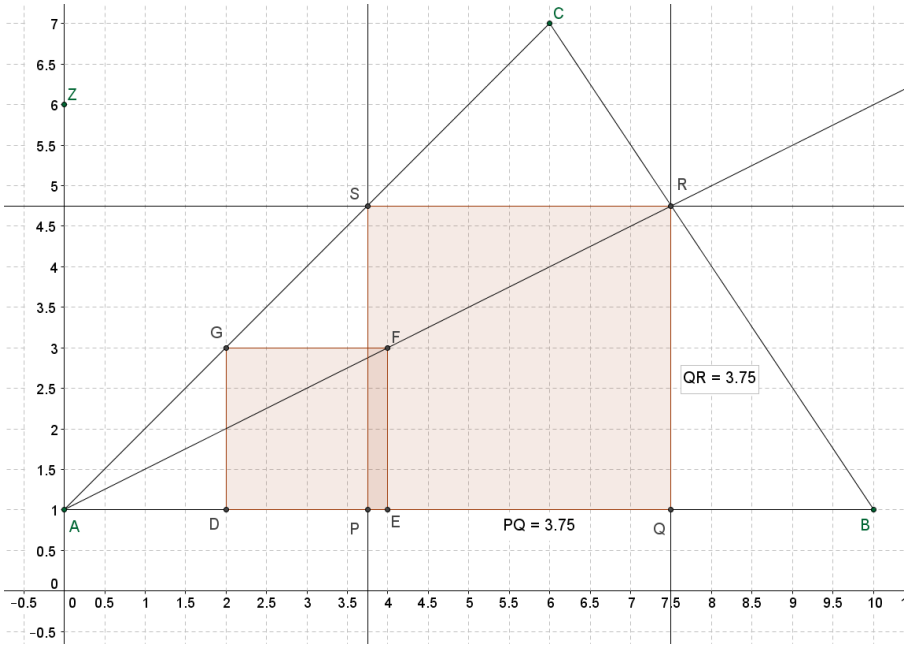
AC: y=x+1

AC: $4{,}75=x_s+1$

AC: $3{,}75=x_s$

$x_s=3{,}75$

$S\left(3{,}75|4{,}75\right)$



Koordinate von P berechnen:

P liegt auf [AB] und hat die gleiche x-Koordinate wie S

AB: y=1

$y_P = 1$

P $(3{,}75|1)$

Koordinaten von Q:

Q hat die gleichen y-Wert wie P und den gleichen x-Wert wie R

Q $(7{,}5|1)$

Koordinate von R:

Koordinaten von S verwenden: + 3,75 in x-Achse

R $(3{,}75+3{,}75|4{,}75)$

R $(7{,}5|4{,}75)$