

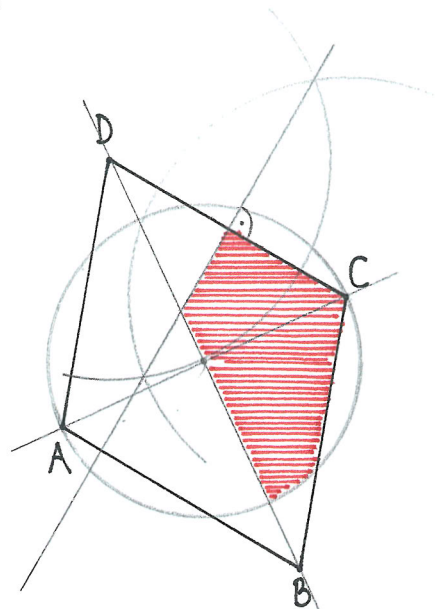
$$\textcircled{1} \quad \underline{\underline{L = \{4, 6, 8\}}}$$

$$\textcircled{2} \quad \frac{2r}{t} \cdot \frac{t-t^2}{4r^2} = \frac{2rt(1-t)}{4r^2t} = \underline{\underline{\frac{1-t}{2r}}}$$

$$\begin{aligned} \textcircled{3} \quad \textcircled{a} \quad 12x - (4x+5) &= 2[7 - (11-2x)] \\ 12x - 4x - 5 &= 2[7 - 11 + 2x] \\ 8x - 5 &= 2[-4 + 2x] \\ 8x - 5 &= -8 + 4x \\ 4x &= -3 \\ x &= \underline{\underline{-\frac{3}{4}}} \end{aligned}$$

$$\begin{aligned} \textcircled{b} \quad x + 2 \cdot \left(\frac{2x}{3} - \frac{1}{4}\right) &= 2x \\ x + \frac{4x}{3} - \frac{1}{2} &= 2x \\ 6x + 8x - 3 &= 12x \\ 14x - 3 &= 12x \\ 2x &= 3 \\ x &= \underline{\underline{\frac{3}{2}}} \end{aligned}$$

④



$$\textcircled{5} \textcircled{a} \quad n_A = \frac{\text{kgV}(36, 28, 40)}{36}$$

kgV mit Primfaktorzerlegung:

$$\begin{cases} 36 = 2 \cdot 2 \cdot 3 \cdot 3 \\ 28 = 2 \cdot 2 \cdot 7 \\ 40 = 2 \cdot 2 \cdot 2 \cdot 5 \end{cases}$$

$$\text{kgV} = 2 \cdot 2 \cdot 2 \cdot 3 \cdot 3 \cdot 5 \cdot 7 = 2'520$$

$$n_A = \frac{2'520}{36} = \underline{\underline{70}}$$

\textcircled{b} Anzahl Zähne des Rades C muss Teiler von $7 \cdot 36 = 252$ sein.
Teiler mit Primfaktorzerlegung:

$$252 = 2 \cdot 2 \cdot 3 \cdot 3 \cdot 7$$

$$2 \cdot 7 = \underline{\underline{14}}$$

$$3 \cdot 7 = \underline{\underline{21}}$$

$$2 \cdot 2 \cdot 3 = \underline{\underline{12}}$$

$$2 \cdot 3 \cdot 3 = \underline{\underline{18}}$$

$$2 \cdot 2 \cdot 7 = \underline{\underline{28}}$$

$\textcircled{6}$ $x \hat{=}$ Anzahl 2kg-Hanteln

$$x \cdot 2 + 2x \cdot 4 + (52 - 3x) \cdot 10 = 300$$

$$2x + 8x + 520 - 30x = 300$$

$$-20x + 520 = 300$$

$$220 = 20x$$

$$\parallel = x$$

$\textcircled{7}$ $x \hat{=}$ Jans Zeit

$$250 \cdot x = 200 \cdot (x + 3)$$

$$250x = 200x + 600$$

$$50x = 600$$

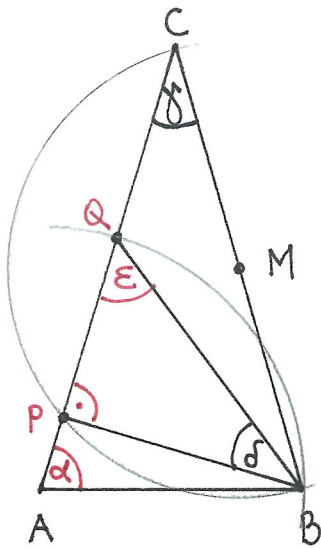
$$x = \underline{\underline{12 \text{ min}}}$$

11 2-kg-Hanteln

22 4-kg-Hanteln

19 10-kg-Hanteln

8



$\sphericalangle P = 90^\circ$ (Thaleskreis)

$\alpha = \frac{180^\circ - \gamma}{2} = \frac{180^\circ - 32^\circ}{2} = 74^\circ$ ($\triangle ABC$ gleichschenkelig)

$\epsilon = \frac{180^\circ - \alpha}{2} = \frac{180^\circ - 74^\circ}{2} = 53^\circ$ ($\triangle ABQ$ gleichschenkelig)

$\delta = 180^\circ - \sphericalangle P - \epsilon = 180^\circ - 90^\circ - 53^\circ = \underline{37^\circ}$ (Winkelsumme)

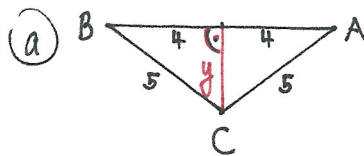
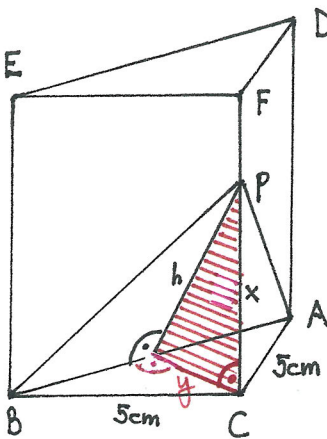
9 (b) $n(x) = (x+2)^2 + 4(x+1) = x^2 + 4x + 4 + 4x + 4 = x^2 + \underline{8x + 8}$

(a) $n(3) = \underline{41}$

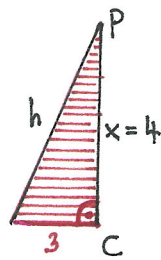
(c) $n(996) = 999'992$

$n(\underline{997}) = 1'001'993$

10



$y = \sqrt{5^2 - 4^2} = 3$



$h = \sqrt{3^2 + 4^2} = \underline{5 \text{ cm}}$

(b) $F_{\triangle APB} = \frac{8 \cdot h}{2} = \frac{8 \cdot \sqrt{3^2 + x^2}}{2} = 4 \sqrt{x^2 + 9}$

11

$V_{\text{Wasser}} = 12^2 \cdot 6 = 864 \text{ cm}^3$

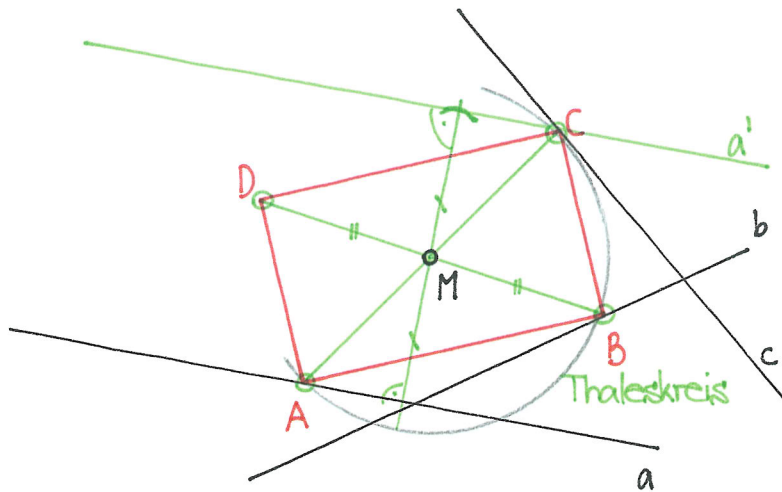
$V_{\text{unten}} = (12^2 - 4^2) \cdot 4 = (144 - 16) \cdot 4 = 128 \cdot 4 = 512 \text{ cm}^3$

$V_{\text{oben}} = V_{\text{Wasser}} - V_{\text{unten}} = 864 - 512 = 352 \text{ cm}^3$

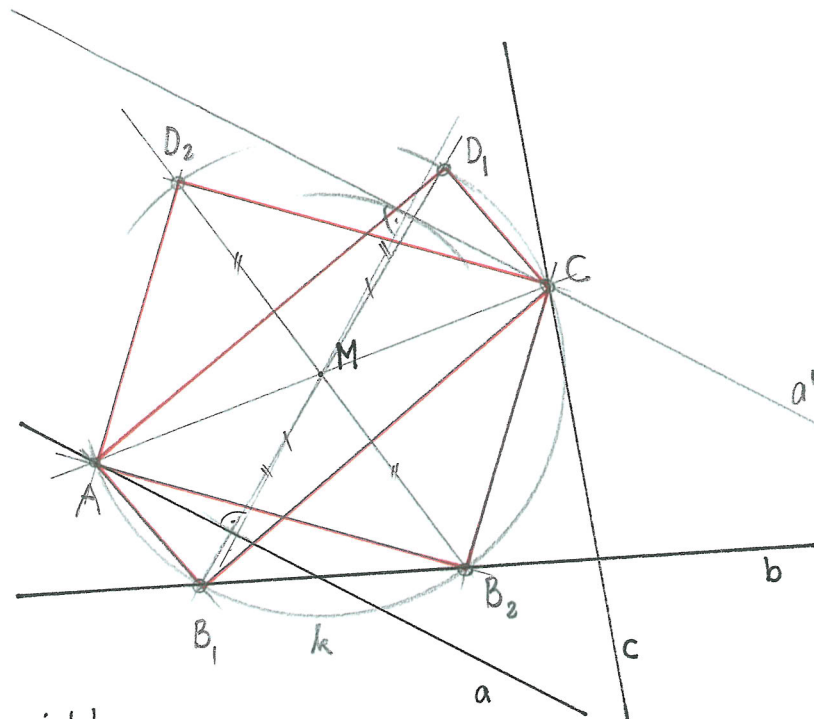
$352 = 2 \cdot (4 \cdot 12) \cdot h \Rightarrow h = 3.6 \text{ cm} \Rightarrow x = \underline{1.6 \text{ cm}}$

12

Skizze



Konstruktion



Konstruktionsbericht

- 1) a an M spiegeln $\rightarrow a'$
- 2) $a' \cap c = \underline{\underline{C}}$
- 3) C an M spiegeln $\Rightarrow \underline{\underline{A}}$
- 4) Thaleskreis k über AC mit Mittelpunkt M
- 5) $k \cap b = \underline{\underline{B}}$ (2 Lösungen)
- 6) B an M spiegeln $\Rightarrow \underline{\underline{D}}$