

⑦ 73/7b (geht ohne a nicht)

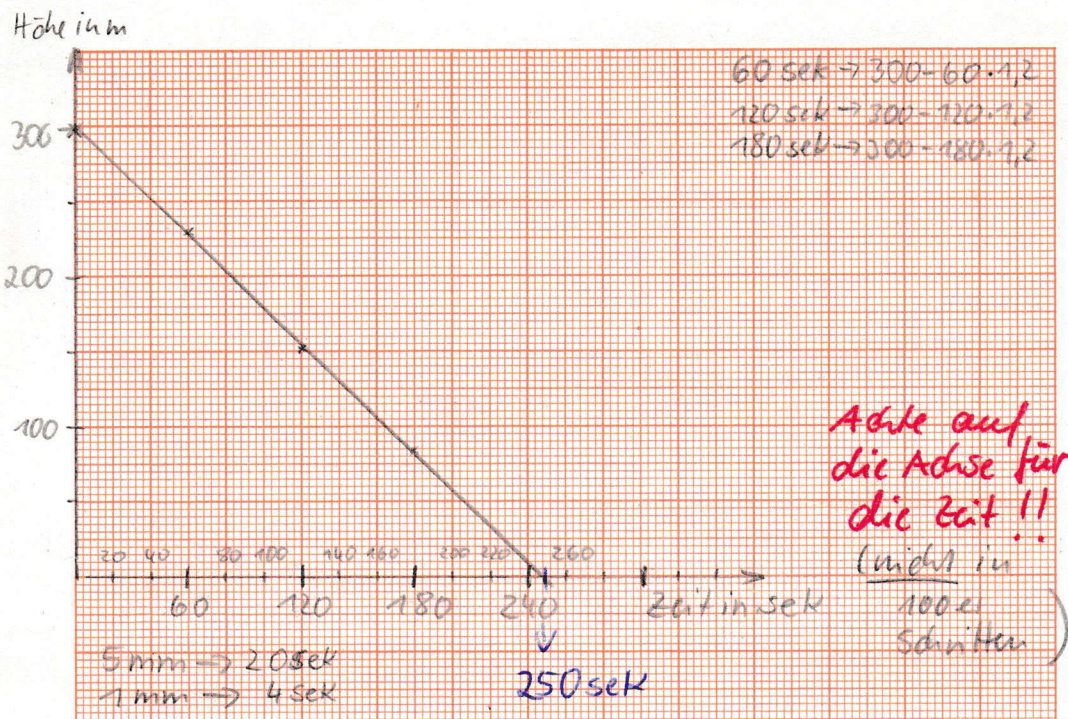
$$300 - x \cdot 1,2 = 0 \quad x \text{ steht für sek.}$$

$$300 - 1,2x = 0 \quad | +1,2x$$

$$300 = 1,2x \quad | :1,2$$

$$\underline{250 \text{ sek} = x} \quad (4 \cdot 60 = 240)$$

4min 10sek braucht es für die Landung.



80/7

Tarif 1

x Km	10	50	100	150
$51 + x \cdot 0,42$	55,20	72	93	114

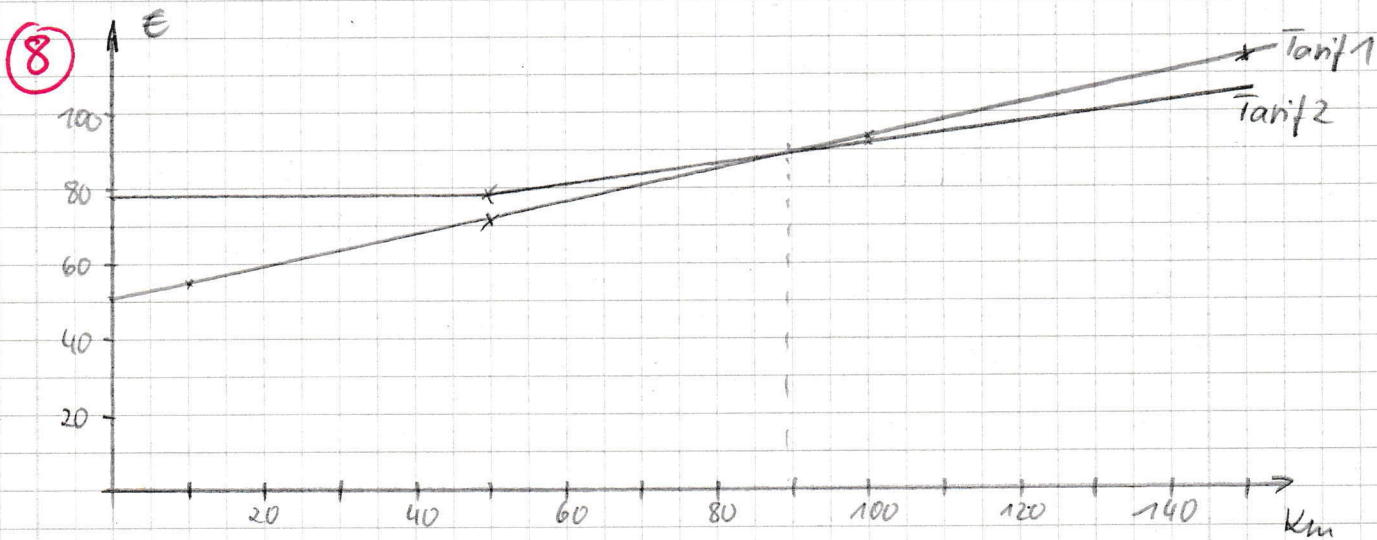
Tarif 2

x Km	10	50	51	100	150
$78 + \underbrace{(x-50)} \cdot 0,28$	78	78	78,28	92	106

für mehr als

50 km

bezahle ich 0,28€



für ca. mehr als 90 km wäre Tarif 2 besser

rechnerisch geht es genauer: $51 + 0,42x = 78 + (x - 50) \cdot 0,28$

$$51 + 0,42x = 78 + 0,28x - 14 \quad | -51$$

$$0,14x = 13 \quad | :0,14$$

$$x \approx 93 \rightarrow \text{ab } 93 \text{ km!}$$

99/2

a) I $y = -3x + 16$

II $y = 2x - 4$

I = II $-3x + 16 = 2x - 4 \quad | -2x$

$-5x + 16 = -4 \quad | -16$

$-5x = -20 \quad | :(-5)$

$x = 4$

II $y = 2 \cdot 4 - 4$

$y = 4$

c) I $6x + 3y = 15$

II $y = 2x - 7$

I $6x + 3(2x - 7) = 15$

$6x + 6x - 21 = 15 \quad | +21$

$12x = 36 \quad | :12$

$x = 3$

II $y = 2 \cdot 3 - 7$

$y = -1$

d) I $6y - x = 2$

II $x - 2y = -1$

I $x = 6y - 2$

II $x = 2y - 1$

$6y - 2 = 2y - 1 \quad | -2y + 2$

$4y = 1$

$y = \frac{1}{4}$ oder $0,25$

99/6

a) I $y + 3x = 18$

II $2x + y = 11$

I $y = -3x + 18$

II $y = -2x + 11$

$-3x + 18 = -2x + 11 \quad | +2x$

$-x = -7$

$x = 7$

I $v = -3 \cdot 7 + 18 = -3$

c) I $4x + y = 46$

II $y - x = 4$

II $y = 4 + x$

I $4x + 4 + x = 46 \quad | -4$

$3x = 42 \quad | :3$

$x = 14$

II $y = 4 + 14$

$y = 18$

9) 107/4

a) I $9x - y = 41$

II $y = 4x - 11$

I $9x - (4x - 11) = 41$

$9x - 4x + 11 = 41 \quad | -11$

$5x = 30 \quad | :5$

$x = 6$

II $y = 4 \cdot 6 - 11$

$y = 13$

b) I $3x + 2y = 2$

II $2y = 3x + 2$

I $3x + 3x + 2 = 2 \quad | -2$

$6x = 0$

$x = 0$

II $2y = 3 \cdot 0 + 2$

$2y = 2 \quad | :2$

$y = 1$

d) I $4x + 2y = 26$

II $3x - y = 7 \quad | +y -7$

II $3x - 7 = y$

I $4x + 2 \cdot (3x - 7) = 26$

$4x + 6x - 14 = 26 \quad | +14$

$10x = 40 \quad | :10$

$x = 4$

II $y = 3 \cdot 4 - 7 = 5$

117/8

- Seiten des Rahmens x und $y \Rightarrow y$ ist 30cm länger als x und der Umfang 2m = 200cm

I $2 \cdot x + 2 \cdot y = 200$ (Umfang)

II $y = x + 30$

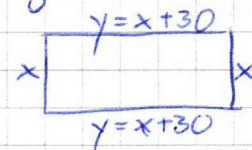
I $2x + 2 \cdot (x + 30) = 200$

$2x + 2x + 60 = 200 \quad | -60$

$4x = 140 \quad | :4$

$x = 35 \text{ cm}$

$\Rightarrow y = 65 \text{ cm}$ (30cm länger als x)



117/10

Bearbeitungsgebühr = x
Anzahl der Pads = y

I $6 \cdot y + x = 31,93 \Rightarrow x = 31,93 - 6y$

II $8 \cdot y + x = 41,91 \Rightarrow x = 41,91 - 8y$

$31,93 - 6y = 41,91 - 8y \quad | +8y$

$31,93 + 2y = 41,91 \quad | -31,93$

$2y = 9,98$

$y = 4,99 \text{ €}$

$x = 31,93 - 6 \cdot 4,99$

$x = 1,99 \text{ €}$ beträgt

die Bearbeitungsgebühr

Preis für ein Housepad

157/1 Maßstab 1: 17 500 000

b) Brüssel $\frac{2,3}{\text{cm}}$ Bremen $\frac{B}{0}$ $\frac{1}{17500000} = \frac{2,3}{x}$ $x = 40\,250\,000 \text{ cm}$
 $= 402,5 \text{ km}$

c) Wien $\frac{2,9}{\text{cm}}$ Berlin $\frac{B}{0}$ $\frac{1}{17500000} = \frac{2,9}{x}$ $x = 50\,750\,000 \text{ cm}$
 $= 507,5 \text{ km}$

g) Köln $\frac{2,4}{\text{cm}}$ Zürich $\xrightarrow{\text{Rechnung}}$ 420 km

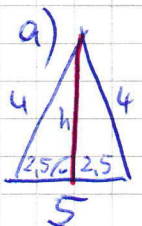
i) München $\frac{1,8}{\text{cm}}$ Prag $\xrightarrow{\text{wie oben}}$ 315 km

10 159/4 Satz des Pythagoras

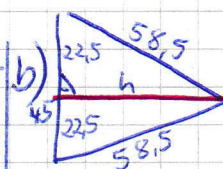
a) $x^2 + 6^2 = 7,5^2$ b) $x^2 + 7^2 = 18,2^2$ c) $4,8^2 + 3,6^2 = x^2$
 $x = \sqrt{7,5^2 - 6^2}$ $x = \sqrt{18,2^2 - 7^2}$ $x = \sqrt{4,8^2 + 3,6^2}$
 $x = 4,5 \text{ cm}$ $x = 16,8 \text{ cm}$ $x = 6 \text{ cm}$

159/8 alles gleichschenkl. $\Delta \rightarrow$ Höhe teilt Δ in 2 gleiche rechth. Δ

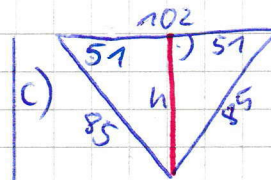
$A = \frac{g \cdot h_g}{2}$

a)  $h^2 + 2,5^2 = 4^2$
 $h = \sqrt{4^2 - 2,5^2}$
 $h = 3,1 \text{ cm}$

$A = \frac{5 \cdot 3,1}{2} = 7,75 \text{ cm}^2$

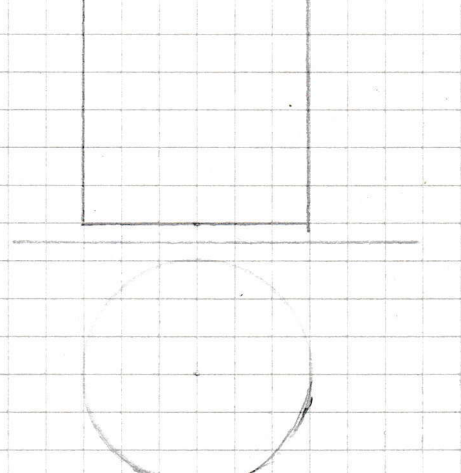
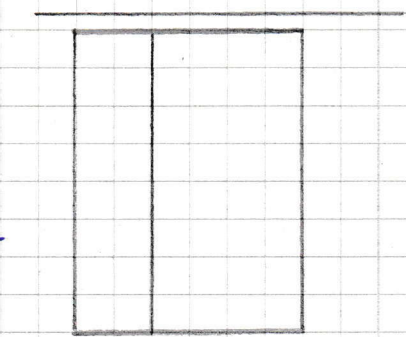
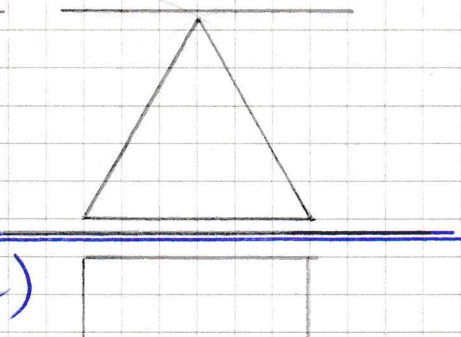
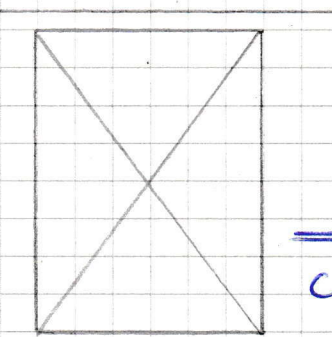
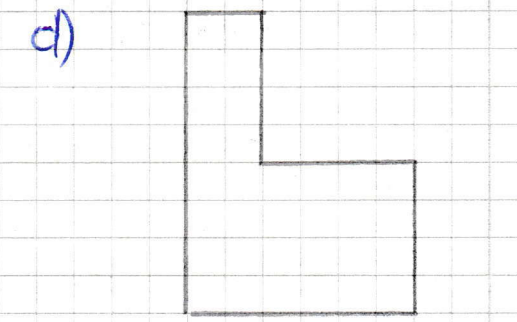
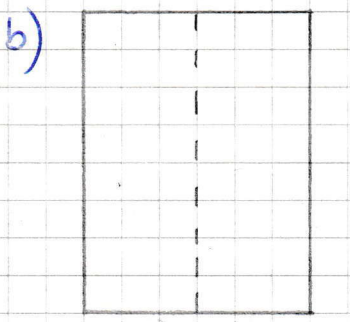
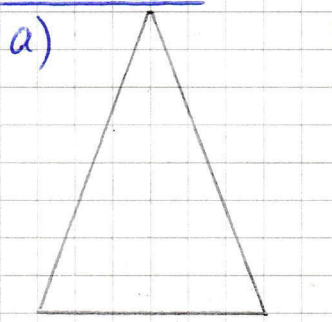
b)  $h = \sqrt{58,5^2 - 22,5^2}$
 $h = 54 \text{ cm}$

$A = \frac{45 \cdot 54}{2}$
 $A = 1215 \text{ cm}^2$

c)  $h = \sqrt{85^2 - 51^2}$
 $h = 68 \text{ mm} = 6,8 \text{ cm}$

$A = \frac{102 \cdot 68}{2}$
 $A = 3468 \text{ mm}^2 = 34,68 \text{ cm}^2$

165/2 zum üben am besten unliniertes Papier

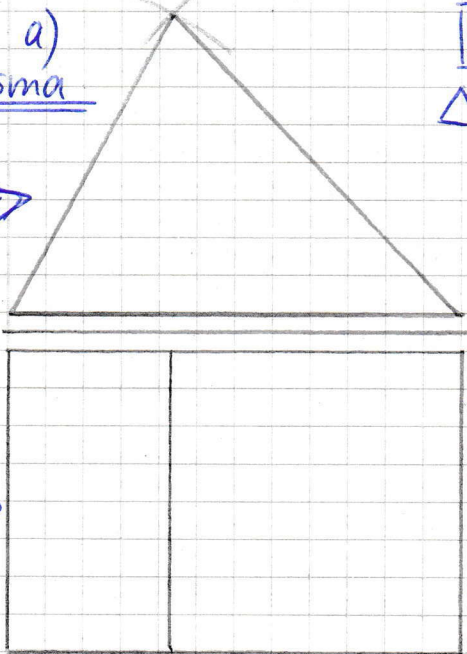


11) 167 | 5

ich rechne mit cm

a) Prisma

$A_G \Rightarrow$



$h \Rightarrow$

$$V = A_G \cdot h \quad h = 4 \text{ cm}$$

$$\Delta \Rightarrow A_G = \frac{g \cdot h_g}{2}$$

$h_g = 4 \text{ cm}$ (im Δ gemessen)

$$A_G = \frac{6 \cdot 4}{2}$$

$$\underline{A_G = 12 \text{ cm}^2} \Rightarrow V = 12 \cdot 4$$

$$\underline{V = 48 \text{ cm}^3}$$

$$\underline{A_0 = 2 \cdot A_G + A_M}$$

$$A_M = u \cdot h \text{ (Umfang von } \Delta)$$

$$u = a + b + c$$

$$u = 6 + 4,5 + 5,6$$

$$\underline{u = 16,1 \text{ cm}}$$

$$\underline{A_M = 16,1 \cdot 4 = 64,4 \text{ cm}^2}$$

$$\underline{A_0 = 2 \cdot 12 + 64,4 = 88,4 \text{ cm}^2}$$

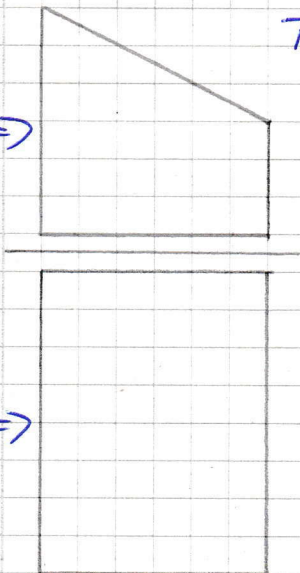
b) Prisma

$$V = A_G \cdot h \quad \text{Höhe des Prismas}$$

a und c sind die Parallelen!

h ist ihr Abstand

$A_G \Rightarrow$



$h \Rightarrow$

$$\text{Trapez} \Rightarrow A_G = \frac{a+c}{2} \cdot h$$

$$A_G = \frac{3+1,5}{2} \cdot 3$$

$$\underline{A_G = 6,75 \text{ cm}^2}$$

$$V = 6,75 \cdot 4$$

$$\underline{V = 27 \text{ cm}^3}$$

$$A_0 = 2 \cdot A_G + A_M$$

$$A_M = u \cdot h$$

$$A_M = 10,9 \cdot 4$$

$$u = a + b + c + d$$

$$\underline{A_M = 43,6 \text{ cm}^2}$$

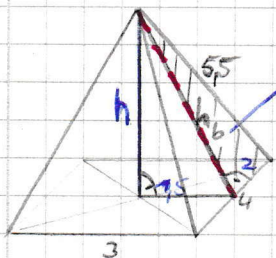
$$u = 3 + 1,5 + 3,4 + 3$$

$$\underline{u = 10,9 \text{ cm}}$$

$$A_0 = 2 \cdot 6,75 + 43,6$$

$$\underline{A_0 = 57,1 \text{ cm}^2}$$

d) Pyramide - zum zeichnen ist die Höhe nötig
u. berechnen



$$h_b \text{ berechnen } h_b^2 + 2^2 = 5,5^2$$

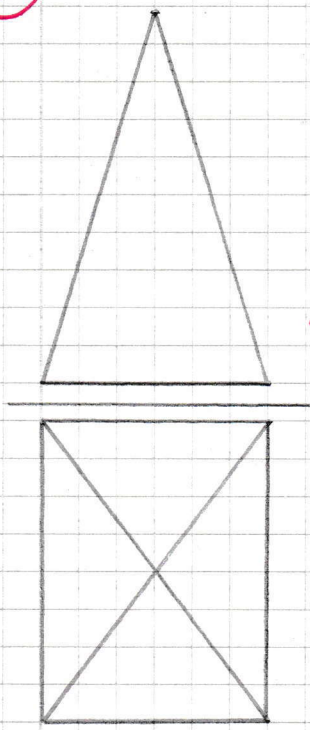
$$h_b = \sqrt{5,5^2 - 2^2}$$

$$h_b = 5,1 \text{ cm}$$

$$h^2 + 1,5^2 = 5,1^2 \quad h = \sqrt{5,1^2 - 1,5^2}$$

$$\underline{h = 4,9 \text{ cm}}$$

12 167/5d



$$V = \frac{1}{3} A_G \cdot h$$

$$A_G = a \cdot b$$

$$A_G = 3 \cdot 4 = 12 \text{ cm}^2$$

$$V = \frac{1}{3} \cdot 12 \cdot 4,9$$

$$V = 19,6 \text{ cm}^3$$

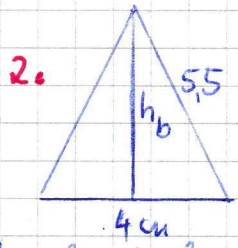
A_0 schwierig, da Grundfläche nicht quadratisch

$$A_0 = A_G + A_M$$

$A_M = 4 \cdot \text{Dreiecksflächen}$

1. $2 \cdot A_{\Delta}$
 \uparrow
 3 cm

2. $2 \cdot A_{\Delta}$
 \uparrow
 4 cm



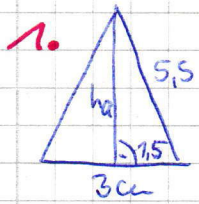
$$A = \frac{g \cdot h_g}{2}$$

$$A = \frac{4 \cdot 5,1}{2}$$

$$A = 10,2 \text{ cm}^2$$

$$A_M = 2 \cdot 8 + 2 \cdot 10,2$$

$$A_M = 36,4 \text{ cm}^2$$



$$h_a^2 + 7,5^2 = 5,5^2$$

$$h_a = \sqrt{5,5^2 - 7,5^2}$$

$$h_a = 5,3 \text{ cm}$$

$$A = \frac{g \cdot h_g}{2}$$

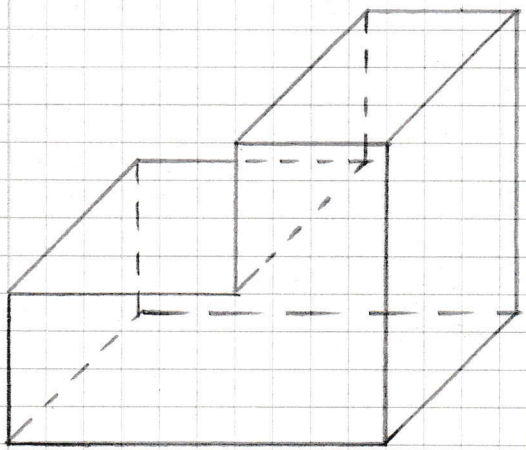
$$A = \frac{3 \cdot 5,3}{2}$$

$$A = 7,95 \approx 8 \text{ cm}^2$$

$$A_0 = 12 + 36,4$$

$$A_0 = 48,4 \text{ cm}^2$$

163/7c



173/12

ein Quader - ein Zylinder

Quader: $V = a \cdot b \cdot c$

$$V = 12 \cdot 12 \cdot 3 \quad (\text{in cm})$$

$$V = 432 \text{ cm}^3$$

Zylinder: $h = 2 \text{ cm}$

$$d = 10 \text{ cm} \rightarrow r = 5 \text{ cm}$$

$$V = A_G \cdot h$$

$$A_G = \pi r^2 = \pi \cdot 5^2$$

$$V = 157 \text{ cm}^3$$

$$A_G = 78,5 \text{ cm}^2$$

$$V_{\text{gesamt}} = 432 - 157 = 275 \text{ cm}^3$$

1 cm^3 wiegt 8,6 g

275 cm^3 wiegen 2365 g.

Drei Kerzenstande

wiegt 2,365 kg.