

1.02

$$a) 1) 3560 \text{ m} = 3,56 \text{ km}$$

$\uparrow$   
 $10^3$

$$2) 1,49 \cdot 10^{11} \text{ m} = 1,49 \cdot 10^2 \cdot 10^9 \text{ m}$$

$$= 149 \text{ Gm}$$

$\uparrow$   
 $G$

$$3) 2,0 \cdot 10^{-9} \text{ s} = 2,0 \text{ ns}$$

$$4) 0,000045 \text{ g} = 45 \mu\text{g}$$

$$b) 1) 630 \text{ nm} = 6,30 \cdot 10^2 \cdot 10^{-9} \text{ m} = 6,30 \cdot 10^{-7} \text{ m}$$

$\uparrow$   
 $10^{-9}$

$$2) 0,218 \text{ mm} = 2,18 \cdot 10^{-1} \cdot 10^{-3} \text{ m} = 2,18 \cdot 10^{-4} \text{ m}$$

$\uparrow$   
 $10^{-3}$

$$3) \text{ tenn} = 1000 \text{ kg}$$

$$4670 \text{ tenn} = 4670 \cdot 10^3 \text{ kg} = 4,67 \cdot 10^3 \cdot 10^3 \text{ kg}$$

$\underbrace{\hspace{2cm}}$   
 $4670$

$$4) 3,45 \text{ ns} = 3,45 \cdot 10^{-9} \text{ s}$$

$\uparrow$   
 $10^{-6}$

$$= 4,67 \cdot 10^6 \text{ kg}$$

1.03

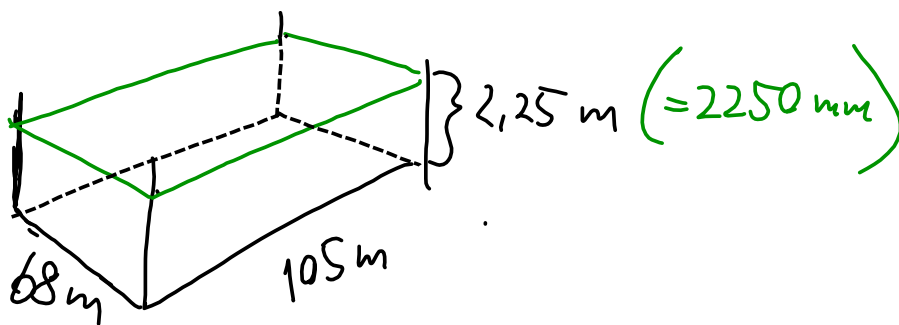
a)  $108 \frac{m}{s}$

$$km = 10^3 m \rightarrow m = \frac{km}{10^3} = 10^{-3} km$$

$$h = 60 \cdot 60 s = 3600 s \rightarrow s = \frac{h}{3600}$$

$$108 \cdot \frac{10^{-3} km \cdot 3600}{\frac{h}{3600} \cdot 3600} = 108 \cdot \frac{3,6 km}{h} = 389 \frac{km}{h}$$

b)



$$V = 68 [m] \cdot 105 [m] \cdot 2,25 [m] = 16065 [m^3]$$

$$m^3: V = 1,6065 \cdot 10^4 [m^3] = 1,6 \cdot 10^4 [m^3]$$

$$10 \text{ ltr} \Rightarrow 1000 \text{ ltr} = 1,0 m^3$$

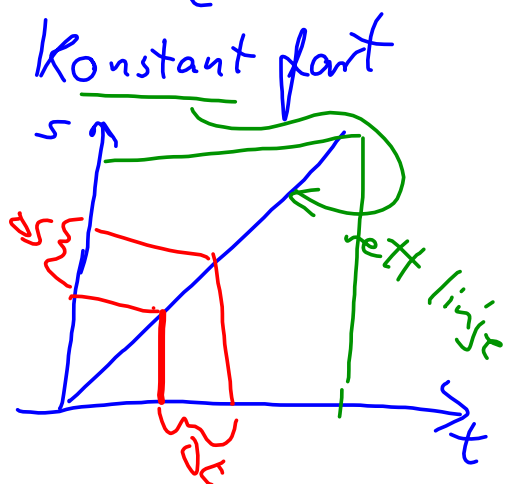
$$m^3 = 10^3 \text{ ltr}$$

$$\text{ltr: } V = 1,6 \cdot 10^4 \cdot 10^3 [\text{ltr}] = 1,6 \cdot 10^7 [\text{ltr}]$$

$$\underbrace{1,0 [m^3]}_{1,0 [m^3]} \quad \frac{16,065 \cdot 10^6 [\text{ltr}]}{16,065} = 10^6 [\text{ltr}]$$

1.08 Hva er forskjellen mellom en konstant fart og gjennomsnittsfart?

$$\bar{v} = \frac{\Delta s}{\Delta t}$$



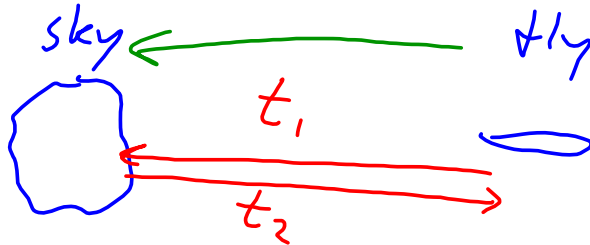
109

$$a) v_A = \frac{\Delta s}{\Delta t} = \frac{(6,0 - 0,0) [m]}{(10,0 - 0,0) [s]} = 0,6 \left[ \frac{m}{s} \right]$$

$$v_B = \frac{\Delta s}{\Delta t} = \frac{(6,0 - 6,0) [m]}{(20,0 - 10,0) [s]} = \frac{0,0 [m]}{10,0 [s]} = 0,0 \left[ \frac{m}{s} \right]$$

$$b) i) v_c = \frac{16,0 - 6,0 [m]}{25,0 - 20,0 [s]} = \frac{10,0 [m]}{5,0 [s]} = 2,0 \left[ \frac{m}{s} \right]$$

ii) alle

1,15

$$t = t_1 + t_2 = 80,01 \text{ } [\mu\text{s}] \quad t_1 = \frac{80,01}{2} \mu\text{s}$$

$$c = 3,00 \cdot 10^8 \text{ } [\text{m/s}]$$

$$\begin{aligned} \text{a) } s_1 &= v \cdot t_1 = 3,00 \cdot 10^8 \text{ } [\text{m/s}] \cdot \frac{80,01}{2} \cdot 10^{-6} \text{ } [\text{s}] \\ &= 12,005 \cdot 10^8 \cdot 10^{-6} \text{ } [\text{m}] = 12,0 \text{ } [\text{km}] \end{aligned}$$

$$\begin{aligned} \text{b) } s_2 &= v \cdot t_3 = 3,00 \cdot 10^8 \text{ } [\text{m/s}] \cdot \frac{76,67}{2} \cdot 10^{-6} \text{ } [\text{s}] \\ &= 11,5 \text{ } [\text{km}] \end{aligned}$$

$$\begin{aligned} v &= \frac{s_1 - s_2}{\Delta t} = \frac{(12,0 - 11,5) \text{ } [\text{km}]}{2,0 \text{ } [\text{s}]} = \frac{500 \text{ m}}{2,0 \text{ s}} \\ &= 250 \text{ } \frac{\text{m}}{\text{s}} \end{aligned}$$

$$\begin{aligned} \frac{1.16}{\bar{a}} &= \frac{\Delta v}{\Delta t} = \frac{20 \text{ [m/s]} - 10 \text{ [m/s]}}{5,0 \text{ [s]}} = \frac{10 \text{ [m/s]}}{5,0 \text{ [s]}} \\ &= \underline{2,0 \text{ [m/s}^2\text{]}} \end{aligned}$$