Inför provet.

lilla boken.

3.1

3.5

3.7

9.1

9.3

9.6

Repetition inför kursprov..

Repetition ur övningsboken: Kap. 3, 9.

Träningsuppgifter kap.3: ~~3.1~~, ~~3.7~~, 3.8, 3.12, 3.14, 3.18 (3.26, 3.27)

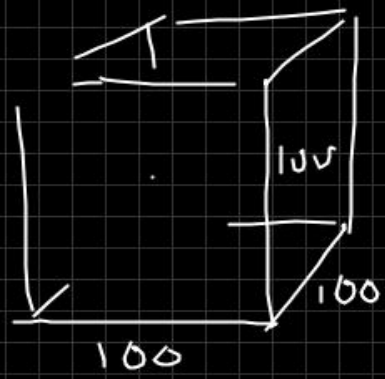
Träningsuppgifter kap.9: ~~9.1~~, ~~9.3~~, ~~9.6~~, 9.7, 9.11, 9.12 (9.8, 9.10, 9.14, 9.17, 9.27, 9.30)

3.1

1) Fakta (SI)
2) Bild
3) Svara på det som efterfrågas

$V = 25\ cm^3 = 25 \cdot 10^{-6}\ m^3$

$m = 67{,}5\ g = 67{,}5 \cdot 10^{-3}\ kg$



$$\rho = \frac{m}{V}$$

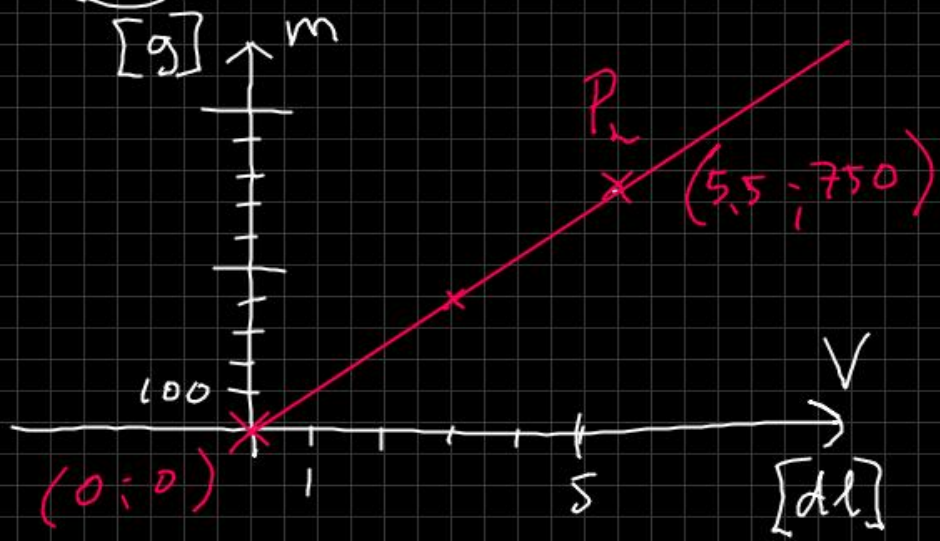
$$\rho = \frac{m}{V} = \frac{67{,}5 \cdot 10^{-3}}{25 \cdot 10^{-6}} = 2{,}7 \cdot 10^{3}\ kg/m^3 = 2{,}7\ g/cm^3$$

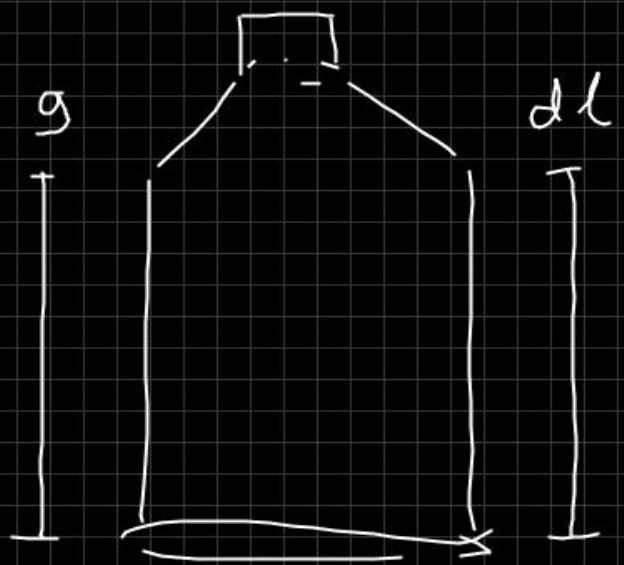
FS s. 70

Svar: aluminium

3,5

$$m(V) = k \cdot V$$





$$1\,dl = \frac{1}{10}\,l = \frac{1000}{10}\,cm^3$$

$$\rho = \frac{m}{V} \Rightarrow \boxed{m = \rho V}$$

$$\rho = \frac{\Delta m}{\Delta V} = \frac{m_2 - m_1}{V_2 - V_1} = \frac{750 - 0}{5,5 - 0} = 136,36\ldots\ g/dl =$$

$$\frac{136,36}{100}\ g/cm^3 = 1,369\ g/cm^3$$

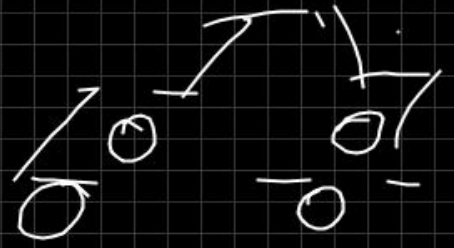
Ovrer: $\rho = 1,4\ g/cm^3$

3.7

$A_1 = 180\ cm^2 = 0{,}0180\ m^2$

$m = 1{,}10\ ton = 1{,}10 \cdot 10^3\ kg$

Lösning:

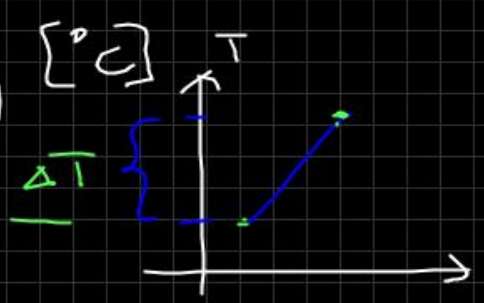


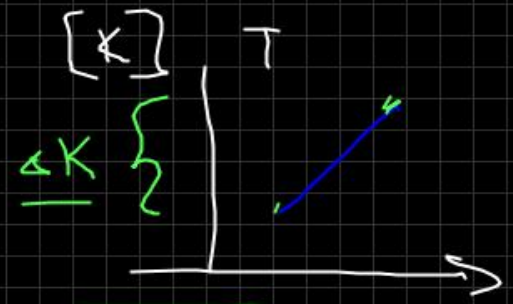
Hjulens sammanlagda area $A = 4A_1 = 0{,}0720\ m^2$

Bilens tyngd $F = m \cdot g = 1{,}10 \cdot 10^3 \cdot 9{,}82 = 10802\ N$

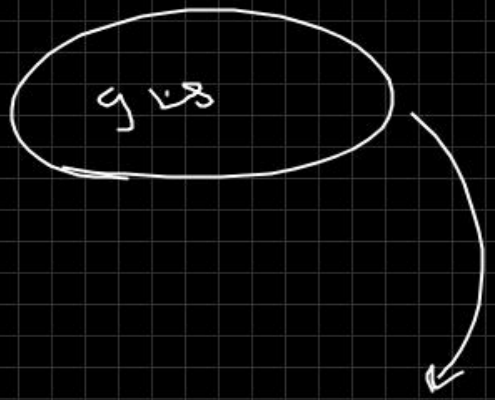
$$P = \frac{F}{A} = \frac{10802}{0{,}0720} = 150027\ Pa \approx 150\ kPa$$

9.1





$\Delta^{\circ}C = \Delta K$



$T = 90\ K.$

$0\ ^{\circ}C = 273{,}15\ K$

Sver: $-183{,}15\ ^{\circ}C = 90\ K$

$\Delta^{\circ}C \Rightarrow 183{,}15\ ^{\circ}C = \Delta K \Rightarrow 183{,}15\ K$

(9.3) $C = 65 \cdot 10^3 \ J/K$

$c_v \sim \left[J/kg \cdot K \right]$

$T_0 = 13^\circ C$

$T_1 = 21^\circ C$

annan stoffet än vanligt c_v

$\Rightarrow \Delta T = 21 - 13 = 8^\circ C \quad (8 \ K)$

~~$E = m \cdot c_v \cdot \Delta T$~~

$E = C \cdot \Delta T = 65 \cdot 10^3 \cdot 8 = 520000 \ J.$

Svar: 0,52 MJ

9.6 Hur mycket energi behövs för att värma 175 g koppar från 20°C till 150°C.

Lösning:

$$E = m \cdot c_v \cdot \Delta T$$

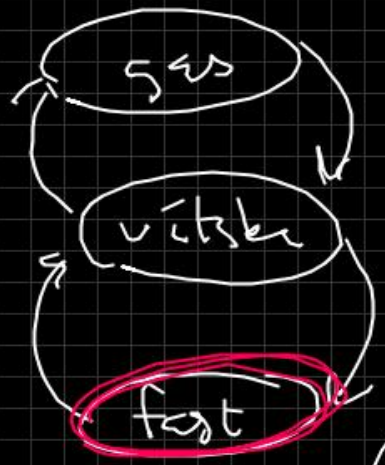
$m = 0{,}175$ kg

$\Delta T = 150 - 20 = 130$ K

c_v = FS s. 70. $= 0{,}39 \cdot 10^3 \ \frac{J}{kg \cdot K}$

$E = 0{,}175 \cdot 0{,}39 \cdot 10^3 \cdot 130$

$E = 8872{,}5$ J



Svar: $E = 8{,}9$ kJ