(3) $F_A = \rho \cdot g \cdot V$ → opwaartse kracht = Archimedes

↑

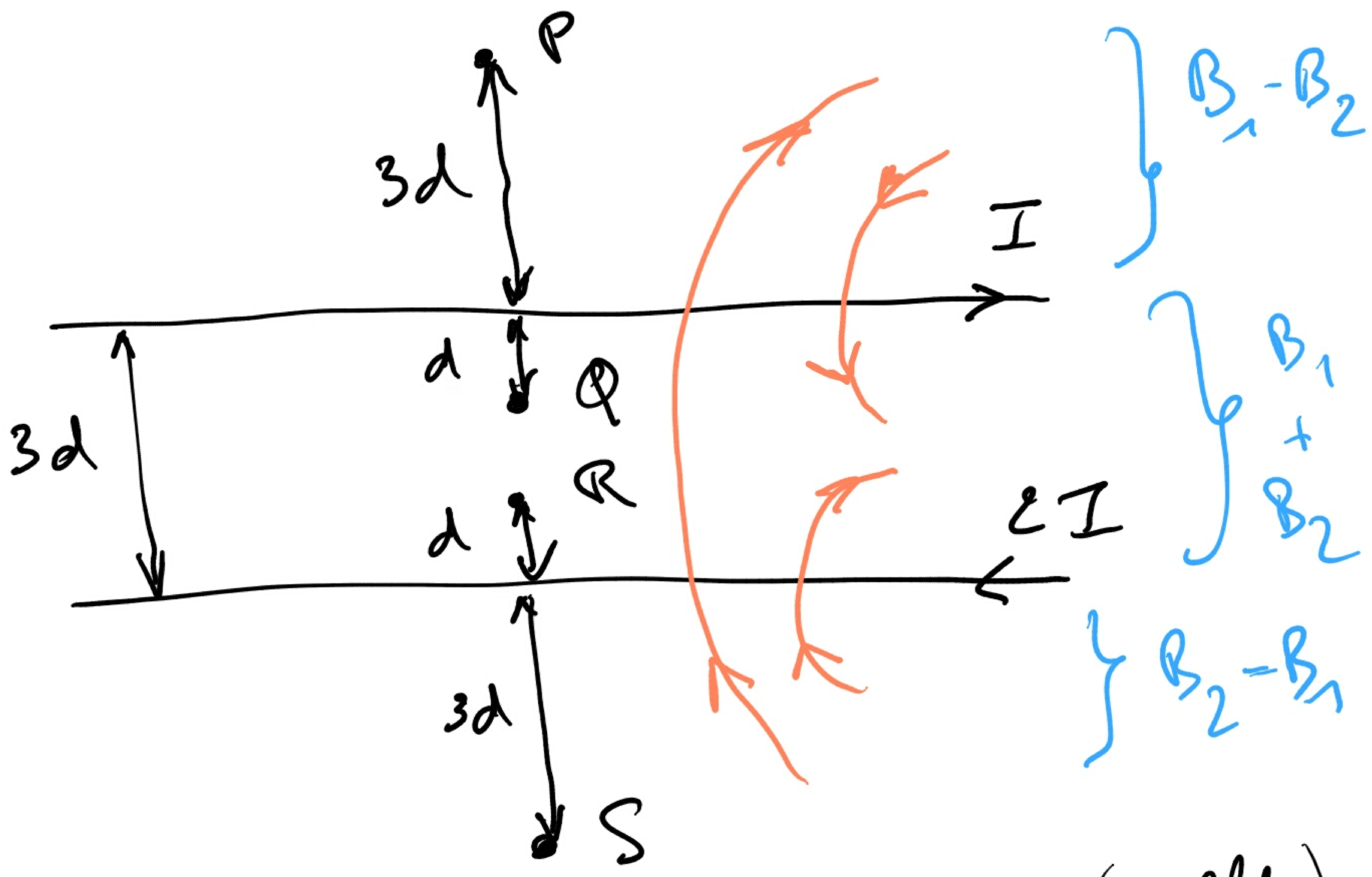
ρ want H_2O in verplaatste ρ_{H_2O} vloeistof

$V_1 = V_2 = V_3$

dus $F_1 = F_2 = F_3$

(D)

(2)



$B = \frac{\mu}{2\pi} \cdot \frac{I}{d} \rightarrow B_2 = 2B_1$ (zelfde d)

B_2 is sterkste veld

tussen geleiders $B = B_1 + B_2$ → niet Q of R

Als $B = 0 \rightarrow B_1 = B_2$

$$\frac{\mu}{2\pi} \frac{I}{d_1} = \frac{\mu}{2\pi} \cdot \frac{2I}{d_2}$$

$\Rightarrow d_2 = 2 d_1$ → niet S

$d_2 = 6d = 2 \cdot d_1 = 2 \cdot 3d \rightarrow P$

(A)

③ $\left.\begin{aligned} F &= m \cdot g \\ F &= q \cdot E \end{aligned}\right\} \; m \cdot g = qE$

$$\Rightarrow q = \frac{m \cdot g}{E} = \frac{10 \cdot 6^{-15} \cdot 10}{30 \cdot 10^3}$$

$$= \frac{10}{30} \cdot \frac{10^{-14}}{10^3} = \frac{1}{3} \cdot 10^{-17}$$

$$\approx 0{,}33 \cdot 10^{-17} = 3{,}3 \cdot 10^{-18} C$$

(4) $R_{tot} = \frac{R \cdot R}{R+R} = \frac{R^2}{2R} = \frac{1}{2} R$

$I = \frac{U}{R}$ totale weerstand $\frac{1}{2}$

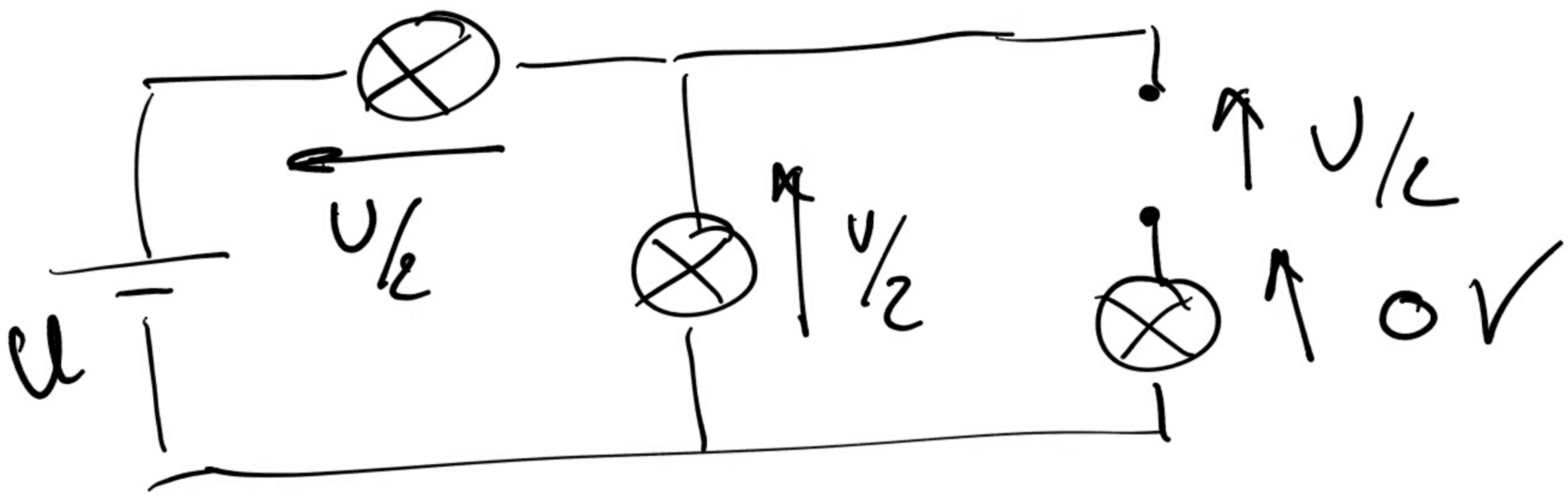
$\rightarrow I = x2 \rightarrow I_1 = I_2$

Of zelfde U over zelfde weerstand (parallel)

$\rightarrow$ zelfde stroom

(C)

(5) L_3 kapot



geen stroom door L4
dus ook geen spanning
over L4

$L_3 \Rightarrow R = \infty \rightarrow$ alle spanning over L_3 $(= U/2)$

(C)

(6) $64\ \mu g$ ^{234}Th $t_{1/2} = 24$ dagen

$$\frac{m_0}{2} = m_0 \cdot e^{-\lambda \cdot t_{1/2}}$$

$$-\ln 2 = -\lambda \cdot t_{1/2} = -\lambda \cdot 24$$

$$\Rightarrow \lambda = \frac{\ln 2}{24}$$

$$m = 64 \cdot e^{-\frac{\ln 2}{24} \cdot 120}$$

$$= 64 \cdot e^{-\ln 2 \cdot 5} = 64\, e^{\ln\left(\frac{1}{2^5}\right)}$$

$$= 64 \cdot \frac{1}{32} = 2\ \mu g$$ (B)

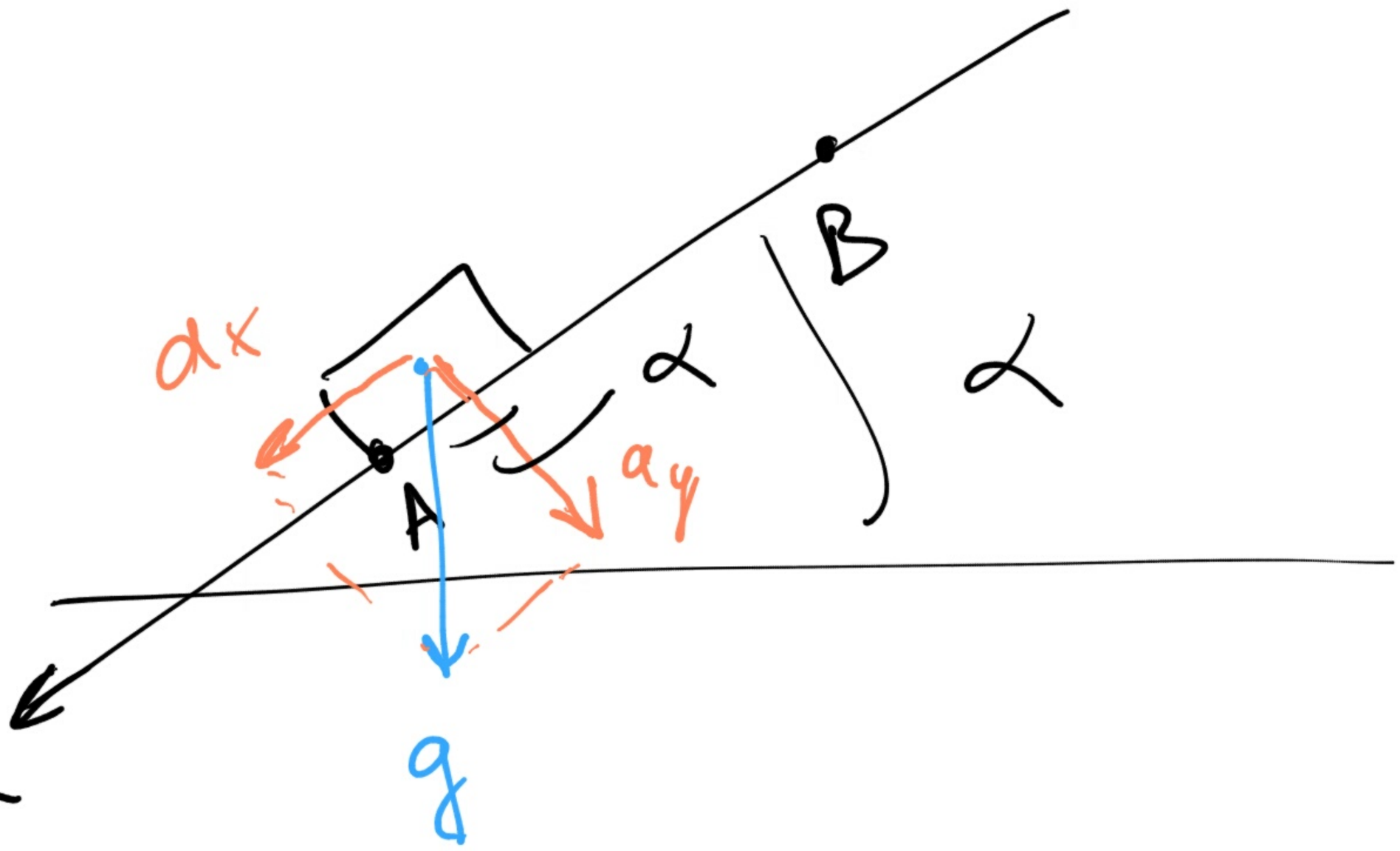
OF

$$\frac{120 \text{ dagen}}{24 \text{ dagen}} = 5$$

dus 5 keer halveren

$$\Rightarrow \frac{64}{2^5} = \frac{64}{32} = 2\ \mu g$$

7



a_x

a_y

g

$a_x = g \sin\alpha$

$\uparrow$ $\uparrow$

C^{te} C^{te} $\rightarrow$ Beide constant

$\downarrow$

a_x = constant

D

(8)

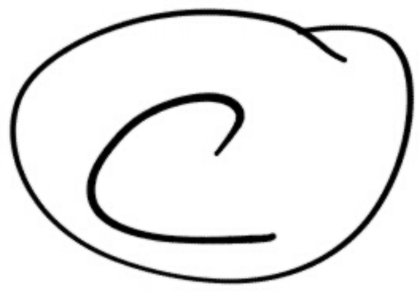
Zwaarte kracht = aarde op maan

Reactie = maan op aarde

$$F_z = G \cdot \frac{m_1 \cdot m_2}{r^2}$$

m_1 = aarde

m_2 = maan



(9) $E_p = m \cdot g \cdot h$

$E_{p1} = m \cdot g \cdot h$

$E_{p2} = \frac{m}{2} \cdot g \cdot \frac{3}{2} h = \frac{3}{4} m \cdot g \cdot h$

$E_{p3} = \frac{m}{2} \cdot g \cdot h = \frac{1}{2} m \cdot g \cdot h$

$E_{p4} = m \cdot g \cdot 2h = 2 \cdot m \cdot g \cdot h$

$E_{p4} > E_{p1} > E_{p2} > E_{p3}$

(10) $F_l = 0,48\,N \quad F_w = 0,42\,N$

$$F = m \cdot a = m \cdot g \Rightarrow 0,48 = m \cdot g$$

$$\Rightarrow m = \frac{0,48}{g}\ kg$$

Archimedes:

$$F_A = \rho_w \cdot g \cdot V = 0,48 - 0,42 = 0,06\,N$$

$$1000 \cdot g \cdot V = 0,06 \Rightarrow V = \frac{0,06}{1000 \cdot g}\ m^3$$

$$\rho = \frac{m}{V} = \frac{\frac{0,48}{g}}{\frac{0,06}{1000 \cdot g}} = \frac{0,48}{0,06} \cdot \frac{1000 \cdot g}{g}$$

$$= \frac{480}{0,06} = \frac{48000}{6} = 8000\ kg/m^3$$

(D)