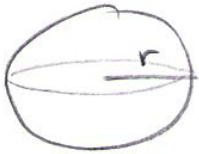


Pallo s. 136



Pallon pinta-ala

$$A = 4\pi r^2$$

Pallon tilavuus

$$V = \frac{4}{3}\pi r^3$$

(E) Pallon tilavuus on 1111 cm³. Side?

$$\frac{4}{3}\pi r^3 = 1111 \quad || \cdot \frac{3}{4\pi}$$

$$\frac{\cancel{4}}{\cancel{4\pi}} \cdot \frac{\cancel{4}}{\cancel{3}} r^3 = \frac{3}{4\pi} \cdot 1111$$

$$r^3 = \frac{3333}{4\pi}$$

$$r = \sqrt[3]{\frac{3333}{4\pi}} \approx 6,425 \text{ (cm)}$$

$$= \left(\frac{3333}{4\pi}\right)^{\frac{1}{3}}$$

mutta vain
laskimella

Fy1 - kurssi

Fy1-kurssista tulee matikan kokeeseen

$$v = \frac{\Delta x}{\Delta t} \quad \text{Keskinopeus}$$

ja

$$\rho = \frac{m}{V} \quad \text{Tiheys}$$

ilman, että siitä varoitetaan etukäteen!

(E) Kuparia $0,0009047 \text{ m}^3$. Massa?

! TK s. 72 !

Kuparin tiheys $\rho = 8,96 \cdot 10^3 \frac{\text{kg}}{\text{m}^3}$

$$= 8,96 \cdot \frac{1000 \text{ kg}}{1000 \text{ l}}$$
$$= 8,96 \frac{\text{kg}}{\text{l}} \quad (\text{Tiedoksi!})$$

$$m = \rho V = 8,96 \cdot 10^3 \frac{\text{kg}}{\text{m}^3} \cdot 0,0009047 \text{ m}^3$$
$$= 8,106 \dots \text{kg}$$

Keskinopeus

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

keskinopeuden laskemiseen

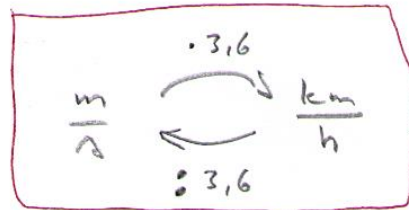
$$t = \frac{\Delta}{v}$$

ajan laskemiseen

$$s = v \cdot t$$

matkan laskemiseen

$$\textcircled{E} \quad v = \frac{\Delta}{t} = \frac{1000 \text{ m}}{325 \text{ s}} \approx 3,08 \frac{\text{m}}{\text{s}} = 11 \frac{\text{km}}{\text{h}}$$



$$\textcircled{E} \quad t = \frac{\Delta}{v} = \frac{1000 \text{ m}}{10 \frac{\text{m}}{\text{s}}} = 100 \text{ s} = 1 \text{ min } 40 \text{ s} \approx 1,67 \text{ min}$$

$$\textcircled{E} \quad s = v \cdot t = 120 \frac{\text{km}}{\text{h}} \cdot 2 \text{ h} = 240 \text{ km}$$

Tiheys

rhoo ρ

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

tiheyden laskemiseen

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

tilavuuksien laskemiseen

$$m = \rho V$$

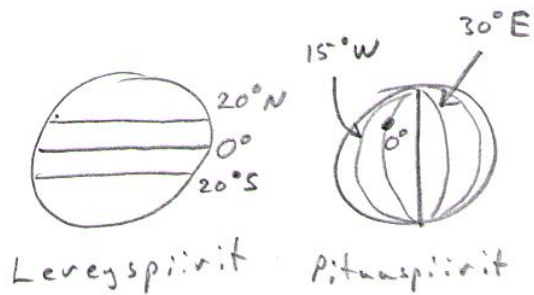
massan laskemiseen

$$\textcircled{E} \quad \rho = \frac{m}{V} = \frac{3,7 \text{ kg}}{1,4 \text{ l}} = 2,6 \frac{\text{kg}}{\text{l}}$$

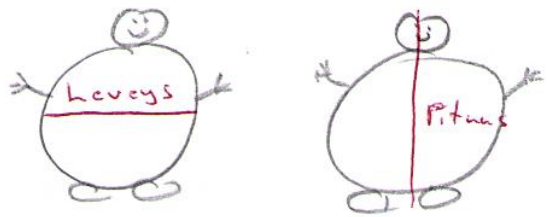
$$\textcircled{E} \quad V = \frac{3,8 \text{ kg}}{8,96 \frac{\text{kg}}{\text{l}}} \approx 0,42 \text{ l}$$

$$\textcircled{E} \quad m = \rho \cdot V = 3,6 \frac{\text{kg}}{\text{l}} \cdot 1,5 \text{ l} = 5,4 \text{ kg}$$

Maapallo s.138



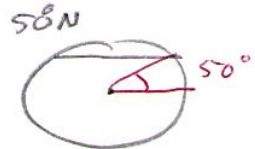
Ihminen



Huom:

Tärkeä kulma muodostuu yleensä

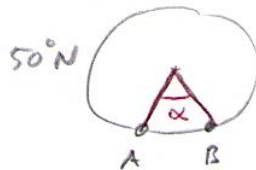
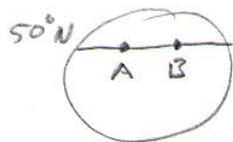
- 1) Maapallon keskipisteeseen



Leveyspiiristä
näkee tämän
kulman

- 2) Pikkukäyrän keskipisteeseen

ihäältä katsottuna



Tarvtee tietää A:n ja B:n
pituuspiirit!

Aikakulmat

$$1^{\circ} = 60' \quad \text{kulmam minuutti}$$

$$1' = 60'' \quad \text{kulma sekunti}$$

$$60^{\circ} 10' 21'' = 60,1725^{\circ}$$

$$60^{\circ} + \frac{10}{60}^{\circ} + \frac{21}{3600}^{\circ} = 60,1725^{\circ}$$