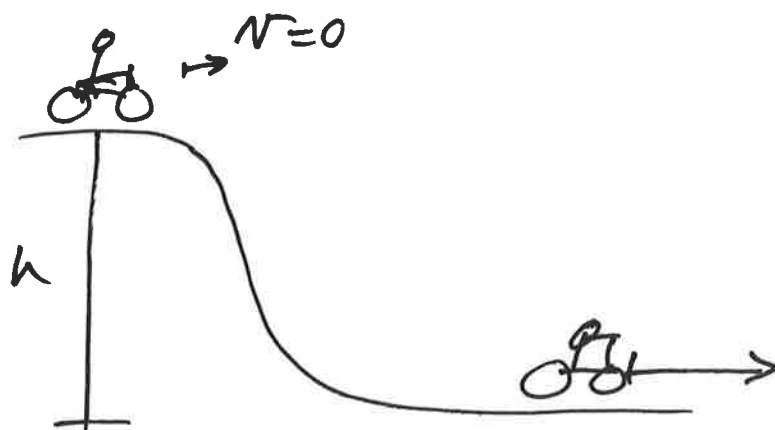


# FYSIIKKA TUTKII

- AINETTA



- ENERGIAA



- LUONNON LAKEJA

KVALITATIIVISESTI / LAADULLISESTI

VESI ON

KYLMÄÄ / VIILEÄÄ / HAACEAA / LÄMMINTÄ /

KUUMAA

KVANTITATIIVISESTI / MÄÄRÄLLISESTI

VESI ON 38,7 °C LÄMPÖISTÄ



LUKVARVO YKSIKKÖ

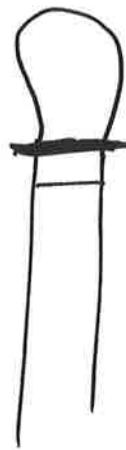
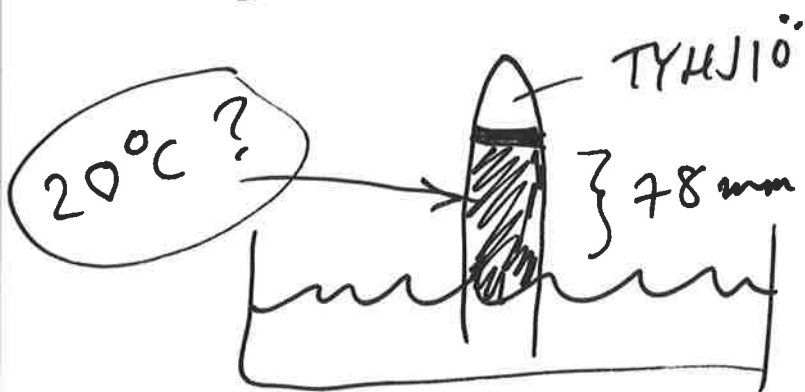
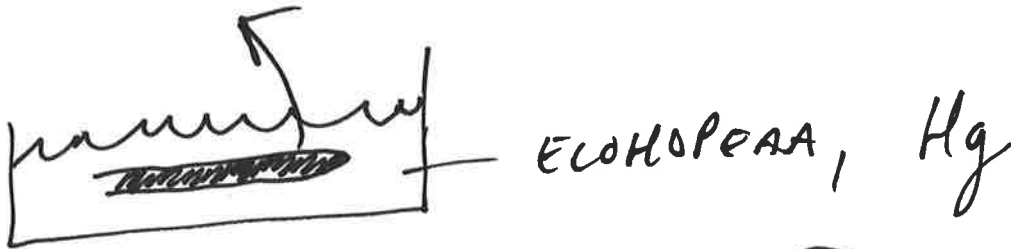
$$1 \text{ Pa} = \frac{1 \text{ N}}{1 \text{ m}^2}$$

$$1 \text{ bar} = 1 \cdot 10^5 \text{ Pa} = 100\,000 \text{ Pa}$$

ESIM. PAINE LUOKASSA  $\approx 1 \text{ bar}$

$$1013 \text{ mbar} = 1,013 \text{ bar}$$

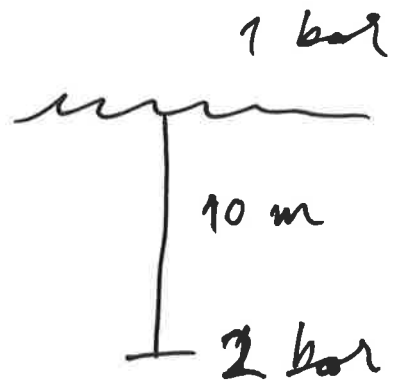
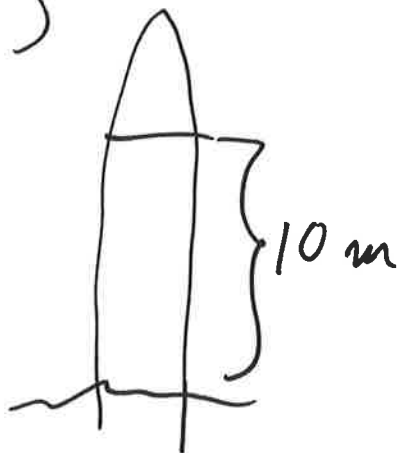
$$1 \text{ bar} = 78 \text{ mmHg}$$



100°C

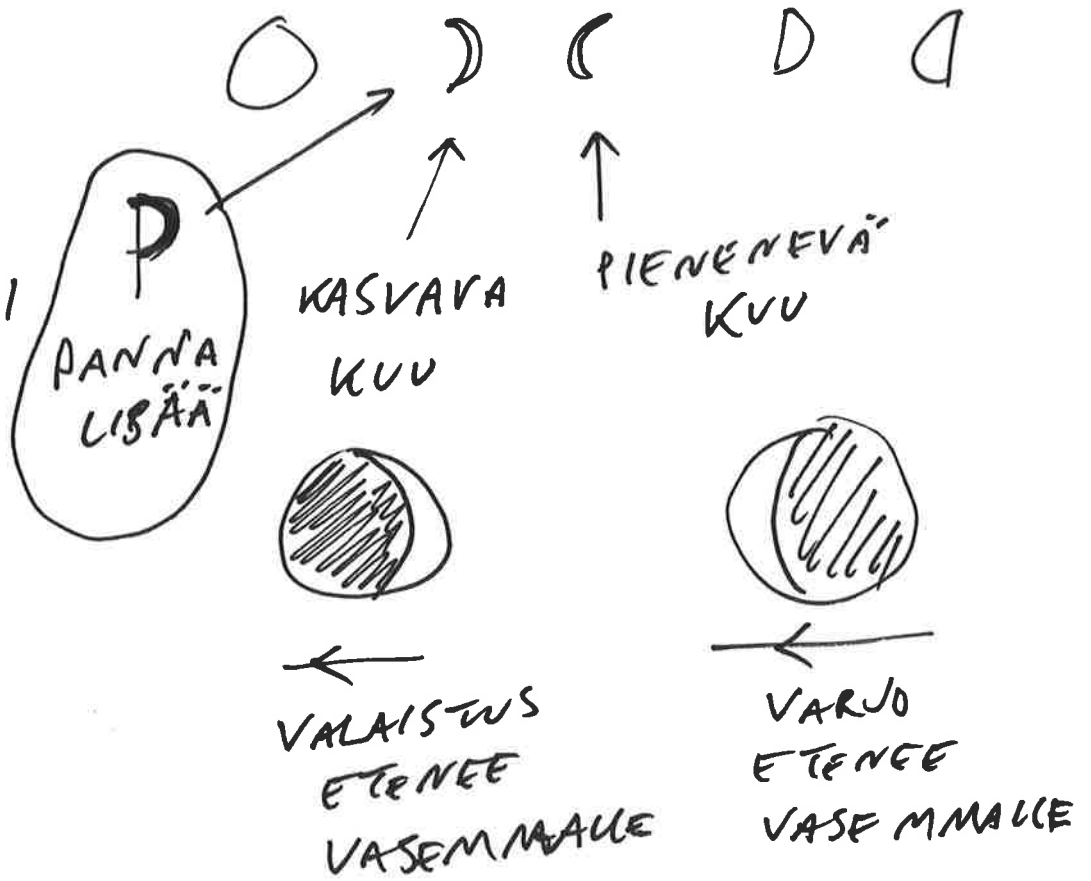


VESI PATSAS

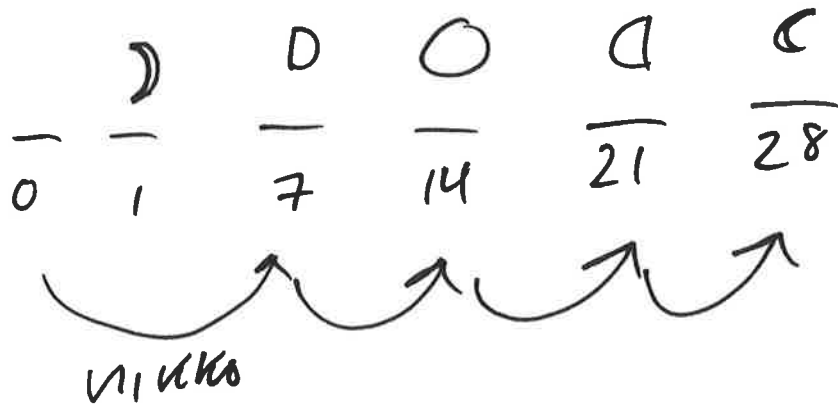


AIKA

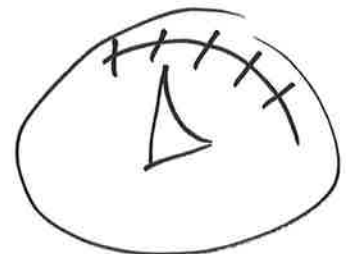
- VUOSI
- KUUKAUSI



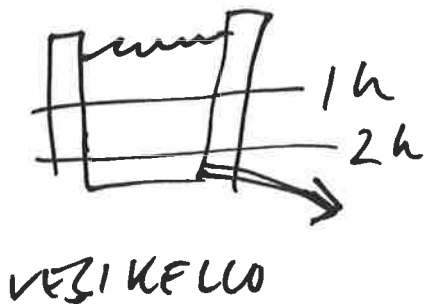
VUOROKAUSI



VUOROKAUSI = 24 TUNTIA



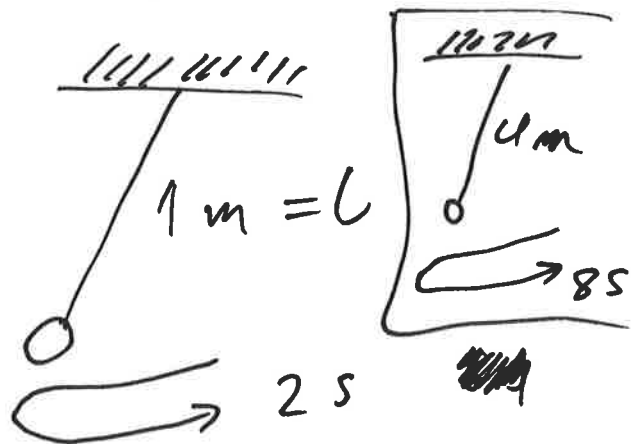
AURINKOKELLO



VEZIKELLO

$$T = \sqrt{\frac{4L}{g}}$$

$$= \sqrt{4} \sqrt{\frac{L}{g}} = \frac{2}{1} \sqrt{\frac{L}{g}}$$



ESIM. YKSIKKÖMUUNNOS

AUTON NOPEUS 100 km/h

$$= 27,778 \text{ m/s}$$

: 3,6  $\rightarrow$

$$\approx \underline{\underline{28 \text{ m/s}}}$$

$$\begin{aligned} 100 \frac{\text{km}}{\text{h}} &= 100 \frac{\text{km}}{\text{h}} \cdot \frac{1000 \text{ m}}{1 \text{ km}} \cdot \frac{1 \text{ h}}{3600 \text{ s}} \\ &= 100 \cdot \frac{1000}{3600} \frac{\text{m}}{\text{s}} \\ &= 100 \cdot \frac{1}{3,6} \frac{\text{m}}{\text{s}} \\ &= \underline{\underline{28 \text{ m/s}}} \end{aligned}$$

KÄTEVÄ  
SELKEÄ  
TAPA

ESIM. MONTAKO SEKUNTIA ON VUODESSA?

$$60 \cdot 60 \cdot 24 \cdot 365 = 31.536.000 \text{ s}$$

$$\approx 31 \cdot 10^6 \text{ s}$$

$$\approx \underline{\underline{3,1 \cdot 10^7 \text{ s}}}$$

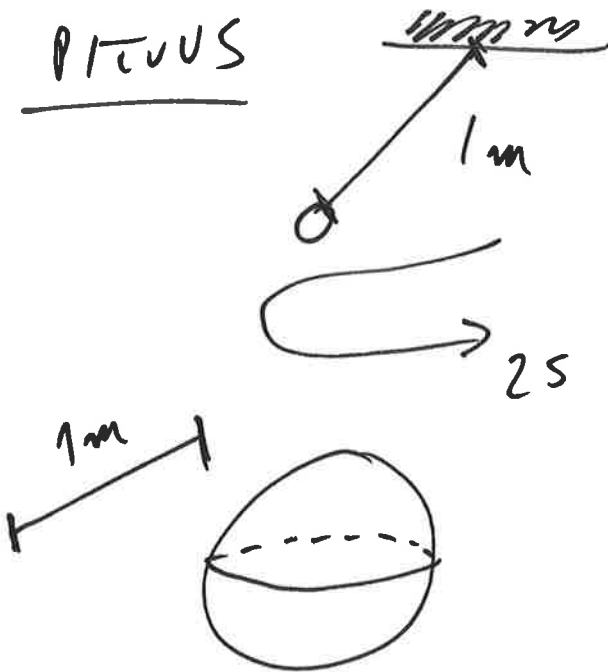
ESIM. MONTAKO PÄIVÄÄ 80-VUOTIAS  
ON ELÄNYT?

$$80 \cdot 365 = 29200$$

$$80 \cdot 365 + \frac{80}{4} = \underline{\underline{29220}}$$

$$80 \cdot 365,25 = 29220$$

PIIUVUS



$$[L] = 1 \text{ m}$$

MAAPALCON YMPÄRYSMITTA

$$= \frac{40075 \text{ km} = X}{2 \cdot 3,14}$$

$$40000 \uparrow \text{ mVUROS ?}$$

$$2\pi r = X$$

$$\rightarrow r = \frac{X}{2\pi} = \frac{40075}{2 \cdot 3,14} = \underline{\underline{6381 \text{ km}}}$$

VALON NOPEUS  $c = 300000 \text{ km/s}$

$$= 3 \cdot 10^8 \text{ m/s}$$

[LASIN SISÄLLÄ KIIHTÄMPI]

$$v = \frac{c}{1,5} = \frac{3 \cdot 10^8 \text{ m/s}}{1,5} = \underline{\underline{2 \cdot 10^8 \text{ m/s}}}$$

ÄÄN,  $v = \cancel{1000 \text{ km/s}}$

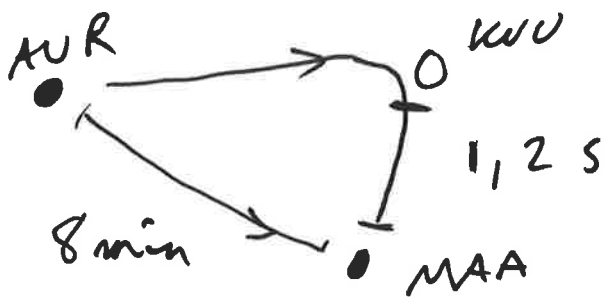
$$= 330 \text{ m/s}$$

$$= \underline{\underline{1188 \text{ km/h}}}$$

$$v = 1230 \text{ km/h}$$

+20°C

[SALAMA T]



ESIM. KUVN ETÄISYYS MAASTA

$$= 300\,000 \text{ km} \cdot 1,2$$

$$= 360\,000 \text{ km}$$

AURINGON ETÄISYYS MAASTA

$$= 8,60 \cdot 300\,000$$

$$= 144\,000\,000 \text{ km}$$

$$= 1,44 \cdot 10^{11} \text{ m}$$

$$= 144 \cdot 10^9 \text{ m}$$

$$= 144 \text{ Gm} [= 1 \text{ AU}]$$

$$k = 10^3$$

$$M = 10^6$$

$$G = 10^9$$

VALOVUOSI ON MATKA, JONKA VALO  
KULKEE VUODESSA

$$3 \cdot 10^8 \text{ m} \cdot 60 \cdot 60 \cdot 24 \cdot 365,25$$

$$= 9\,467\,2800 \cdot 10^8 \text{ m}$$

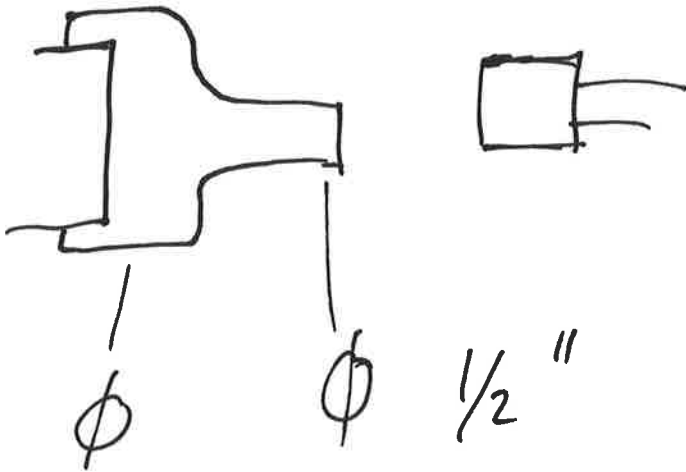
$$\approx \underline{\underline{9,5 \cdot 10^{15} \text{ m}}} = 9,5 \text{ PETA METRIÄ}$$

$$= \underline{\underline{9,5 \text{ Pm}}}$$

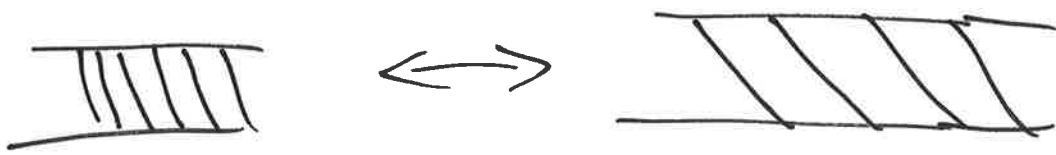
MUITA YKSIKÖITÄ

1 TUUMAA = 2,54 cm = 1"

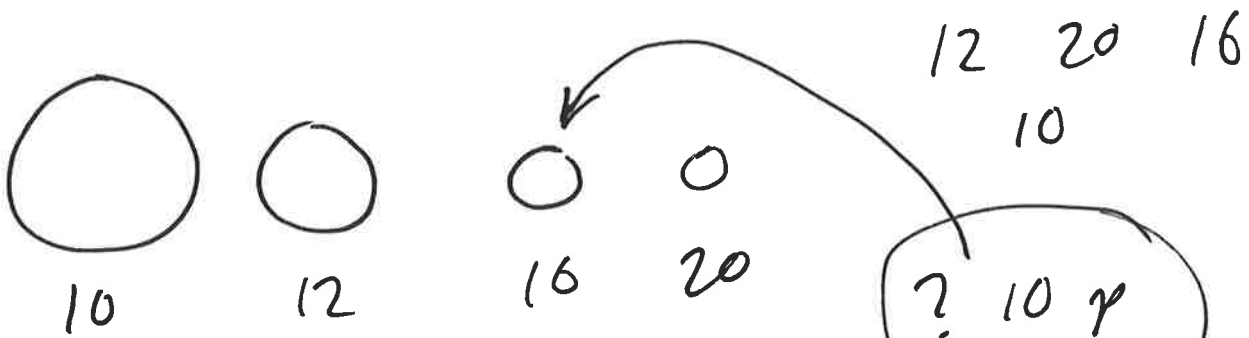
1 JALKA = 30,48 cm = 12 TUUMAA = 1'



3/16"    1/4"  
3/8"    1/8"



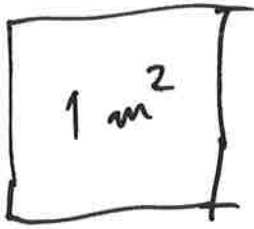
7,62 mm = 3/10"



1 PAVNA  
LVIJÄÄ



# PINTA - ALA



1 m

$$= 10 \text{ dm}$$

$$1 \text{ m} = 10 \text{ dm}$$



1 dm

1 dm

$$1 \text{ m}^2 = 100 \text{ dm}^2$$

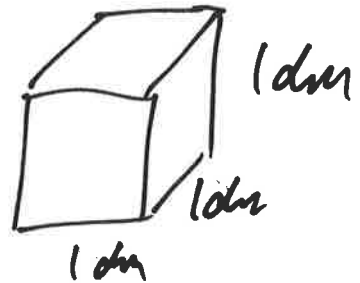
$$= (10 \text{ dm})^2$$

$$5 \text{ dm}^2 = 50000 \text{ mm}^2$$

$$= 500 \text{ cm}^2$$



$$1 \text{ L} = 1 \text{ LITRA} = 1 \text{ dm}^3$$



$$1 \text{ m}^3 = 1000 \text{ L}$$

$$1 \text{ m} = 10 \text{ dm}$$

$$1 \text{ m}^3 = (10 \text{ dm})^3 = 10^3 \text{ dm}^3 = 1000 \text{ dm}^3 = 1000 \text{ L}$$



$$1 \text{ maili} = 1,6 \text{ km}$$

$$1 \text{ merimaili} = 1852 \text{ m}$$

$$1 \text{ SOLMU} = \text{MERIMAILIA/M}$$

$$\left[ \frac{1852}{1609} = 1,16 \right]$$

ESIM.

MONTAKO  $m^2$  ON YKSI  
EFFKERI?



66 JALCAA

~~660~~ 660 JALCAA

V:  $4620,42 m^2?$   $4044, \dots m^2$

$4047 m^2$

RATK.

$660 \cdot 66 JALKA^2$

$= 43560 JALKA^2$

$= 43560 \cdot (0,3048 m)^2$

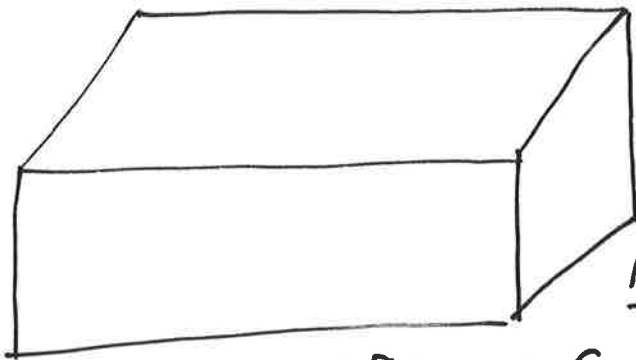
$= 4046, \dots 85 m^2$

$\approx \underline{4047 m^2}$

$= \underline{40,4 AARIA} \text{ — } (10 m)^2$

$= 0,4 \text{ HEHTAARIA — } (100 m)^2$

ESIM. MERKITSEVÄIT NUMEROT,  
LASKE TILAVUUS.



$$6,3 \text{ cm} = a$$

2 kpl

$$15,470 \text{ cm} = b$$

5 kpl

$$40,28 \text{ cm} = c$$

4 kpl

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

$$= 3925,72908 \text{ cm}^3$$

$$\approx \underline{\underline{3900 \text{ cm}^3}}$$

← PYÖR  
2 NUM.  
TARK.