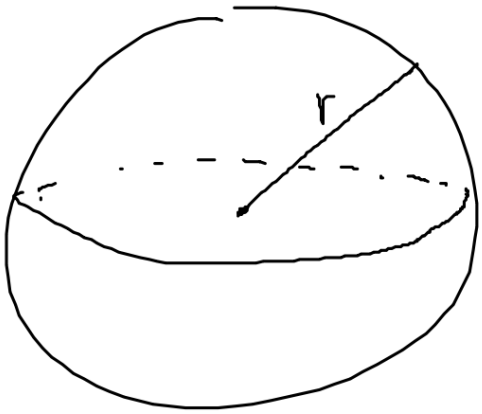
Palla

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

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



381. $V = 1\ \ell = 1\ dm^3 = \frac{4}{3}\pi r^3 \quad \| : \frac{4}{3}\pi$

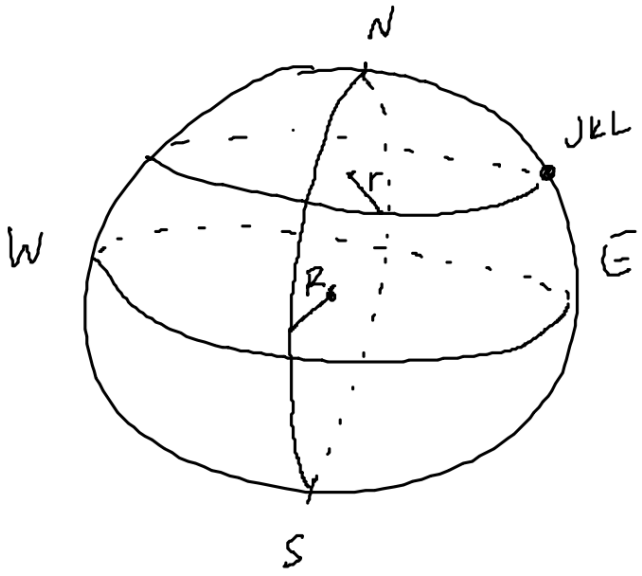
$r^3 = \frac{1}{\left(\frac{4}{3}\pi\right)} = 0,23874 \quad \| \sqrt[3]{}$

V: h. 1,2 dm

$r = \sqrt[3]{0,23874} = 0,620\ (dm)$

$d = 2r = 1,24\ dm$

– Maapallo ≈ pallo



62° N, 26° E

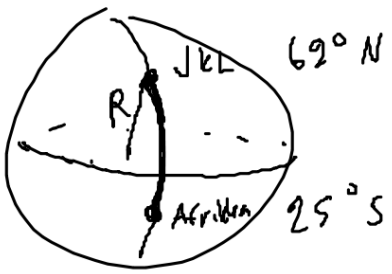
← leveysp. 0°...90°, mitataan N:ään tai S:ään

R = Maapallon säde = 6366 km

↑ pituusp. 0°...180° mitataan Greenwichistä W:iin tai E:iin

– etäisyys pitkin pituuspiiriä

1. $R = 6366$ km
2. Päätellään pallokeilan välinen kulma leveyspiirien avulla
3. Matka = kaaren pituus

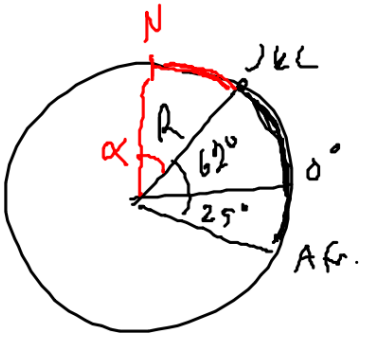


a)

asteet	kaari
360°	$2\pi \cdot 6366$
87°	x

$360° x = 87° \cdot 2\pi \cdot 6366 \quad |:360°$

$x \approx 9700$ km

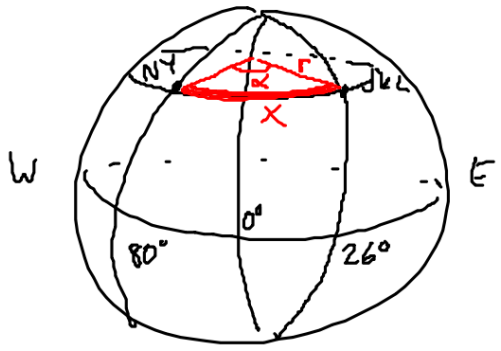


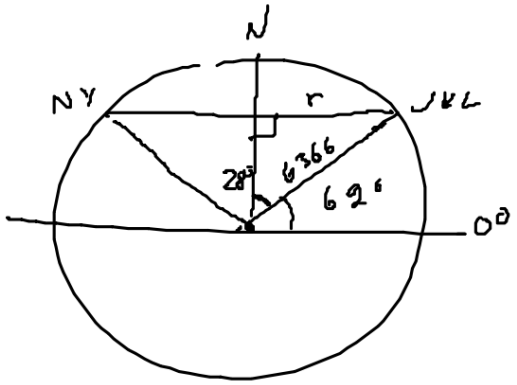
b) JKL – Pohj. napa $\alpha = 90° - 62° = 28°$

$\frac{360}{28} = \frac{2\pi \cdot 6366}{x} \rightarrow x \approx 3100$ km

– Leveyspiiri laskut: säde vaihtelee, se on laskettava ensin.

Esim.





1. r lasketaan alemman kuvion avulla:

$$\frac{\sin 28^\circ}{1} = \frac{r}{6366}$$

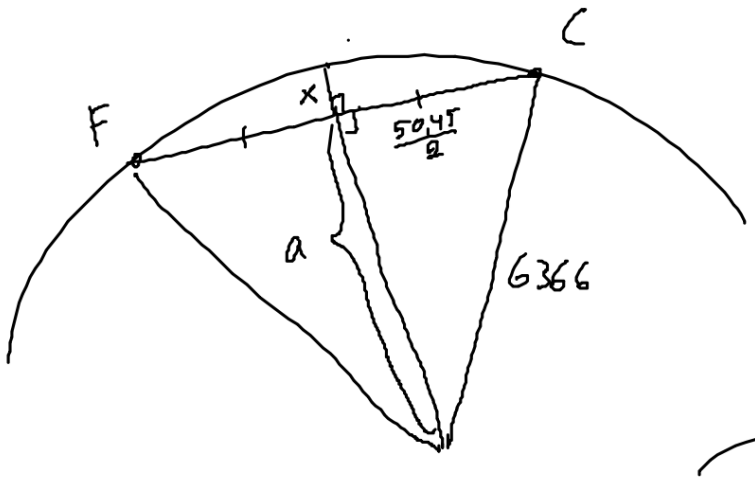
$$r = 2989 \text{ (km)}$$

2.

kaari	asteet
$2\pi \cdot 2989$	360°
x	$80^\circ + 26^\circ$

$$x \approx 5500 \text{ (km)}$$

387.



$p = 40000 = 2\pi r$

$\rightarrow r = 6366$

$V = \frac{4}{3}\pi r^2$

$A = 4\pi r^2$

$a^2 + 20,225^2 = 6366^2$

$a^2 = 40525546,95$ $\sqrt{\ }$

$a = 6365,968$

$x = 6366 - 6365,968 = 0,032$ km

$= 32$ m