

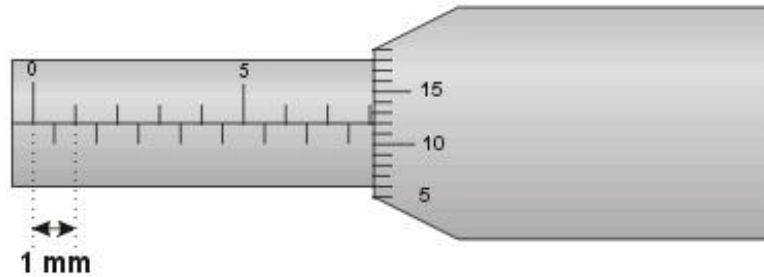
AZTERKETA: TRANSMISIOA eta METROLOGIA

Izena

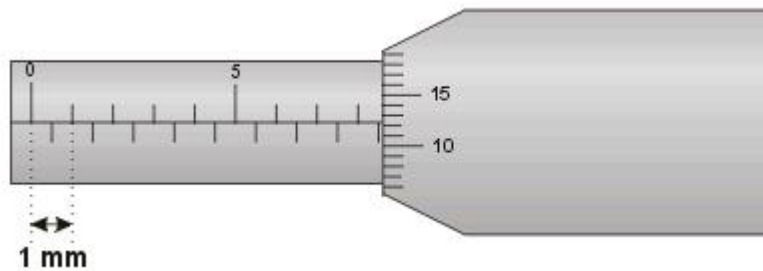
Kurtsoa

1. Kalkulatu neurketak ondoko mikrometro eta kalibreetan

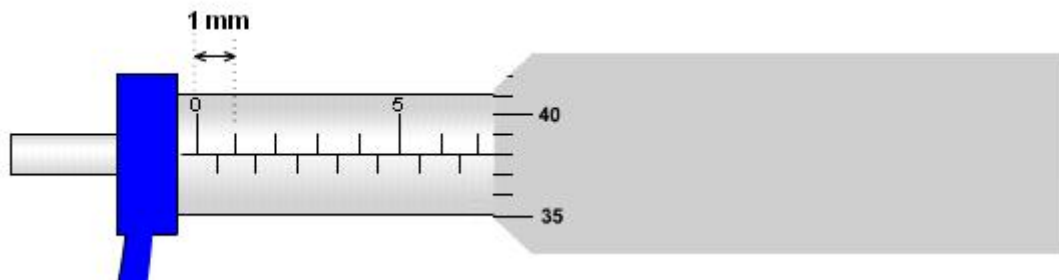
2 PUNTU



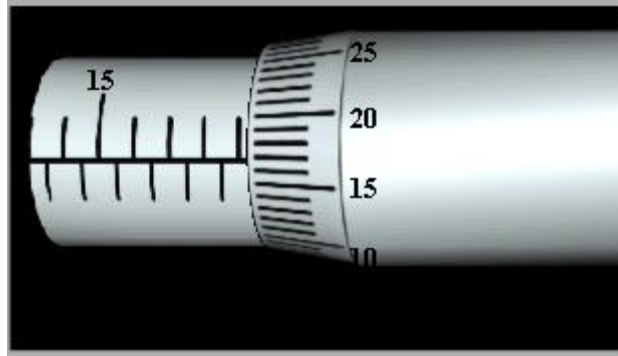
$$x = 8 \text{ mm} + \frac{0.5 \text{ mm}}{50} \times 12 = 8.12 \text{ mm}$$



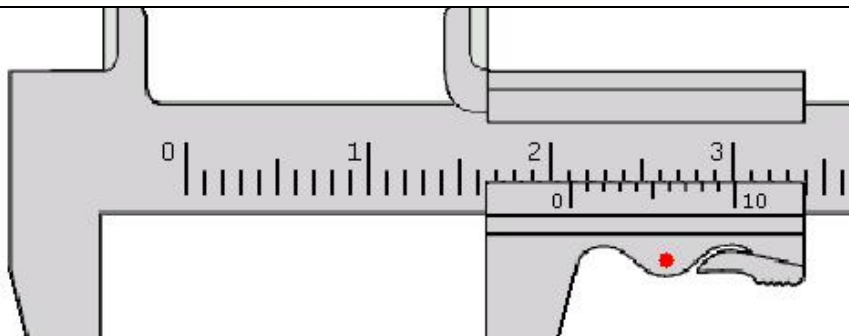
$$x = 8.5 \text{ mm} + \frac{0.5 \text{ mm}}{50} \times 12.5 = 8.625 \text{ mm}$$



$$x = 7 \text{ mm} + \frac{0.5 \text{ mm}}{50} \times 38 = 7.38 \text{ mm}$$



$$x = 19 \text{ mm} + \frac{0.5 \text{ mm}}{50} \times 16.5 = \boxed{19.165 \text{ mm}}$$



$$x = 21 \text{ mm} + 0.1 \text{ mm} = \boxed{21.1 \text{ mm}}$$

2. Adierazi

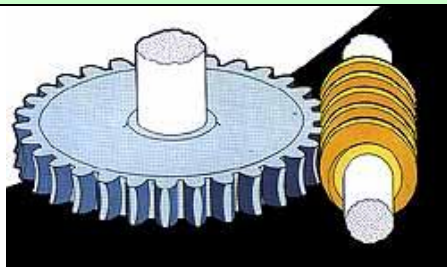
a) eroalea edo eroana den azkarrena

b) biraketa zentzu berean, aurkakoa edota angelu batekin egiten duten

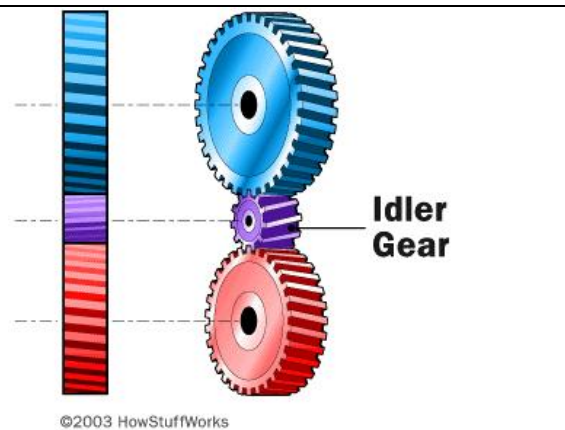
(PUNTUAZIOA: 2 puntu)



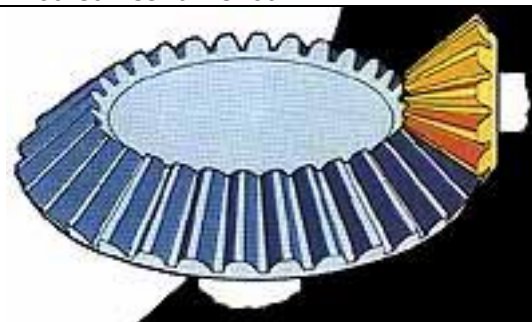
Eroalea: ezkerrekoa



Eroalea: eskuinekoa



Eroalea goikoa eta eroana behekoa



Eroalea: eskuinekoa

② a) azkarrena ... ERDALEA
biraketan
biraketaren ... AURKAKOA
noranzkoa

b) azkarrena ... ERDALEA
biraketan
biraketaren ... ANGELUA (90°)
noranzkoa

c) azkarrena ... ERDALEA
biraketan
biraketaren ... BERDINA
noranzkoa

d) azkarrena ... ERDALEA
biraketan
biraketaren ... ANGELUA (90°)
noranzkoa

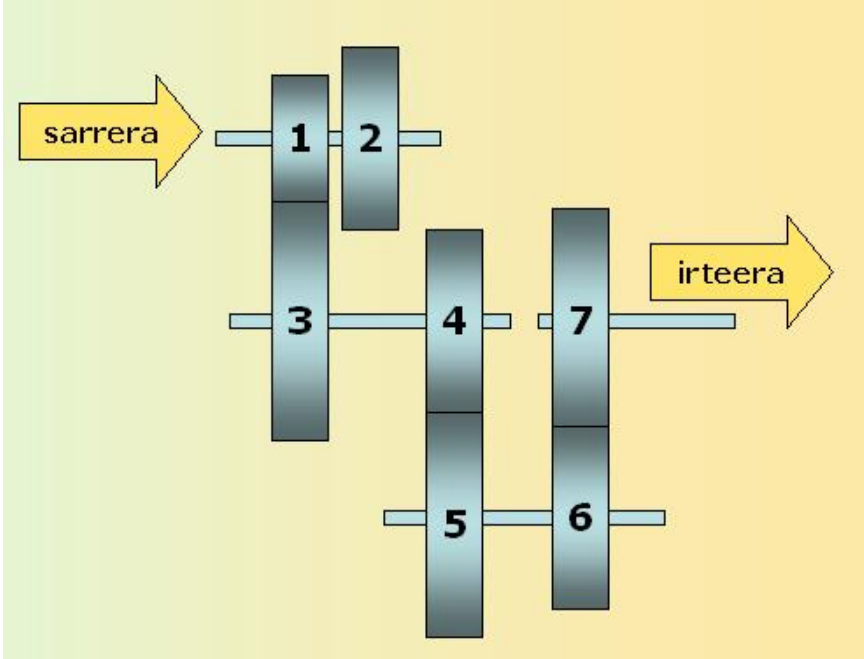
3. Irudiko engranaje tren kontuan hartuz, zehaztu irteerako ardatzak izango duen abiadura angeluarra (rpm-tan emanda) sarrerako ardatza 800 rpm-ra baldin badao.

Kalkulatu hurrengo kasuetarako:

a) irudiko kasua

b) "2" eroalea "4" eroanean engranatzan denean

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DATUAK:

$w_1 = 800 \text{ rpm}$

$N_1 = 40; N_2 = 60; N_3 = 85;$

$N_4 = 70; N_5 = 75; N_6 = 50; N_7 = 100$

$$\textcircled{3} \text{ a) } \frac{\omega_7}{\omega_1} = \frac{\omega_7}{\omega_6} \cdot \frac{\omega_6}{\omega_5} \cdot \frac{\omega_5}{\omega_4} \cdot \frac{\omega_4}{\omega_3} \cdot \frac{\omega_3}{\omega_1}$$

KONTUAN
HARTUZ:

a) $\omega_5 = \omega_6$; $\omega_3 = \omega_4$

b) ekuazio orokorra: $\omega_1 \cdot N_1 = \omega_2 \cdot N_2 \rightarrow \frac{N_1}{N_2} = \frac{\omega_2}{\omega_1}$

c) $\omega_1 = 800 \text{ rpm}$

$$\frac{\omega_7}{800 \text{ rpm}} = \frac{N_6}{N_7} \cdot \frac{N_4}{N_5} \cdot \frac{N_1}{N_3} = \frac{50}{100} \cdot \frac{70}{75} \cdot \frac{40}{85} = 0'22$$

$$\omega_7 = 0'22 \cdot 800 \text{ rpm} = \boxed{176 \text{ rpm}}$$

$$\text{b) } \frac{\omega_7}{\omega_1} = \frac{\omega_7}{\omega_6} \cdot \frac{\omega_6}{\omega_5} \cdot \frac{\omega_5}{\omega_4} \cdot \frac{\omega_4}{\omega_2} \cdot \frac{\omega_2}{\omega_1}$$

KONTUAN HARTUZ:

a) $\omega_5 = \omega_6$; $\omega_1 = \omega_2$

b) Ekuazio orokorra

$$\omega_1 \cdot N_1 = \omega_2 \cdot N_2 \rightarrow \frac{N_1}{N_2} = \frac{\omega_2}{\omega_1}$$

c) $\omega_1 = 800 \text{ rpm}$

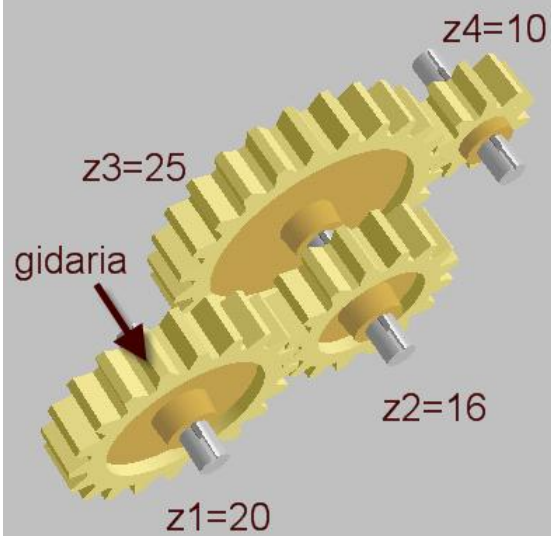
$$\frac{\omega_7}{800 \text{ rpm}} = \frac{N_6}{N_7} \cdot \frac{N_4}{N_5} \cdot \frac{N_2}{N_4} = \frac{50}{100} \cdot \frac{70}{75} \cdot \frac{60}{70} = 0'4$$

$$\omega_7 = 0'4 \cdot 800 \text{ rpm} = \boxed{320 \text{ rpm}}$$

4. Eroalearen abiadura anguluarra 120 rpm bada, kalkulatu beste abiadura anguluar guztiak era hauetan:

- rpm
- rad/s

2 PUNTU



$$\textcircled{4} \quad \omega_1 = 120 \text{ rpm} = 120 \frac{\text{bira}}{\text{min}} \cdot \frac{1 \text{ min}}{60 \text{ s}} \cdot \frac{2\pi \text{ rad}}{1 \text{ bira}} = 4\pi \frac{\text{rad}}{\text{s}} = \boxed{12.57 \frac{\text{rad}}{\text{s}}}$$

$$\omega_2 \rightarrow \omega_1 \cdot N_1 = \omega_2 \cdot N_2 \rightarrow \omega_2 = \frac{\omega_1 \cdot N_1}{N_2} = \frac{120 \text{ rpm} \cdot 20}{16}$$

$$\boxed{\omega_2 = 150 \text{ rpm}}$$

$$\omega_2 = 150 \frac{\text{bira}}{\text{min}} \cdot \frac{1 \text{ min}}{60 \text{ s}} \cdot \frac{2\pi \text{ rad}}{1 \text{ bira}} = \boxed{15.7 \frac{\text{rad}}{\text{s}}}$$

$$\omega_3 = \omega_2 \rightarrow \boxed{\omega_3 = 150 \text{ rpm}} ; \quad \boxed{\omega_3 = 15.7 \frac{\text{rad}}{\text{s}}}$$

$$\omega_4 \rightarrow \omega_3 \cdot N_3 = \omega_4 \cdot N_4 \rightarrow \omega_4 = \frac{\omega_3 \cdot N_3}{N_4} = \frac{150 \text{ rpm} \cdot 25}{10}$$

$$\boxed{\omega_4 = 375 \text{ rpm}}$$

$$\omega_4 = 375 \frac{\text{bira}}{\text{min}} \cdot \frac{1 \text{ min}}{60 \text{ s}} \cdot \frac{2\pi \text{ rad}}{1 \text{ bira}} = \boxed{39.3 \frac{\text{rad}}{\text{s}}}$$