

1. A motor rotates at 500 rpm, it is connected to a 20-tooth gear. The input gear moves another of 100 teeth by means of a metal chain. A. Calculate the gear ratio. B. Calculate the speed at which the big wheel moves.

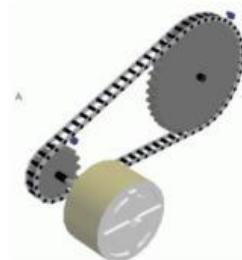
Data: Formula:  $\boxed{\quad} \times \boxed{\quad} = \boxed{\quad} \times \boxed{\quad}$

$N_1 = \boxed{\quad}$

$Z_1 = \boxed{\quad} \quad r = \boxed{\quad} / \boxed{\quad}$

$N_2 = \boxed{\quad} \quad \text{a) solution: } r = \boxed{\quad}$

$Z_2 = \boxed{\quad} \quad \text{b) solution: } N_2 = \boxed{\quad} \text{ rpm.}$



2. The bicycle mechanism chain and sprocket of 40 teeth moves the smaller of 10 teeth. If the cyclist pedals 50 times in one minute and the wheels have a radius of 30 cm, calculate: a. gear ratio b. rotational speed of the wheel c. Linear speed.

Data: Formula:  $\boxed{\quad} \times \boxed{\quad} = \boxed{\quad} \times \boxed{\quad}$

$N_1 = \boxed{\quad}$

$Z_1 = \boxed{\quad} \quad r = \boxed{\quad} / \boxed{\quad}$

$N_2 = \boxed{\quad} \quad \text{a) solution: } r = \boxed{\quad}$

$Z_2 = \boxed{\quad} \quad \text{b) solution: } N_2 = \boxed{\quad} \text{ rpm}$

$$v = \frac{s}{t} = N \frac{2\pi}{60} R$$

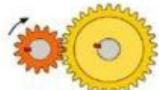


c) solution:  $v = \boxed{\quad} \text{ cm/s; pass to m/s} = \boxed{\quad} \text{ m/s}$

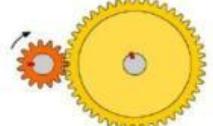
3. In the following system of gears, the input wheel marked with the yellow arrow has 15 teeth and rotates at 10 rpm. Calculate the output speed of rotation.



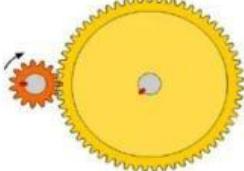
a.  $Z_2 = 15 \text{ teeth}$   
 $N_2 = \boxed{\quad} \text{ rpm}$



b.  $Z_2 = 30 \text{ teeth}$   
 $N_2 = \boxed{\quad} \text{ rpm}$



c.  $Z_2 = 45 \text{ teeth}$   
 $N_2 = \boxed{\quad} \text{ rpm}$



d.  $Z_2 = 60 \text{ teeth}$   
 $N_2 = \boxed{\quad} \text{ rpm}$

