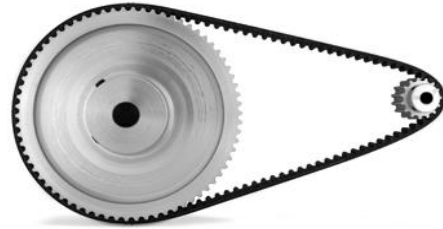
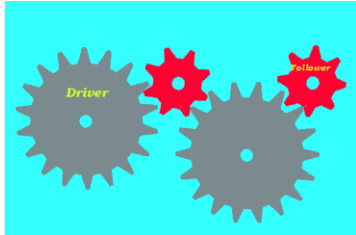


Motion Transmission Systems

Def: _____



Made up of:

Driver	
Driven	
Intermediate	



Reversibility



Speed change

The speed of the driver or driven will depend on 2 factors:

- _____
- _____

Formula: Speed ratio = $\frac{\text{\# of teeth of driver}}{\text{\# of teeth of driven}}$ or $\frac{\text{diameter of driver}}{\text{diameter of driven}}$

Small gear to large gear	Large gear to small gear	Same size gears
		

Ex:


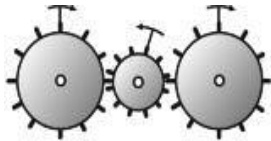
1) If a driver gear has 20 teeth and the driven gear has 10 teeth, what is the speed ratio?

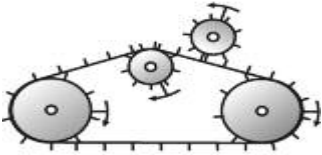
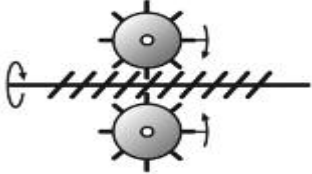
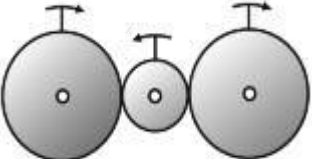
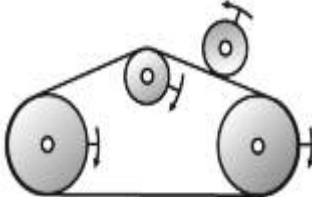
2) If a driver gear with a diameter of 20 cm and the driven gear has a diameter of 40 cm, what is the speed ratio?

Speed change with driver, driven and intermediates

- Must ignore intermediates when determining the speed change.

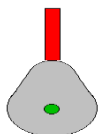


Type	Explanation	Picture	Rev?
Gear train		 	

Chain and sprocket		<p>Bikes</p> 	
Worm and worm gear		<p>Wine bottle opener</p> 	
Friction gear systems		<p>Printers</p> 	
Belt and pulley system		<p>Motors</p> 	

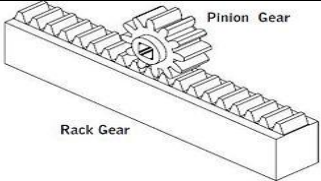
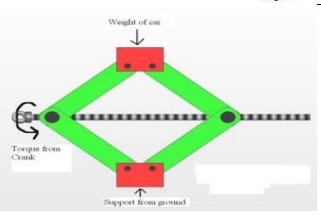


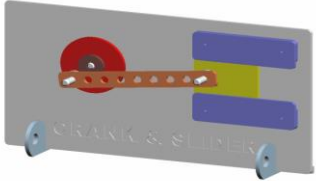
Motion Transformation Systems

Def: _____



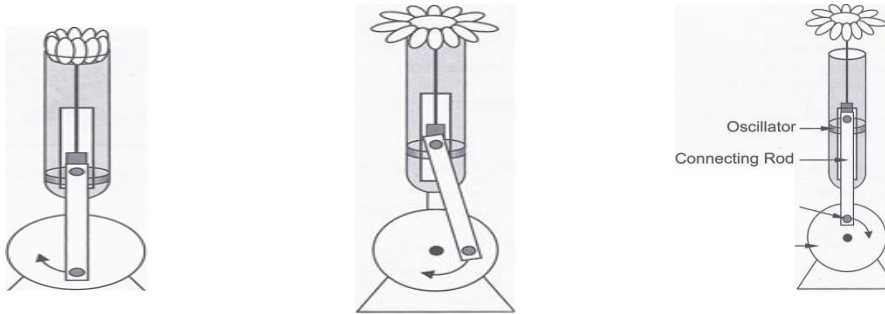
- Has a driver and driven, but no intermediate

Reversibility

Type	Explanation	Picture	Rev?
Rack and pinion		 <p>A 3D perspective diagram of a rack and pinion mechanism. It features a long, flat rack gear with teeth on one side and a smaller pinion gear with teeth on its outer circumference. The pinion gear is shown meshing with the teeth of the rack gear. Labels 'Pinion Gear' and 'Rack Gear' are present.</p>	
Screw gear System Type 1		 <p>A schematic diagram of a screw gear system. It shows a diamond-shaped linkage structure with four joints. The top joint is labeled 'Weight of car' with a downward arrow. The bottom joint is labeled 'Support from ground' with an upward arrow. The left joint is labeled 'Torque from Crank' with a curved arrow indicating rotation. A dashed horizontal line passes through the two side joints.</p>	
Screw gear system Type 2		 <p>A photograph of a red adjustable wrench, oriented diagonally. The handle is on the right, and the adjustable head is on the left.</p>	
Cam and follower		 <p>A 3D model of a cam and follower mechanism. It consists of a red cam with a rounded profile and a green follower with a pointed tip that fits into the cam's profile. A vertical shaft passes through the cam and follower.</p>	
Slider and crank mechanism		 <p>A 3D model of a slider and crank mechanism. It shows a red crank with a circular end and a yellow slider with a rectangular end. The slider is shown moving along a horizontal track. The text 'CRANK & SLIDER' is visible at the bottom of the model.</p>	

Past exam question

1. The mechanism illustrated below moves a paper flower in and out of a container.



- a- Is this a motion transmission or motion transformation mechanism?
- b- Is the system reversible?
- c- From the list of changes suggested below, choose the combination of **two** changes that should be made to the mechanism so that the flower can come further out of the container.
- Change 1- Increase the diameter of the crank.
 - Change 2- Decrease the diameter of the crank.
 - Change 3- Move the connecting rod pivot away from the center of the crank.
 - Change 4- Move the connecting rod pivot closer to the center of the crank.