

# In Action

LINEAR

RECIPROCATING

ROTARY

OSCILLATING



## MECHANISMS

Transfer Motion  
Change the **type** of motion  
Change the **speed** of motion  
change the **direction** of motion

### Gears

Transfer rotary motion in the opposite direction unless an idler gear or chain is used

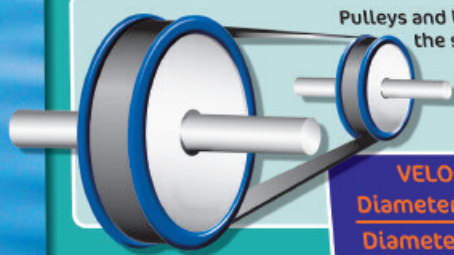


Gears can control the speed of rotation

$$\text{GEAR RATIO} = \frac{\text{No of teeth on driven gear}}{\text{No of teeth on driver gear}}$$

### Pulleys and Belts

Transfer rotary motion from pulley to pulley and create linear motion in the belt



Pulleys and belts can control the speed of rotation

$$\text{VELOCITY RATIO} = \frac{\text{Diameter of driven pulley}}{\text{Diameter of driver pulley}}$$

# In Action

## TRIANGULATION



## SHEAR



## STRUCTURES

### Triangulation =

Frame structures support their load using a combination of structural members assembled to make triangles

### Loads

Forces exerted on a structure

### Static Loads

Stationary e.g. the weight of the structure itself

### Dynamic Loads

Moving e.g. vehicles and people

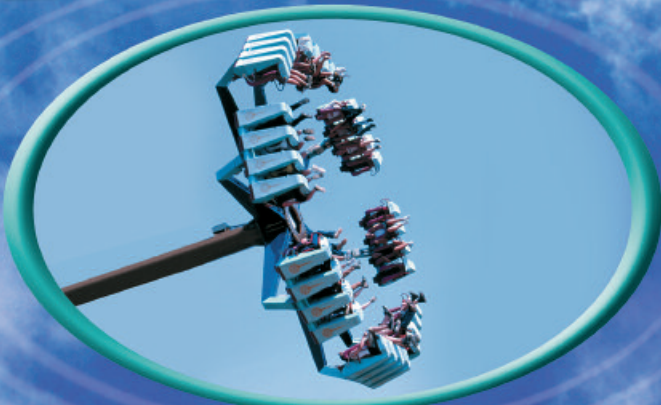
### Structural Members =

**Struts** – resist compression

**Ties** – resist tension

**Beams** – resist bending

## BENDING



## TENSION



## TORSION

## COMPRESSION