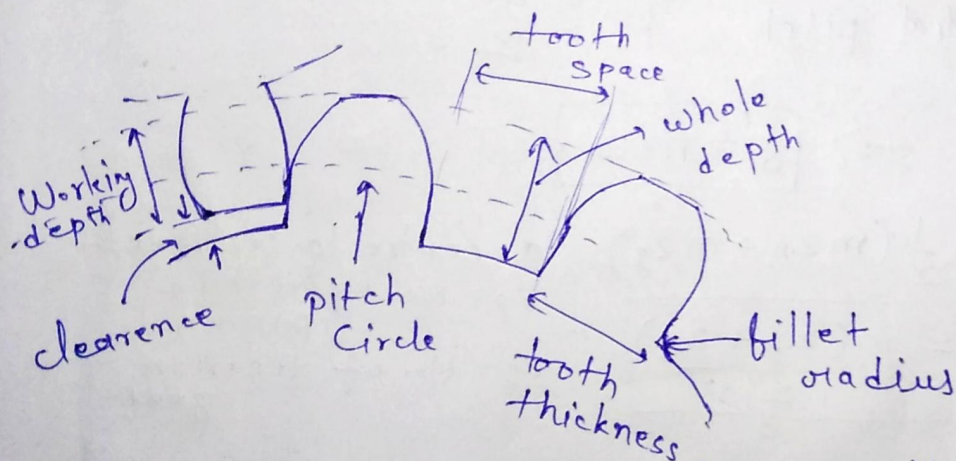
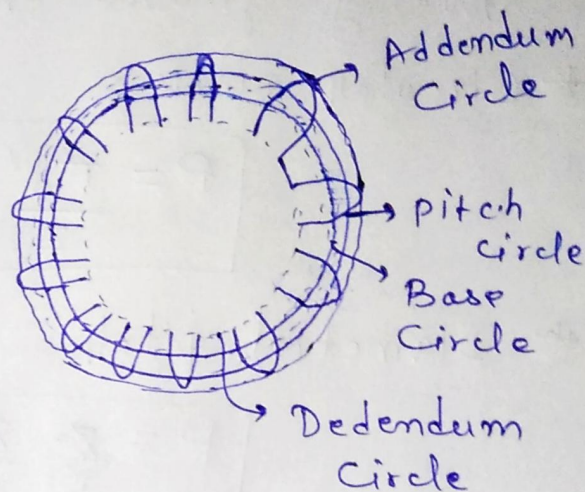
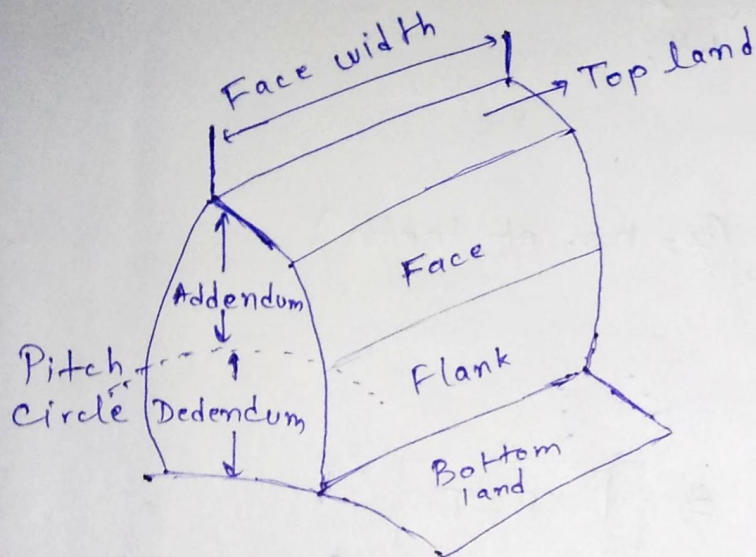


Spur Gear



(i) Velocity ratio = $\frac{\text{Angular velocity of driving gear}}{\text{Angular velocity of driven gear}}$

(ii) Transmission Ratio = $\frac{\text{Angular velocity of first driving gear}}{\text{Angular velocity of last driven gear}}$

- * Pitch diameter (d')
- * Addendum (h_a)
- * Dedendum (h_f)

- * Clearance (c)
- * Face width (b)
- * Working depth (h_k)

* Line of Action \Rightarrow Common tangent to the base circle of the mating gears.

* Arc of Contact \Rightarrow Arc of the pitch circle through which a tooth moves from the beginning to the end of contact with mating tooth.

* Arc of Approach \Rightarrow Arc of the pitch circle through which a tooth moves from its beginning of contact until the point of contact arrives at the pitch point.

* Arc of Recess \Rightarrow Arc of the pitch circle through which a tooth moves from the contact at the pitch point until the contact ends.

* Pressure Angle (α)

* Contact Ratio (m_p) \Rightarrow No. of teeth in contact
For smooth transfer ≈ 1.2
Usually greater than 1.4.

* Circular pitch \Rightarrow

$$P = \frac{\pi d'}{Z} \quad (Z = \text{no. of teeth})$$

* Diametral pitch

$$P = \frac{Z}{d'} \Rightarrow P \times P = \pi$$

* Module = $\frac{1}{\text{Diametral pitch}} = \frac{1}{P} = \frac{d'}{Z}$

$$\Rightarrow d' = m Z$$

$$a = \frac{1}{2}(d'_p + d'_g) = \frac{1}{2}(m Z_p + m Z_g)$$

$$\Rightarrow a = \frac{m(Z_p + Z_g)}{2}$$

a = centre to centre dist.
 Z_p = No. of teeth in pinion
 Z_g = No. of teeth on gear

Gear ratio ($\dot{\theta}$) = $\frac{n_p}{n_g} = \frac{Z_g}{Z_p}$

n_p = speed of pinion
 n_g = speed of gear