MOMENTS

KEY WORDS & DEFINITIONS

1. Moment
The turning effect of a force on a rigid body.

2. Resultant Moment
The sum of all moments acting on a rigid body.

3. The Point of Tilting
The instantaneous situation where the reaction at any support or the tension in any supporting string or wire, other than at the pivot, will be zero.

4. Coplanar Forces
Forces that act in the same plane.

5. Lamina
A 2D object whose thickness can be ignored.

FORMULAE

Moment about P = magnitude of force x perpendicular distance of the force from P

Moment of **F** about P = | **F** | x d   Nm clockwise

Moment of **F** about P = FdSinθ Nm clockwise

MODELLING ASSUMPTIONS & IMPLICATIONS

A plank is uniform $\Rightarrow$ Weight acts at the centre of the plank

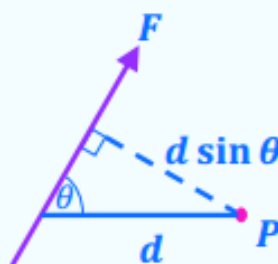**A plank is a rod** $\Rightarrow$ The plank remains straight

Any people/objects are particles $\Rightarrow$ Their weight acts at the end of any rod

WHAT DO I NEED TO KNOW

1. The **units** of Moments are **Newton metres Nm**

2. The **direction** of the Moment (clockwise or anticlockwise) must be included with a moment's value.

3. When a rigid body is in **equilibrium**, the **resultant force** in any direction is **0N** and the **resultant moment** about any point is **0Nm**

4. The centre of mass of a **non-uniform rod** is **not** necessarily at the **midpoint** of the rod.