Center of Gravity

The centre of mass of an object is where all mass is evenly distributed around that point.

The CoG is where the force is considered to act from. E.g the moment is worked out as the force * the perpendicular distance from the pivot.

Finding the Center of Mass

When you have a symmetrical object made of an uniform material it's centre of mass is in the exact centre of the object.

In a non-uniform shape or material you have have to use a suspended plumb line from various points on the shape and then trace them. The intersection point is the center of mass

Stability

When something is balanced (stable) the sum of their anti-clockwise moments is equal to the sum of their clockwise moments. If they are not then the object is not stable

The more stable an object the harder it is to push over.

Good for stability

- Low CoG

  - ensures the CoG doesn't go over the pivot easily

- Broad bases

  - large distance so large moment

Forces on a Beam

When an object moves across a stable beam with multiple pivots the force the pivots are applying is:

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((length of beam - objects distance from pivot)/length of beam) * force the object
is applying
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