O Level Physics   Tutorial 4: Turning Effects of Forces

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1. (i) What is the meaning of moment of a force about a point?

   (ii) Give two everyday examples on moment of a force.

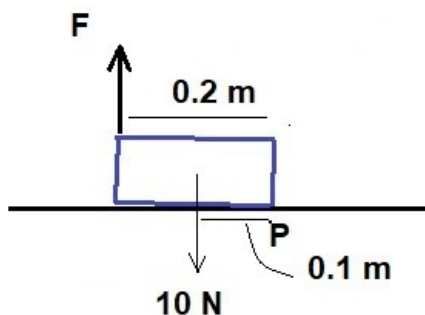
2.

Figure 4-1

A vertical force F tries to lift one end of a brick in the figure above. F has to overcome the moment about P due to the 10 N weight. Assuming that the 10 N acts at the centre of the bricks, find this moment.

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3. State the principle of moments for a body in equilibrium.

(d) apply the principle of moments to new situations or to solve related problems
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4. Apply the principle of moments to find the force F in question 2 above.

(e) show an understanding that the weight of a body may be taken as acting at a single point known as its centre of gravity
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5.   We can just about balance a meter rule at the centre with a finger if we adjust it patiently, so it is as if the weight of the ruler only acts at that single point.

The ruler has a mass of 0.1 kg. A small lump of copper of mass 0.1 kg is taped to the 0 cm end of the ruler. Find the new centre of gravity.

(f) describe qualitatively the effect of the position of the centre of gravity on the stability of objects.
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6. (a) What is meant by the stability of an object?

    (b) Explain why an object with a higher centre of gravity is less stable.