

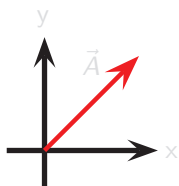
Torque

We realized with Newton's second law of motion that a force causes an acceleration. What about angular acceleration? The ability for a force to cause a rotation or twisting motion depends on three factors.

- ▶ The magnitude F of the force.
- ▶ The distance r from the point of application to the pivot.
- ▶ The angle at which the force is applied.

The quantity **Torque** is defined as

$$\tau = rF \sin \phi$$



Torque measures the effect of the force at causing an object to rotate about a pivot, so torque is the *rotational* equivalent of force. The units of torque are Nm . Previously we defined Joules to be Nm but torque is not energy related so we do not use joules

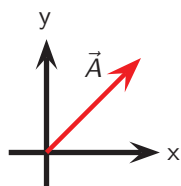
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