TORQUE

**1)** Torque is a measure of how much a force acting on an object causes that object to rotate. The object rotates about an axis, which we will call the pivot point, and will label 'O'. We will call the force 'F'. The distance from the pivot point to the point where the force acts is called the moment arm, and is denoted by 'r'. Note that this distance, 'r', is also a vector, and points from the axis of rotation to the point where the force acts.

2)
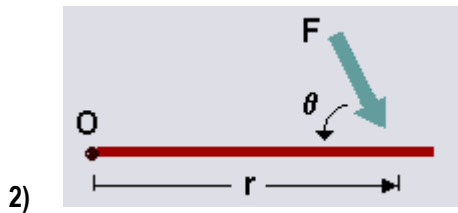
3) Torque is defined as: $\mathcal{T}$ = r x F = r F sin().

4) In other words, torque is the cross product between the distance vector (the distance from the pivot point to the point where force is applied) and the force vector, 'a' being the angle between r and F.

5) Imagine pushing a door to open it. The force of your push (F) causes the door to rotate about its hinges (the pivot point, O). How hard you need to push depends on the distance you are from the hinges (r) (and several other things, but let's ignore them now). The closer you are to the hinges (i.e. the smaller r is), the harder it is to push. This is what happens when you try to push open a door on the wrong side. The torque you created on the door is smaller than it would have been had you pushed the correct side (away from its hinges).

LANGUAGE
CENTRE