I will do an example to apply that parallel axis theorem.

In a separate segment, we calculated the moment of inertia all of a uniform rod, rotating about its center, perpendicular to axis, and perpendicular to the length direction of the rod. I will now offset that axis, and use the parallel access theorem.

Here is that rod: length l, mass m, with uniform mass distribution. This was the center, and therefore the center of mass. We calculated earlier that the moment of inertia about this axis of rotation equals 1/12 ml squared, but now I would like to know what the moment of inertia is about an axis of rotation which is also perpendicular to the rod. Let it go through point P, and this separation between these two axes equals d. That moment of inertia equals 1/12 ml squared, which is the moment of inertia-- the axis through the center of mass, plus m times d squared.

We derived this one, but you could have looked it up in the tables-- whatever you prefer. When you want to know what it is about this axis, you apply the parallel axis theorem. If you want to rotate this rod about point Q, about an axis perpendicular to the direction of the rod, then you would find that I q equals 1/12 ml squared plus m-- d is now 1/2 l-- so you get plus m times 1/4 l squared. That equals 1/3 ml squared.

This result you can also find in many tables, but if somehow you don't have the tables and you have the value of moment of inertia about the center of mass, then you can evaluate all the others, so it comes in very handy.