$$\Sigma \overrightarrow{F} = 0$$

The above equation means "The sum of all the forces equals zero". This is a key concept of this chapter.

The common misconception is that there is no force acting on the object. This is not at all true - it means that there is no net force acting on the object.

Let's take the example of a car on the highway. If you are driving in a straight line and keeping a constant velocity, what is the net force acting on the car?

$$F = ma$$

You're going 100 km/hr. You are keeping this velocity constant. What is your acceleration?

$$a = 0 \quad \therefore F = 0$$

It does not mean there is no force. There are lots of forces…

It means if you add them all up, they will cancel and the result is 0.

Let's imagine that we're trying to hang a picture. (follow in text pg. 25) It is not straight and we want to calculate the force of tension (F_T) on the strings.

We need to know a couple things;
The mass of the picture m=1.5 kg.
θ=30° ϕ=60°

Next we draw a free body diagram

Then we decompose our vectors into F_{Tx} $F_{T\cup}$. And set the $\Sigma F=0$.

	x	y
F_{T1}		
F_{T2}		
F_3		

Divide into 3 groups. Each group gets a problem from page 26.
You have 7 mins, then we go over them together.

τ=Torque

1.3 part 2 - The most important part…

Ever experience an uneven teeter totter? Did you find a way to fix it so you could still play with bigger / smaller friends?

In the simplest example a force is applied perpendicular to the lever arm and the pivot (fulcrum) is at the end.

$$\tau = Fl$$

If we have a more complicated example - and we will - We need to only find the Force that does the work F_y.

$$\tau = Fl\sin\theta$$

Plug and Chug: 3 groups. 3 questions. 3 minutes.
Text pg 28.

HW: 1-4. I'll be taking some of the questions from the review section as well as from the homework. Consider the test to be a combo test / homework check!