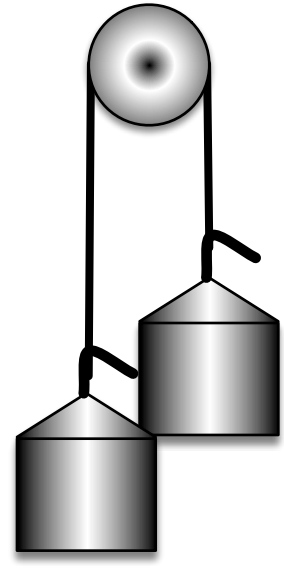
Cycle 8 2nd Law

Situation 1

1 kilogram (the stuff) weighs 10 N (pull of gravity)



SITUATION #1

We can cancel out weight here on Earth and you can feel just the mass. Does it take any force to hold them in place?

Why not?

Now push them up and down. Do you feel something when you slow them down and speed them back up?

That can't be weight you're feeling because the two weights canceled out.

If you put your hand on the table and push one of them down onto it, is it possible that it could hurt?

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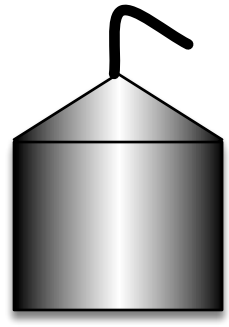
SITUATION #2



Which way does gravity pull things?

Pick it up the 1 kg and hold it steady in your hand. How much force do you have to use to hold it at rest?

Is that a weight or a mass issue?

Now put it on the table and move it side to side quickly with your hand. Does it feel like nothing or do you feel some resistance?

You are feeling how difficult it is to speed up and slow down the 1 kg. Is that due to its mass or weight? (Remember gravity doesn't act from side to side.)

SITUATION #3

If the ISS gets hit by some space junk in free fall orbit (zero-g conditions), does it still do damage? (If you're not sure, check out the "Space Debris" link at mrmont.com)