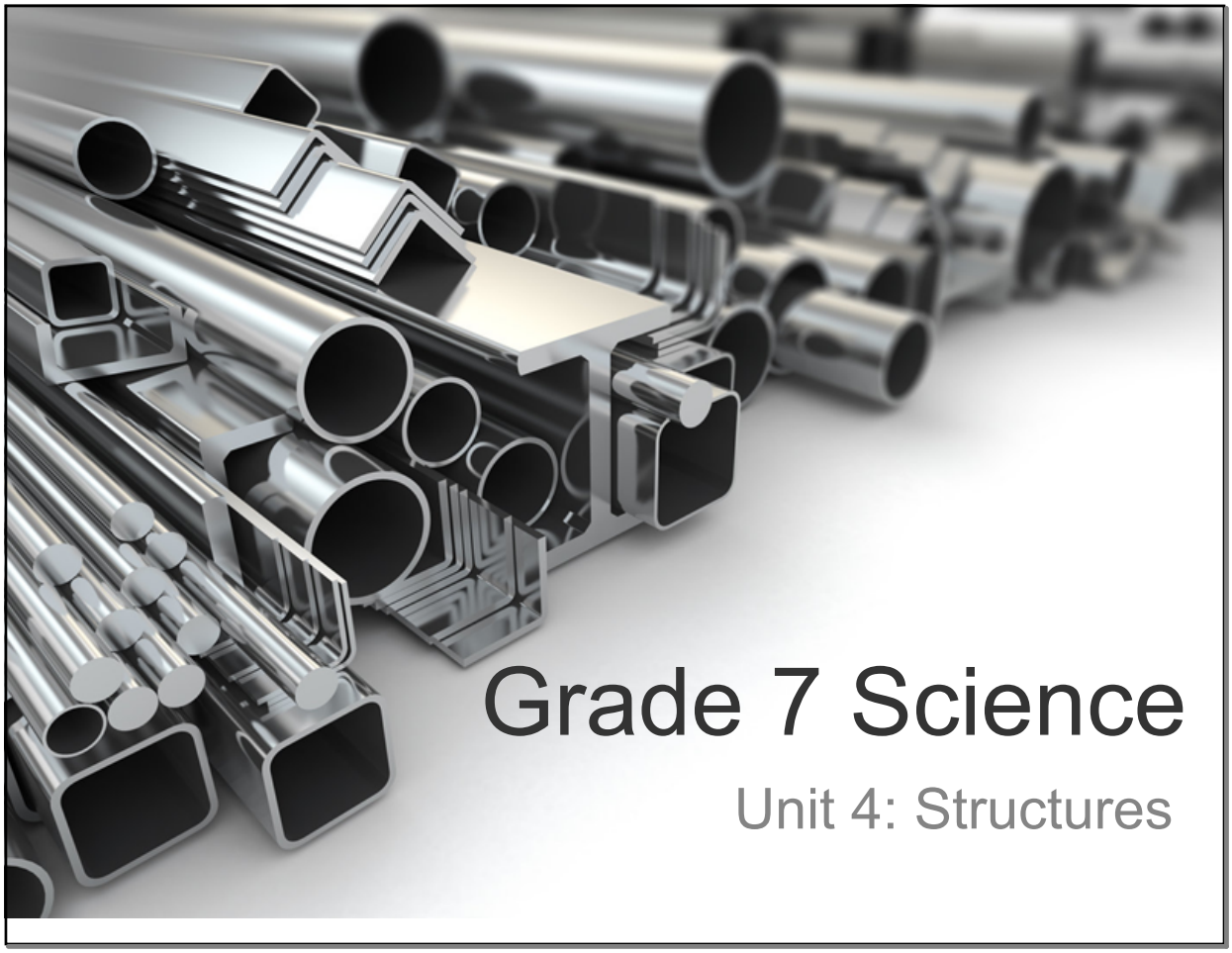
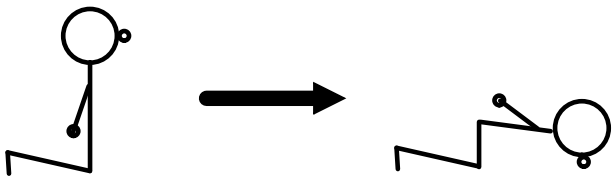


Grade 7 Science

Unit 4: Structures

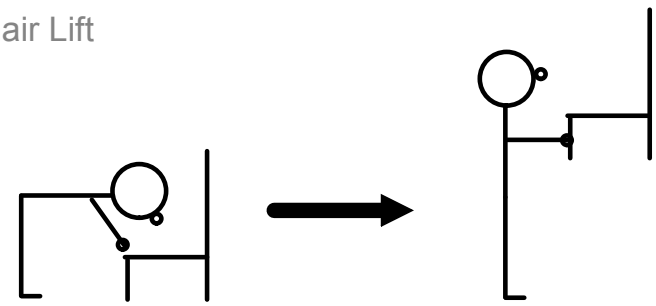
Today we will start with two activities:

1) Kneeling Nose Touch



BE CAREFUL. Have your hands ready to support yourself, should you lose your balance.

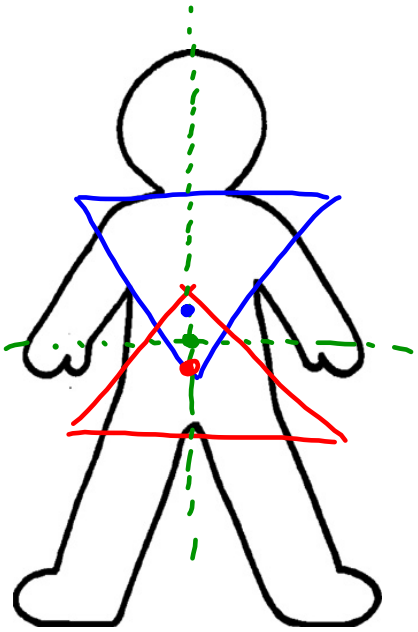
2) Chair Lift



Bend only at the hips. Chair is to go straight up, not towards you.

When we look at the results from the 2 activities, what trends do we notice? If we were to do these activities as a group of adults, do you think the results would change? In what way?

Where do men/women carry most of their weight?



We can define an object by its "centre of gravity."

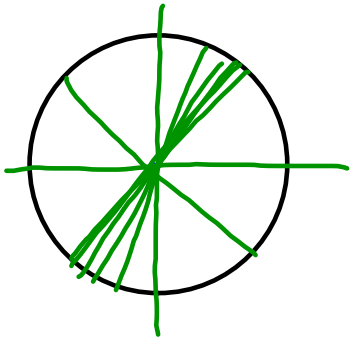
Centre of Gravity

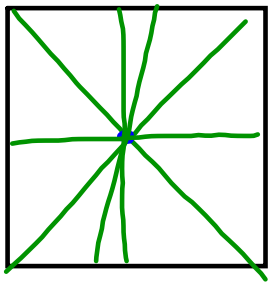
The point at which all of the gravitational force of an object may be considered to act.

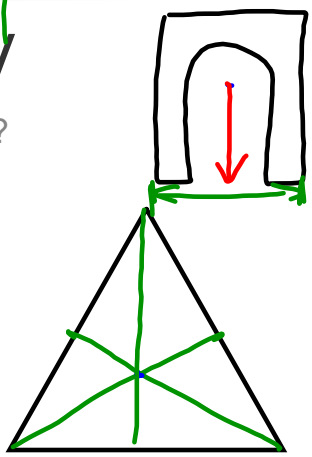
If you cut an object in half through the centre of gravity the mass is equally distributed on both sides.

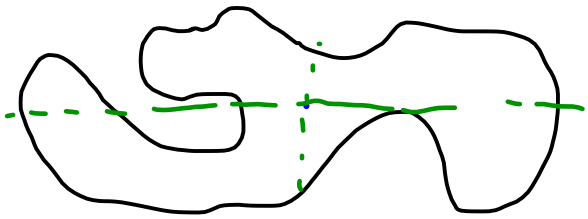
Centre of Gravity

Where would the centre of gravity be for these objects?







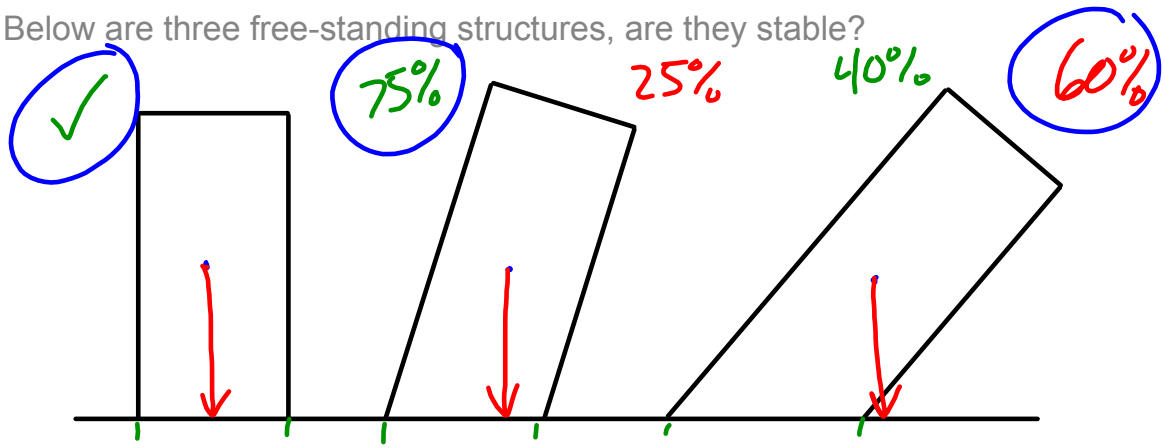


What two assumptions do we need to make?

- That the object is uniform in thickness.
- That the object is made of all one material.

Centre of Gravity

Below are three free-standing structures, are they stable?



Thrust Line — The vertical line that runs downward from an object's centre of gravity, through which force is transferred.
If the thrust line is between the edges of the base, then the structure is stable (assuming no other forces are acting). If the thrust line reaches the ground outside of the base, then the structure is not stable.