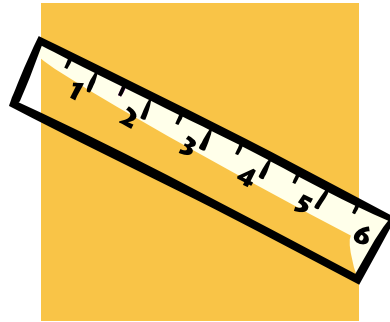


## The Ionosphere – How High Does It Go?

In this activity, you and your classmates will work in groups of 2 to develop a scale model of the earth's atmosphere.

The paper attached to the wall in the classroom is 2 meters high. The top of the paper will represent the top of the atmosphere, and the bottom (the floor) will represent the surface of the earth at sea level. Your group will be given a particular object that would be found within our atmosphere. You should draw and cut out an image of your object to attach to the model. Include the name of the object on the image. The image itself does not have to be drawn to scale, but its placement within the atmosphere model will require scaling.

To establish the scale for the model, you need to know the height of the model and the height of the atmosphere. The model height is 2 m, and the atmosphere height is 1000 km.



Scale: 1 cm = \_\_\_\_\_ km

Your object \_\_\_\_\_

Actual height \_\_\_\_\_

Scaled height \_\_\_\_\_ (show calculation below)



## Questions

1. In what layer of the atmosphere does your object exist? What percent of the total atmosphere depth does this occupy?
2. Does the space shuttle orbit within the troposphere? Within our atmosphere?
3. Why does the shuttle maintain its speed at its orbit altitude if it is within the atmosphere?
4. Consider a satellite at a 600 km altitude that has been in orbit around the earth for 5 years. Do you think that exposure to the atmosphere for this period of time has had an impact on the speed of the satellite? Why?
5. Imagine if the ionosphere density increased by a factor of ten times. How could this affect the orbit of a satellite?