

# Modeling Earth's Atmospheric Layers



You are going to create a **COLORED** model of Earth's atmospheric layers. You will use a long sheet of paper to complete your model. You may use the side that has already been marked. If you want the challenge, use the blank side and create your own model.

This along with the summary questions will count as a **SKILLS** grade; this is summative.

1. Color the **Earth** blue and green to represent the continents and oceans.
2. Draw the **troposphere**, which is the first layer of the atmosphere. The troposphere extends 16 km above Earth.
  - a. Use the following scale – 1 mm = 1 km. Place a series of dots around Earth, 16 mm from the Earth's surface.
  - b. Connect the dots and label it the troposphere. Color this layer yellow. Draw pictures to help indicate what happens in this layer. You can add airplanes, people, weather occurrences, and ozone O<sub>3</sub> (This gas is dangerous for us, it can damage our lungs. It develops on hot summer days because of air pollution.)
3. Draw the **stratosphere**, which is the second layer of the atmosphere. It extends 16 km – 50 km above the Earth's surface.
  - a. Measure and draw a circle 50 mm from Earth's surface. Be careful- do not draw it starting from the troposphere, remember to start measuring from Earth's surface.
  - b. Connect the dots and label it stratosphere. Color this layer orange.
  - c. Draw pictures to help indicate what happens here. Jet streams occur here, which are fast moving streams of wind between the 2 layers.
  - d. In October 2012, Felix Baumgartner jumped from the stratosphere in a "Leap from Space" challenge. Felix traveled in a capsule powered by a balloon to 39 km above Earth. Draw Felix's capsule at the proper altitude in the **stratosphere**.

*Keep Going*



4. Draw the **mesosphere**, which extends 50 km – 90 km from the Earth’s surface.
  - a. Measure and draw a circle 90 mm from the Earth’s surface.
  - b. Label this layer mesosphere. Color this layer red.
  - c. Draw pictures to help show characteristics. It is the coldest layer of the atmosphere. Radio waves are reflected to Earth and meteors from space burn up in this layer.
  
5. Label the **ozone layer**. The ozone layer plays an important role because it helps to block harmful ultraviolet radiation from the Sun.
  - a. The ozone layer is between the stratosphere and the mesosphere. Its symbol is O<sub>3</sub> because it is made of three oxygen atoms.
  - b. Color a thin, blue line to represent the ozone layer. Make a small section of the line dotted (-----) to represent the “hole” in the ozone layer.
  
6. Draw the **thermosphere**. This is the fourth layer of the atmosphere. It extends 90 km – 300 km from the Earth’s surface.
  - a. Label it the thermosphere and color it green.
  - b. Draw pictures to help show characteristics. The thermosphere is very hot and contains light “shows” called auroras.
  
7. Beyond the thermosphere is the **exosphere**. It extends 300 km – 600 km.
  - a. Color this gray and label it exosphere.
  - b. When meteoroids enter Earth’s atmosphere, they enter through the thermosphere, which is extremely hot. Because of the heat, most meteoroids burn up. Draw and label a meteor entering Earth’s atmosphere.
  - c. Satellites are used to send many types of information from one location on Earth to another. They are used by governments, researchers, and private companies for reasons such as defense, television, data, and weather. Satellites orbit Earth hundreds of thousands of km above Earth. Draw a satellite in the **exosphere**.