CHAPTER 5 PROJECT

The Ozone Layer

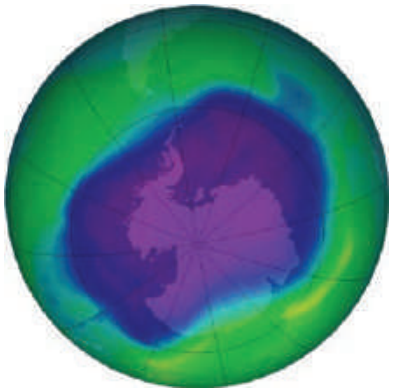

Photo Courtesy of NASA

The level of ozone in Earth's atmosphere has been closely watched since the 1970s, with the level of ozone depletion at the south pole a good indicator of global trends. One model of the region of polar depletion assumes the region is circular and that its radius, over a certain period of time, grows at a constant rate of 2.6 kilometers per hour.

1. Write the area of the circle as a function of the radius r.

2. Assuming that t is measured in hours, that $t = 0$ corresponds to the start of the annual growth of the hole, and that the radius of the hole is initially 0 kilometers, write the radius as a function of time t.

3. Write the area of the circle as a function of time t.

4. What is the radius after 3 hours?

5. What is the radius after 5.5 hours?

6. What is the area of the circle after 3 hours?

7. What is the area of the circle after 5.5 hours?

8. What is the average rate of change of the area from 3 hours to 5.5 hours?

9. What is the average rate of change of the area from 5.5 hours to 8 hours?

10. Is the average rate of change of the area increasing or decreasing as time passes?