**The Reasons for the Seasons**  
*Family Page*

**Question:** Do shadows change with the seasons?

**What’s Happening in Class?**
Your child is conducting a controlled investigation to determine the length of the sun’s shadow on a fixed object such as a flagpole or telephone pole. This investigation takes place over a three-day period (one day in the fall, one in the winter, and one in the spring). This concrete experience acts as a springboard to the abstract understanding of the positioning of the sun and Earth as it relates to the seasons. In March (after the final observation) a classroom activity using a lamp and globe will reinforce the connection between the Earth’s tilt, its revolution, and seasonal change. For more specific information on this lesson, visit the *Science for Ohio* website at www.environmentaleducationohio.org and click on *The Reasons for the Seasons* inquiry.

**What Can We Do at Home?**
1) Research the meanings of the following terms and find out how they are related to the seasons:
   - rotation, northern hemisphere, season
   - revolution, southern hemisphere, axis
   - axial tilt, counterclockwise, vertical

2) Discuss answers to the following questions:
   - Why is it warmest in the summer?
   - How do the seasons of the northern hemisphere relate to the seasons of the southern hemisphere?
   - How would the Earth’s seasons be different if it had no tilt?
   - Why does the sun appear to “rise in the East and set in the West?”
   - The Earth makes one complete rotation on its axis in ______________ (time frame). The Earth makes one complete revolution around the sun in ______________ (time frame).

3) Choose an object around your home whose shadow can be measured. Take monthly measurements at the same time of day. Keep a bar graph of the shadow measurements and watch for any patterns. Note: take your measurement one hour earlier once Daylight Savings Time ends and Standard Time resumes (the end of October).