# Seasons of Earth

*Have you ever wondered where shadows come from? Maybe why some shadows are larger than others? Today, we are going to explore these questions and find out more about our shadows and the shadows around us!*

## Materials Needed:

- **Orange** (represents Earth)
- **Flashlight or Lamp** (represents Sun)
- **Skewer** (tilt of Earth)
- **Toothpicks** (2)
- **Marker** (labeling the “Earth”)
- *Label Tabs - optional (label toothpicks)*

# Scientific Method:

**Step 1: _____**

Write any observations that you see about our Earth.

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**Step 2: _____**

What questions do you have about the Earth and/or seasons?

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**Step 3: _____**

What do you think causes the seasons to change?

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**Step 4: _____**

**Creating "Earth"**

- Carefully push the skewer all the way through the orange so that it sticks out at both ends.
    - One end of the skewer is the North Pole, the other is the South Pole. Use the marker to write "N" at the North Pole, and "S" at the South Pole.
- Use the marker pen to draw a circle all the way around the middle of the orange, halfway between the North Pole and the South Pole. This circle is the Equator.
- Hold the orange so that the North Pole is at the top of the orange. The Earth spins around the imaginary line between the North and South Poles. Hold the skewer and spin the Earth
- Carefully push a cocktail stick into the orange halfway between the North Pole and the Equator.
- Write "USA" on one of your labels. Attach this label to the cocktail stick in your orange.
- Push another cocktail stick into the orange, directly opposite the USA marker.
- Write "Australia" on a sticker and attach it to your cocktail stick.
    - You have now constructed a simple model of the Earth

**Experimenting with Earth and Sun**

- Tilt the Earth to represent Earth's axis
- Rotate the Earth around the flashlight/lamp to demonstrate direct/indirect sunlight
- Explain seasons and one full rotation is a whole year for Earth

**Step 5: _____ & _____**

What causes the seasons on Earth? _____

_____

What do we call one full rotation around the sun? _____

Explain the difference between direct and indirect sunlight?

_____

_____

**Step 6: _____**

Make sure you share your data with the teacher/group and check out what happened to other people's shadows! We always like to compare our results with others, just in case something different happens.