SEASONS
Session 2 - 3: Apparent Path of the Sun in the Sky

A. Make a prediction:

I think the Sun's apparent path in the sky each day is **different** throughout the year.
< the same / different >

If you think it is the same, explain *why* it is the same.
If you think it is different, describe *how* it is different.

It is different each day because Earth's fixed tilt of Earth changes the Earth-based orientation with the Sun as Earth moves around the orbital plane.

(But students won't be expected to know that yet, this is just to collect their initial ideas.)

B. Collect data for Boston:

Season and date	**Marker Color** (on SunTracker)	**Sun Angle at Midday** (in degrees)	**Length of Day** (in hours)
Winter (December 21)	**blue**	**24°**	**9 hours**
Spring (March 21)	**green**	**48°**	**12 hours**
Summer (June 21)	**red**	**71°**	**15 hours**
Fall (September 21)	**black**	**48°**	**12 hours**

C. Compare and analyze data for Boston:

1. Which season has the highest Sun angle at midday? **Summer**
2. Which season has the lowest Sun angle at midday? **Winter**
3. Which season has the longest day length? **Summer**
4. Which season has the shortest day length? **Winter**
5. Which seasons have the same Sun angle at midday / day length? **Spring and Fall**
6. Was the Sun ever directly overhead in Boston? **Nope**

D. Record your ideas:

How do you think the Sun's height in the sky and the length of day affect temperature on Earth?

1. Here are some ways I think the Sun's **height in the sky** affects temperature:

   Higher sun angles produce more concentrated light, resulting in more energy and higher temperature. (But students aren't expected to know that yet.)

2. Here are some ways I think the **length of day** affects temperature:

   More hours of daylight mean light and energy transmit to a location on Earth for a longer time, raising the temperature. (Again, hasn't been explained yet.)