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.

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:

<table>
<thead>
<tr>
<th>Season and date</th>
<th>Marker Color (on SunTracker)</th>
<th>Sun Angle at Midday (in degrees)</th>
<th>Length of Day (in hours)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Winter (December 21)</td>
<td>blue</td>
<td>24°</td>
<td>9 hours</td>
</tr>
<tr>
<td>Spring (March 21)</td>
<td>green</td>
<td>48°</td>
<td>12 hours</td>
</tr>
<tr>
<td>Summer (June 21)</td>
<td>red</td>
<td>71°</td>
<td>15 hours</td>
</tr>
<tr>
<td>Fall (September 21)</td>
<td>black</td>
<td>48°</td>
<td>12 hours</td>
</tr>
</tbody>
</table>

### 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.)