

Name _____

Bell _____ Date _____

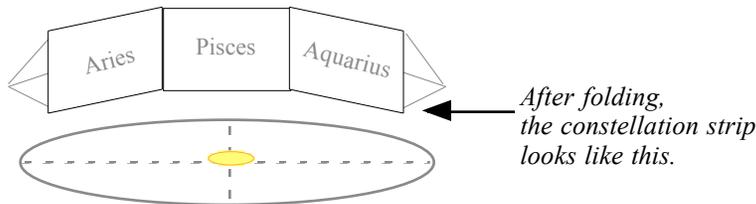
Seasons & Constellations

ACTIVITY: Seasons & Constellations

- * During autumn, we see the constellation Orion in the dark early morning sky. In winter, we see Orion in the night sky. In summer, we don't see Orion.
- * The stars are always up there in the sky. So, why do we only see certain stars and constellations during certain times of the year?
- * Construct this simple model which will help you understand the seasonal nature of the night sky:

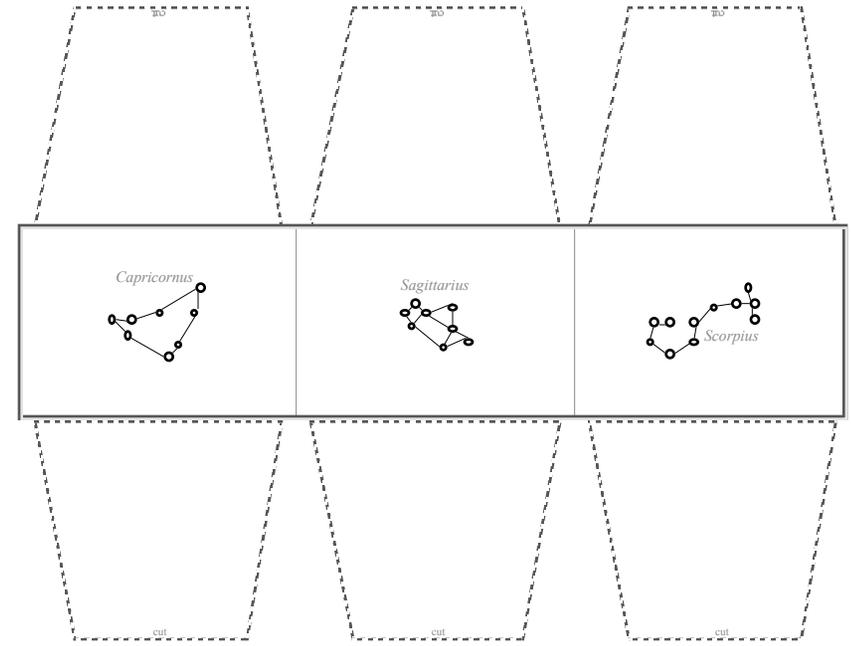
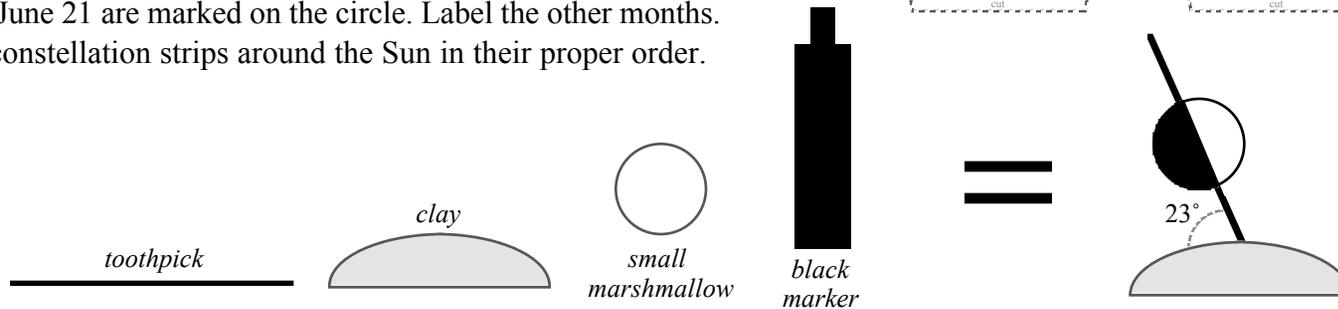
Step

- Use scissors to cut out each of the four constellation strips.
- Fold the paper flaps so that each constellation strip stands upright on its own
- Fold between each constellation, so that each strip curves in a circular shape.
- The constellations appear in the following monthly order:
1. Cancer 2. Leo 3. Virgo (Mar 21) 4. Libra 5. Scorpius 6. Sagittarius (June 21)
7. Capricornus 8. Aquarius 9. Pisces (Sept 21) 10. Aries 11. Taurus 12. Gemini (Dec 21)



Step

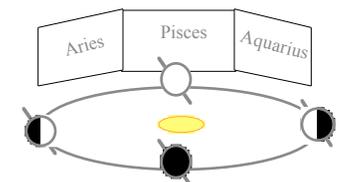
- Cut out the two half circle forms and tape them together. Color the Sun yellow.
- December 21 and June 21 are marked on the circle. Label the other months.
- Position the four constellation strips around the Sun in their proper order.



The constellation strip looks like this after cutting.

Step

- We will use a marshmallow to represent Earth. Use black marker to darken HALF of the marshmallow.
- The light half always faces toward the Sun, the dark half always faces away from the Sun.
- Stick a toothpick thru the marshmallow. Then, use clay to help tilt the marshmallow Earth at a 23° angle.
- Construct 4 of these marshmallow Earths, and place them around the Sun at Dec 21, Mar 21, Jun 21, & Sept 21.



* only 1 of 4 constellation strips is shown.

cut

cut

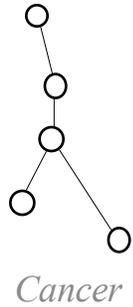
cut

The constellation *Gemini*
is seen in the night sky of winter.

fold

fold

fold

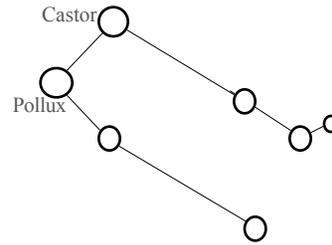


9 | hr

8 | hr

fold

Gemini



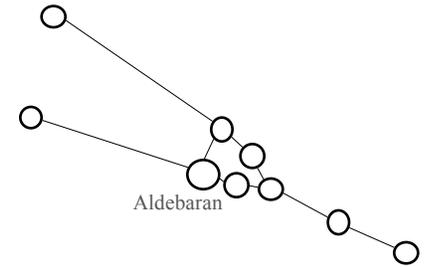
8 | hr

7 | hr

6 | hr

fold

Taurus



6 | hr

5 | hr

4 | hr

fold

cut

cut

cut

cut

cut

cut

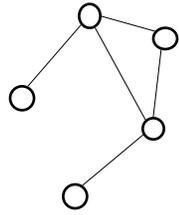
The constellation *Virgo* is seen in the night sky of *spring*.

fold

fold

fold

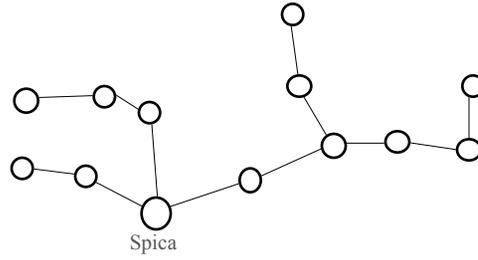
Libra



16 | hr

15 | hr

Virgo

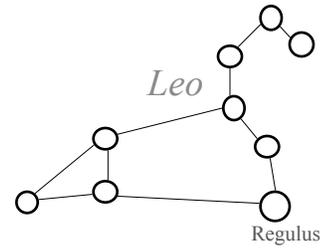


14 | hr

13 | hr

12 | hr

Leo



12 | hr

11 | hr

10 | hr

fold

fold

fold

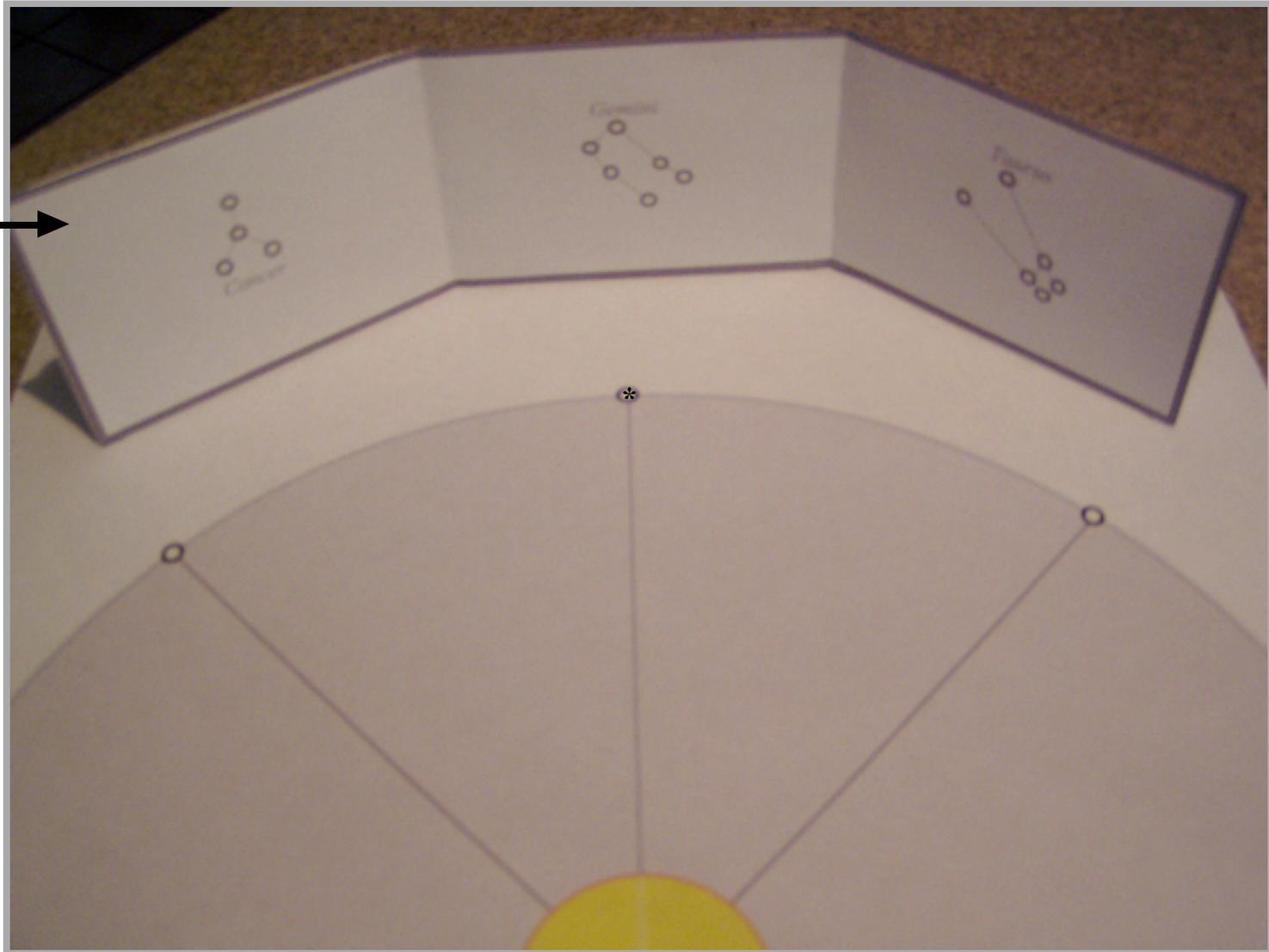
cut

cut

cut

After folding,
the constellation strip
looks like this.

There is no need to
tape or paste the
constellation strip.



* Constellation **GEMINI** is seen high in the midnight sky on December 21.
December 21 Earth position is marked (*) on the model.

cut

cut

cut

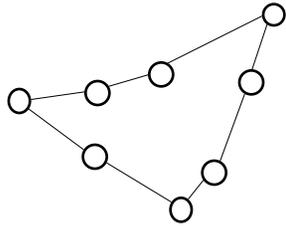
The constellation *Sagittarius* is seen in the night sky of *summer*.

fold

fold

fold

Capricornus



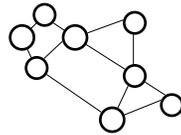
22 | hr

21 | hr

20 | hr

fold

Sagittarius

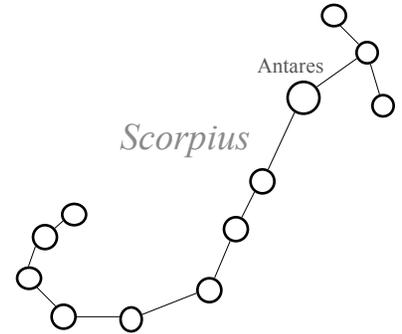


19 | hr

18 | hr

fold

Scorpius



Antares

18 | hr

17 | hr

16 | hr

fold

cut

cut

cut

cut

cut

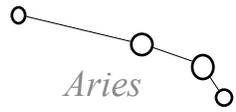
cut

The constellation *Pisces*
is seen in the night sky of *autumn*.

fold

fold

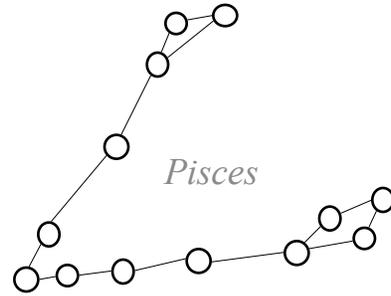
fold



3 | hr

2 | hr

fold



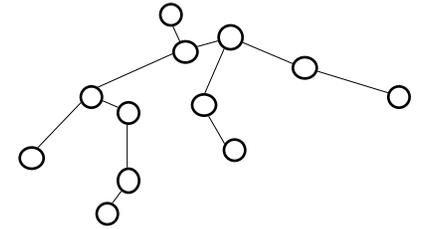
2 | hr

1 | hr

0 | hr

fold

Aquarius



23 | hr

22 | hr

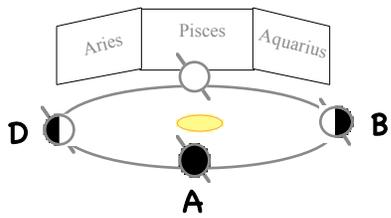
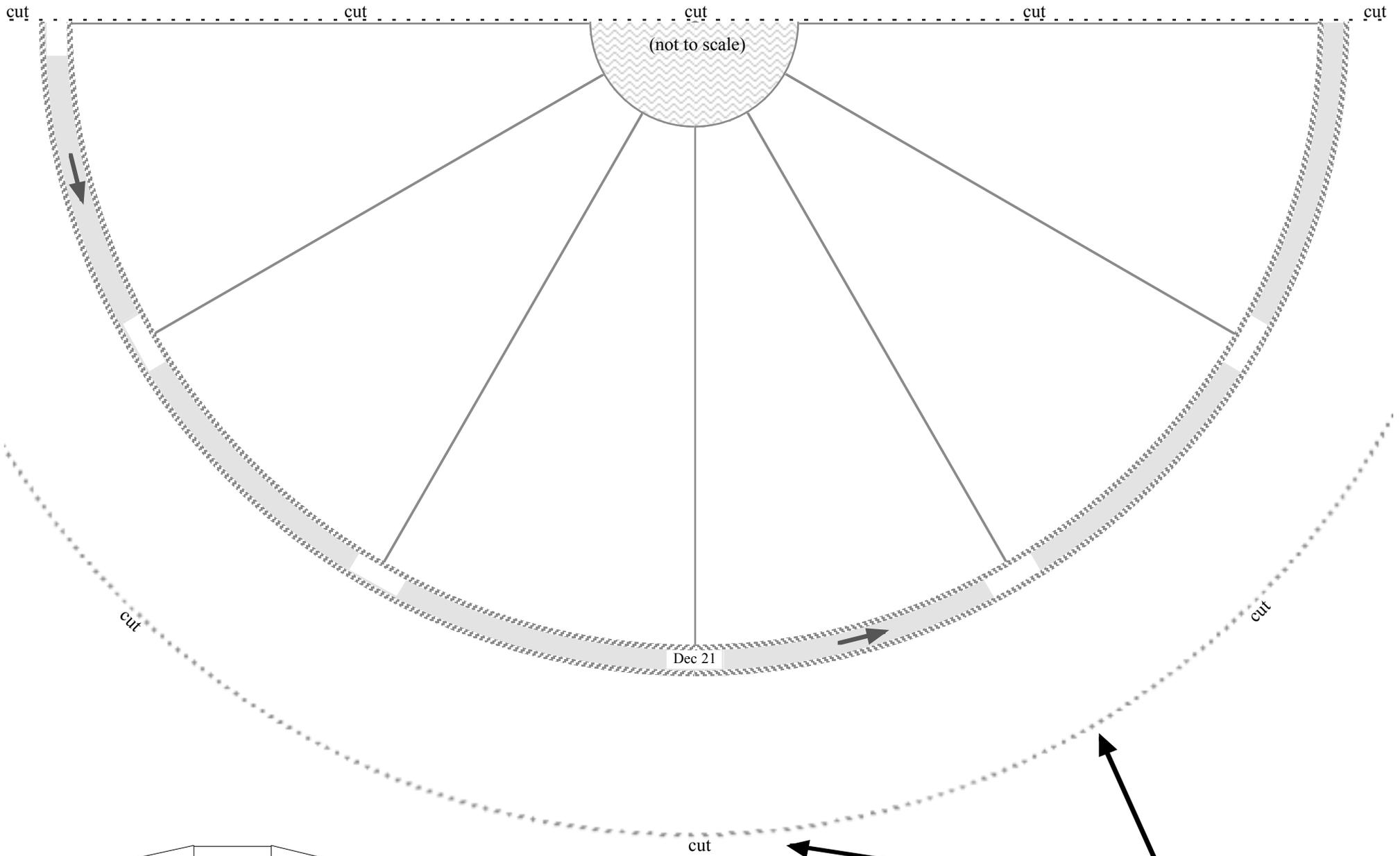
21 | hr

fold

cut

cut

cut



Tape / Glue other Sun half here

Tape / Glue other Sun half here

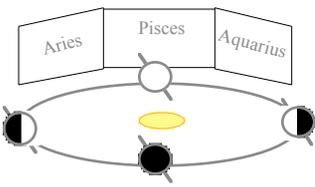
SUN

Jun 21

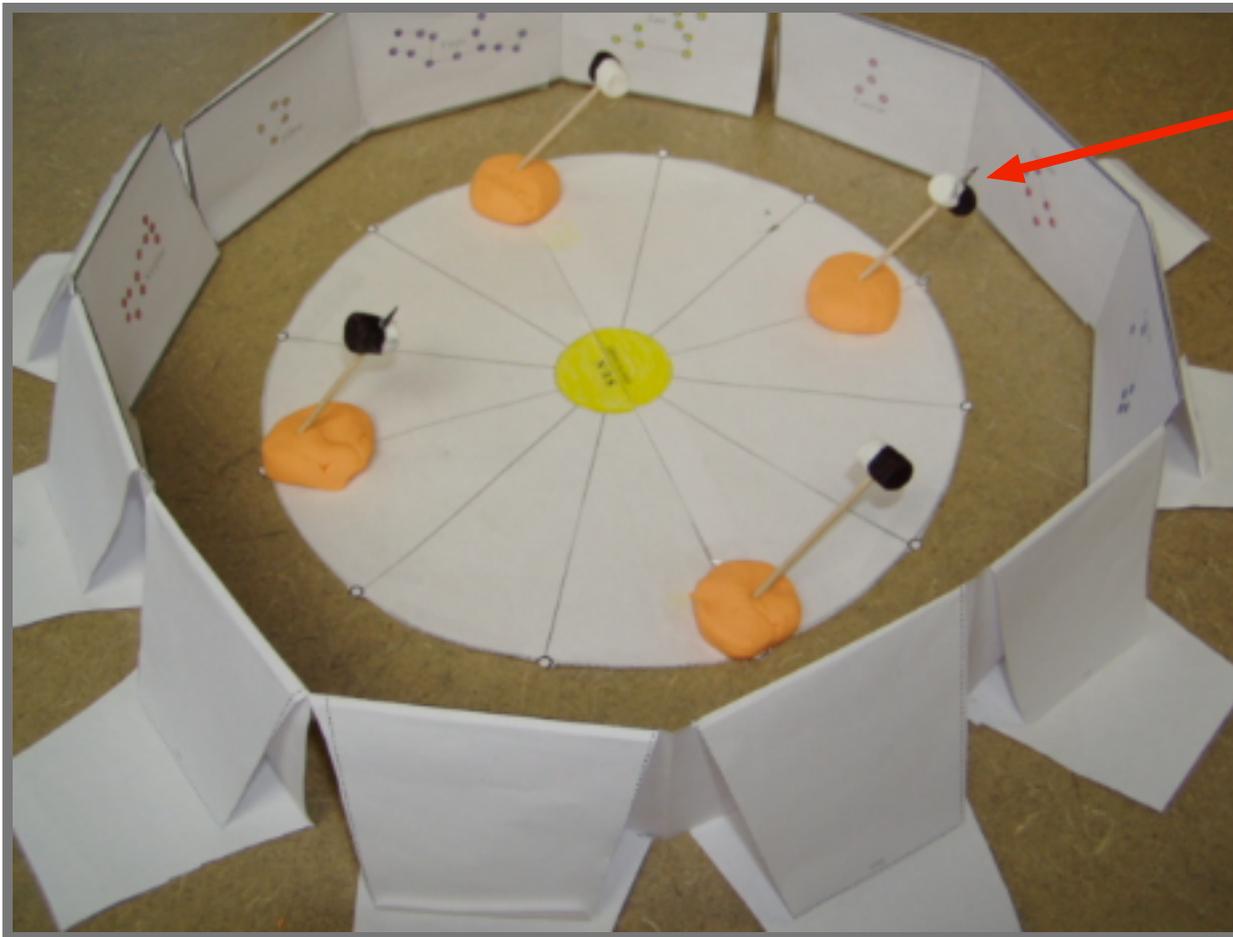
cut

cut

cut

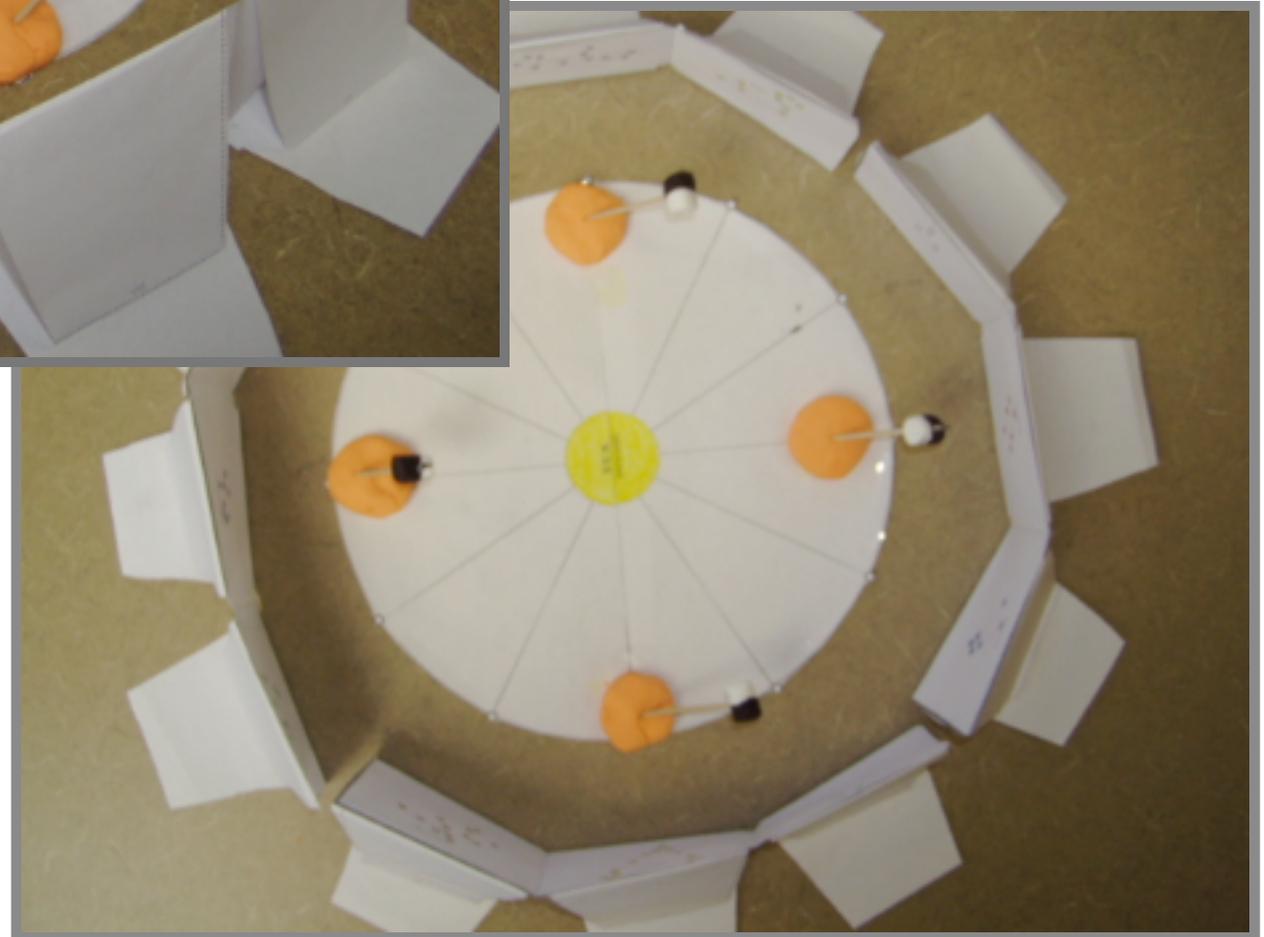


**The constellation strips are positioned along this cut edge.*



NOTE: No matter where it is in it's yearly orbit, the Earth always points toward the same point in space - toward the north star *Polaris*.

REMEMBER: In summer (begins Jun 21), the northern hemisphere is tipped toward the Sun. In winter, the northern hemisphere is tipped away from the Sun.



NOTE:

- Use clay or Play Dough to hold the toothpicks w/ Earth in place.
- The half of Earth facing the Sun is light. The half facing away from the Sun is dark.
- The constellation strips are free standing, and do not need to be taped or pasted.

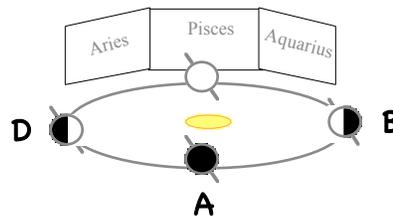
Teacher Notes:

* Many students have noticed Orion in the dark morning skies of autumn. Later in the year (winter), they recognize Orion in the night sky. They wonder “why”?

* Remember that the stars seen in the night sky are far beyond our Sun (the next-closest star is 4.3 ly). All of these stars are part of our Milky Way galaxy. The faint light from these distant stars is overpowered by our Sun’s light. So, we don’t see these stars during the day even though they are up there.

* We can see other nearby galaxies in the night sky. A few of these galaxies can be seen with the naked eye from very dark observing sites. M31, the Andromeda galaxy, is an example. However, our eyes cannot resolve individual stars in galaxies outside our Milky Way.

* As it orbits the Sun, going from one season to the next, Earth’s night-half faces a different part of the sky.



* At Earth position “A”, we would be **unable** to see Aries, Pisces, and Aquarius because they are in the daytime sky (behind the Sun). However, six months later (C), they will be in the night sky and will be visible to us.

* This is a great activity for astronomy students at any level. We hope you find it useful!

SURFFDOGGY