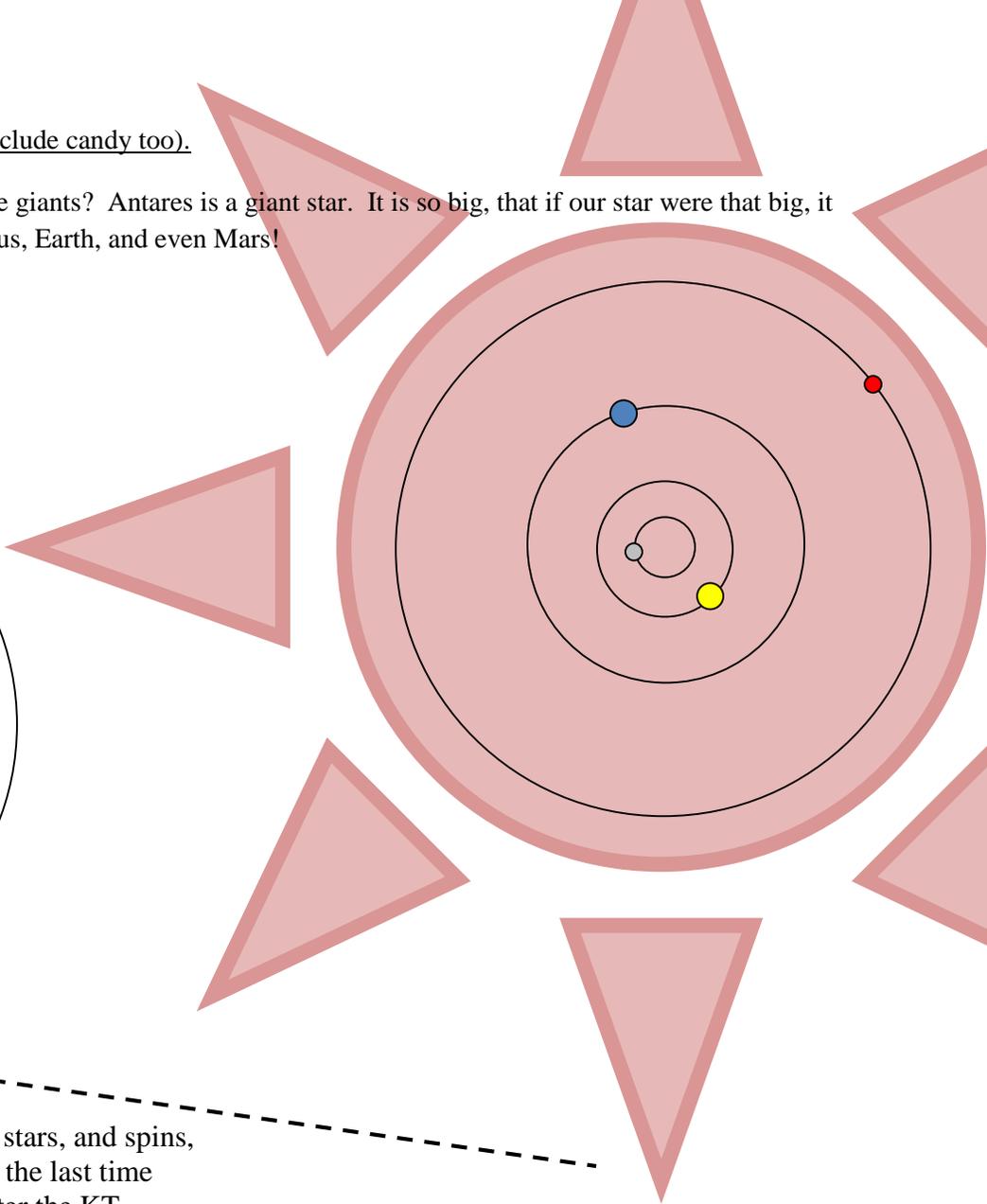
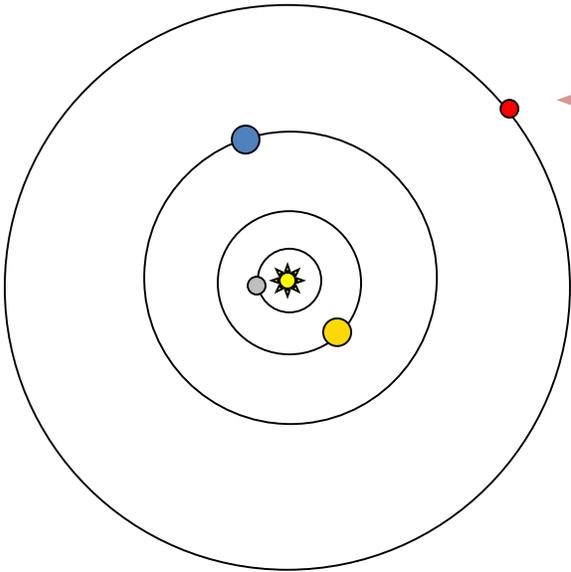
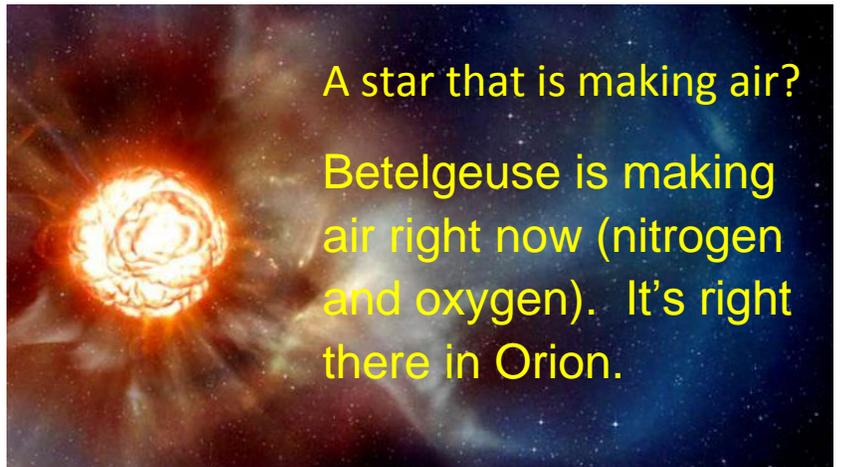


Cut-out Notes for Solstice Doors (we often include candy too).

Giant Stars! Did you know some stars are giants? Antares is a giant star. It is so big, that if our star were that big, it would swallow the planets Mercury, Venus, Earth, and even Mars!

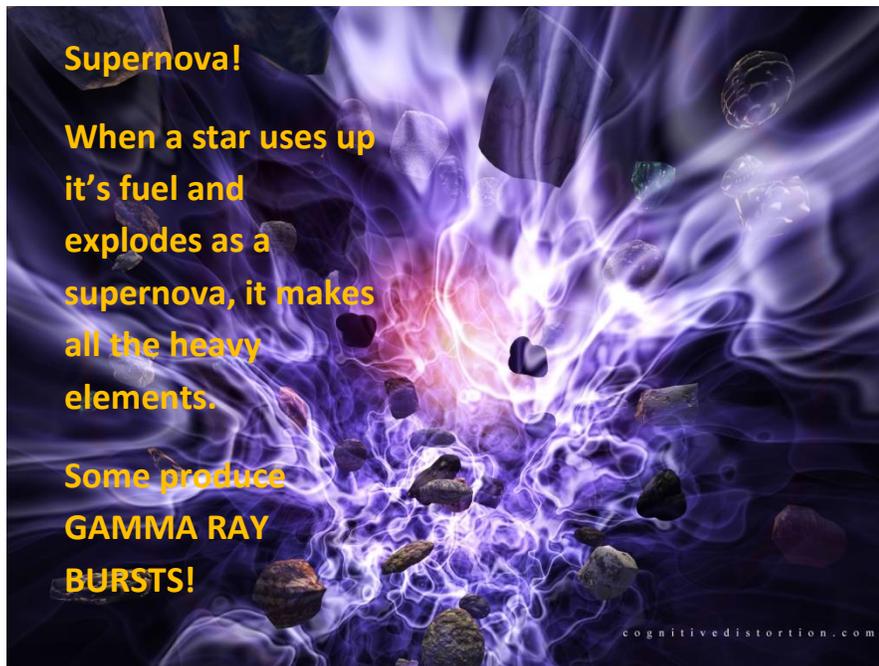


Our Galaxy, the Milky Way:
Our galaxy contains over 200 Billion stars, and spins,
Taking 50 million years to rotate. So the last time
We were here was 15 million years after the KT
Asteroid killed off most of the dinosaurs!
It has a central bar that rotates faster too!



Year Light started	Dist. (LY)	Star
<u>yr - 4</u> <u>2010</u>	4.4	<u>Alpha Centauri A</u>
<u>2010</u>	4.4	<u>Alpha Centauri B</u>
<u>2006</u>	8.6	<u>Sirius A</u>
<u>2004</u>	11	<u>Procyon</u>
<u>1998</u>	17	<u>Altair</u>
<u>1990</u>	25	<u>Vega</u>
<u>1990</u>	25	<u>Fomalhaut</u>
<u>1981</u>	34	<u>Pollux</u>
<u>1979</u>	36	<u>Denebola</u>
<u>1978</u>	37	<u>Arcturus</u>
<u>1973</u>	42	<u>Capella A</u>
<u>1973</u>	42	<u>Capella B</u>

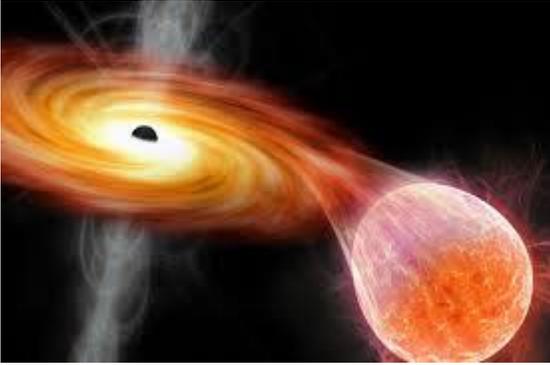
When did the light we see leave the surface of that star? Here is a list of nearby stars & years.



Supernova! Has anyone in our family seen a supernova? What about older Ancestors?



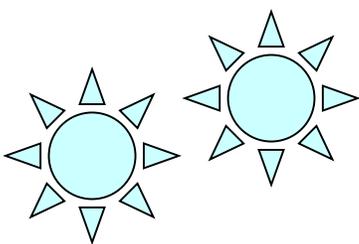
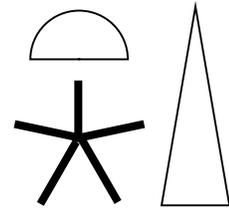
Supernova! Question – if the Sun had more mass, and went supernova right now, what would it be like here on Earth?



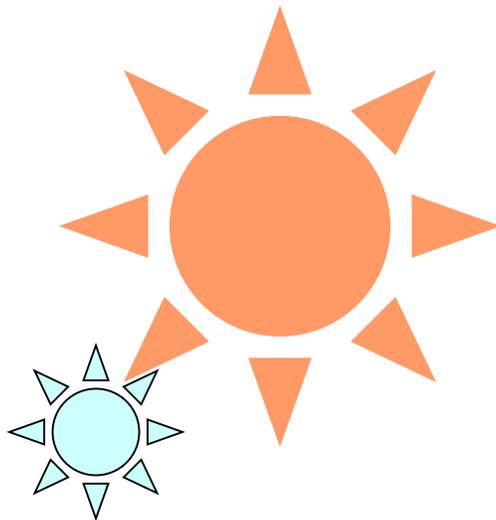
Black holes! There are monsters in the Cosmos, that can swallow entire stars, and destroy space itself! If you were inside one, looking out, would it look black outside?

Sirius, the Brightest Star in the Sky

Have you seen the star Sirius? It is the brightest star in the sky, and is visible on clear nights in the winter. The Sirius system formed around the time of the Permian extinction, just 250 million years ago, with two stars (Sirius A and Sirius B). By the time the dinosaurs began to evolve into many different species, Sirius B used up all its fuel and expanded into a red giant, then it lost much of its body, and shrank down to the white dwarf star it is today. The Egyptians believed Sirius was the god Sopdet, and wrote about Sirius with the hieroglyph below, and our Ancestors from many cultures noticed it. Mommy and Daddy will show you Sirius one of these nights!



250 mya



200 mya



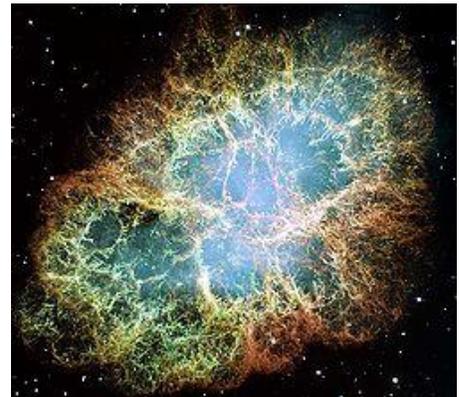
Today

Geminid Meteor Shower

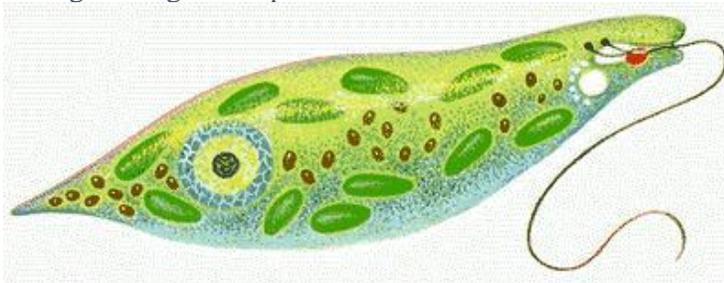
Did you know we are about to be enter the stream of meteors from an object called the Phaethon. It peaks on December 13th. Maybe we'll get a chance to see some Geminid meteors!

Crab Nebula

The Crab Nebula is all that remains of an exploded star. The supernova that made this nebula was seen nearly 1000 years ago, and was visible even in the daytime for weeks. Daddy can show you where it is in Taurus, but it can't be seen very well without a big telescope.



Are there any solar powered animals? Well, sort of. Euglena aren't animals, but they can move, and are solar powered, having incorporated green algae like plants have.



Have you seen the three stars in Orion's belt? They are the most prominent three stars in a row in the night sky, and they are slowly getting closer to the East horizon every night. Just below them is the Orion Nebula, where new stars are being born. It is easy to see in the sky now on clear nights.



Twinkle twinkle little star
Now I know just what you are
Making atoms in your core
Helium and many more
Twinkle twinkle little star
Now I know just what you are



Did you know that solar power plants are being built? Here is a new solar power plant being built in Spain, based on solar thermal power, where the sunlight boils water and that turns a generator.





The Andromeda Galaxy contains more stars (over 1,000,000,000,000) than our galaxy, and is rushing towards us, getting closer by about 70 miles every second. Mommy can point out where it is in the sky, though it can't be seen very well without a telescope.



A Black Hole – When large stars die, they form a black hole from the remains of their supernova explosion. Black holes exist in the centers of our galaxy as well as the Andromeda Galaxy. Even light cannot escape the gravity of a black hole.



Ice crystals in the air sometimes make a wheel of light appear around the Sun – a lot like our Wheel of the Year. The bright spots near the horizon are Sun Dogs, and are most often seen in the wintertime. How lucky we are to be able to see the wonders of wintertime!

Handouts for the moment of the Solstice Sunrise (the simple ones are good for kids)

Drew Dellinger's poem "The Sun" from "Love Letter to the Milky Way" is good too.

the sun returns again today,
we greet the sun's first morning ray,
we sing and celebrate the light,
the sun's born in the longest night.
(from circle 'round)

O Newborn Sun of love and light
Rise quickly now, rise high and bright.
O Glorious Sun of light and love
you are far beyond the skies above.

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