Name:_____

Star Gazing

Part 1

What do you know about stars? _____

_____

_____

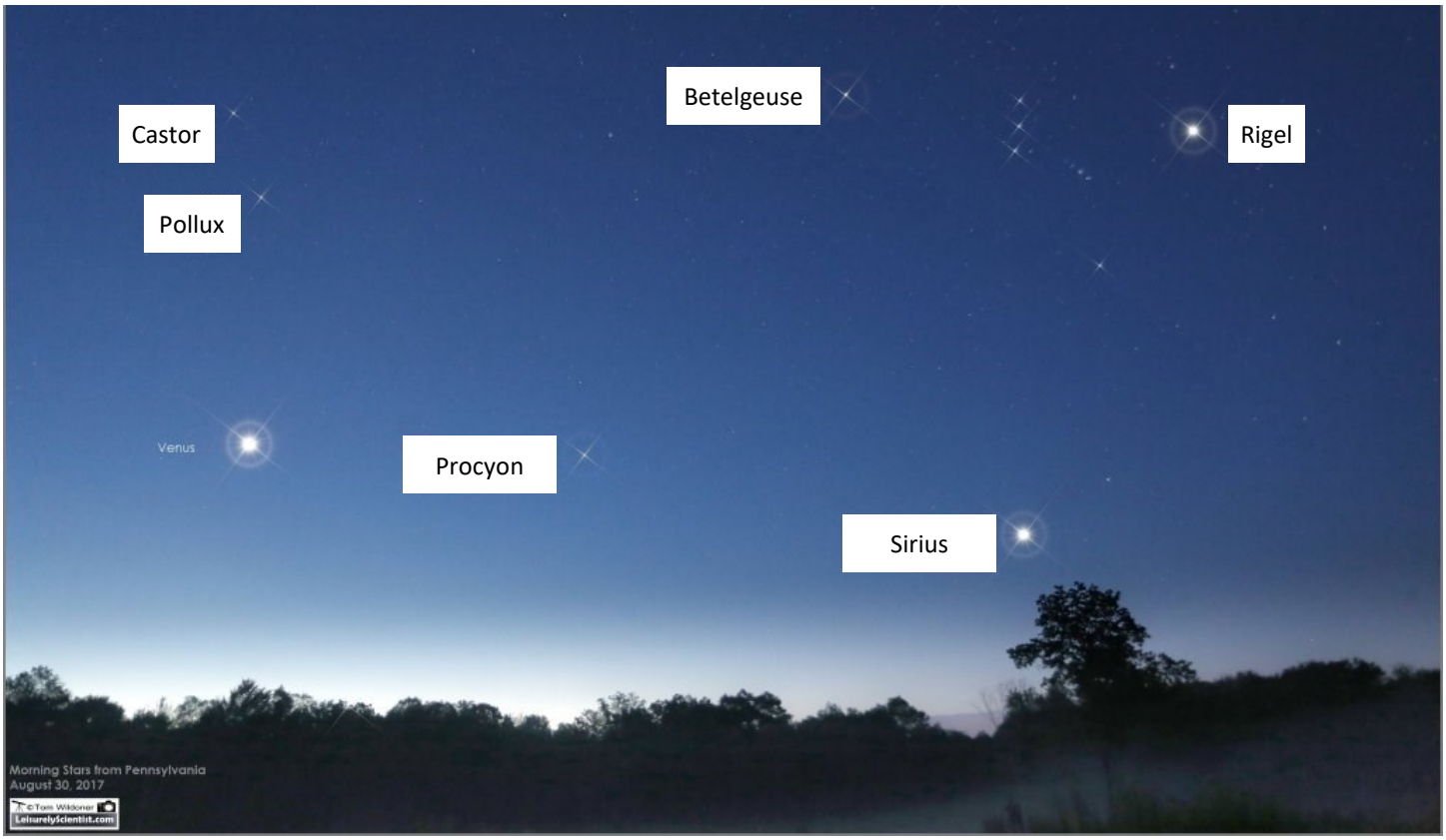
Is the Sun a star?_____

_____

Why do we only see some stars at night?_____

_____

_____



The picture above shows the stars as seen from Pennsylvania in the summer. Put the labeled stars in order from dimmest to brightest.

Dimmest Star:_____

_____

_____

_____

_____

Brightest Star:_____

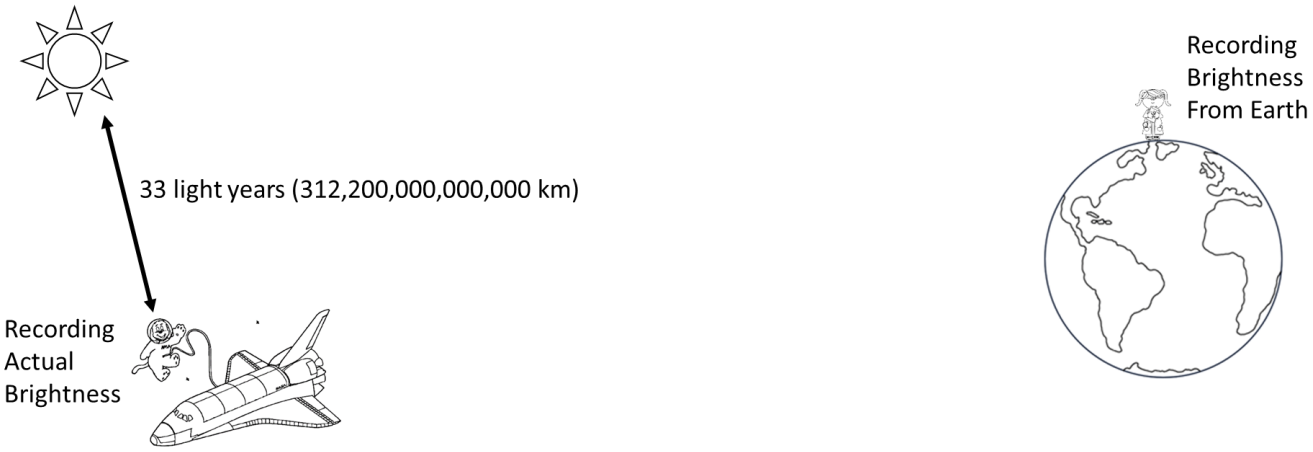
Using the data table below, write the brightness from Earth next to your list of brightest to dimmest star.

What do you notice about the brightness from Earth's numbers compared to your order?
In general_____

_____

Put the star cards in order from dimmest to brightest according to the brightness from Earth. With a wet erase pen label the star cards from **1 being the dimmest and 7 being the brightest from Earth**. Also write brightest on the brightest star and dimmest on the dimmest star.

System Name	Brightness From Earth*	Actual Brightness*	Number of Stars in System	Systems Distance From Earth (light years)*
Sun	26.7	-4.2	1	0.000016
Castor	-1.9	-1.0	6	51
Pollux	-1.1	-1.1	1	34
Procyon	-0.3	-2.6	1	11
Betelgeuse	-0.5	5.9	1	724
Sirius	1.5	-1.4	2	9
Rigel	-0.1	7.8	3-5 Scientists know of at least three but think there are more.	860
For systems with more than one star, the information for the dominant star is given.				



Light Year: The distance that light can travel in one year (9,490,700,000,000 km)

What is the difference between brightness from Earth and actual brightness, use the words apparent and actual brightness in your answer?_____

_____

_____

_____

_____

Part 2

Actual Brightness

Order the cards from dimmest to brightest actual brightness. Then using the ordered cards, write down the order of the brightness from Earth's numbers (the numbers that you wrote on the cards earlier).

_____ _____ _____ _____ _____ _____ _____

Dimmest Actual Brightness

Brightest Actual Brightness

A person claims that the brighter the actual brightness, the brighter the star will appear to be in the sky from Earth. Circle if you agree or disagree with this claim? Then use data to back up your argument.

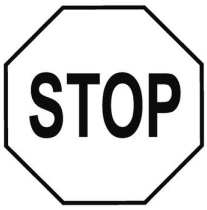
I agree / disagree with the person because _____

_____

_____

_____

_____



Share your answer to the previous question with the member of your group. Vote on which answer is the "best." Write this answer on poster paper to share with the class.

Number of Stars

Go outside and watch the teacher demo.

How can a "star" be made up of multiple stars?_____

_____

_____

_____

_____

Draw a Picture of the Stars from a Distance

Draw a Picture of the Stars Close Up

Order the cards from least stars in the system to most stars in the system. Then using the ordered cards, write down the order of the brightness from Earth's numbers (the numbers that you wrote on the cards earlier). Put a circle around all the numbers that have the same number of stars in their systems.

_____ _____ _____ _____ _____ _____ _____

Least Stars Most Stars

A person claims that the more stars that make up the system, the brighter the star will appear to be in the sky from Earth. Do you agree or disagree with this claim? Make sure that you use data to back up your argument.

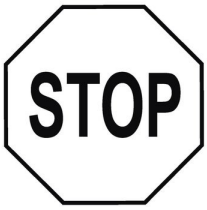
I agree / disagree with the person because _____

_____

_____

_____

_____



Share your answer to the previous question with the member of your group. Vote on which answer is the "best." Write this answer on poster paper to share with the class.

Part 3

Distance

Order the cards from farthest to closest from Earth. Then using the ordered cards write down the order of the brightness from Earth numbers (the numbers that you wrote on the cards earlier).

_____ _____ _____ _____ _____ _____ _____

Farthest Closest

A person claims that the closer the star, the brighter the star will appear to be in the sky from Earth. Do you agree or disagree with this claim? Make sure that you use data to back up your argument.

I agree / disagree with the person because _____

_____

_____

_____

_____

Share your answer to the previous question with the member of your group. Vote on which answer is the "best." Write this answer on poster paper to share with the class.

Final Analysis

As a class discuss the following

- Is the brightness from Earth solely dependent on actual brightness, number of stars, or distance from Earth?
- What data would you need to get to show how each of these factors affect the brightness from Earth?

Scientific Finding: The number of stars only a small effect on the brightness of a star as seen from Earth. Therefore, we will assume this factor does not affect the brightness from Earth.

*Does **actual brightness** affect the brightness from Earth?*

To study this what must be true of the distance and number of stars?

_____

_____

_____

Find the two stars that have the most similar distance from the Earth.

Star Name:	_____	_____
Distance:	_____	_____
Actual Brightness:	_____	_____
Brightness from Earth	_____	_____

What is the difference in distance from Earth between these two stars?_____

Do you think that actual brightness affects how bright the star appears to be from Earth and why?

_____

_____

_____

_____

As the actual brightness increases, the brightness from Earth increases / decreases.

How actual brightness affects the brightness from Earth and how you know this.

*Does **distance** affect the brightness from Earth?*

To study this what must be true of the actual brightness and number of stars?

_____

_____

_____

Star Name:	_____	_____
Distance:	_____	_____
Actual Brightness:	_____	_____
Brightness from Earth	_____	_____

What is the difference in actual brightness between these two stars?_____

Do you think that distance from Earth affects how bright the star appears to be from Earth and why?

_____

_____

_____

As the distance from Earth increases, the brightness from Earth increases / decreases.

How distance affects the brightness from Earth and how you know this.

What is the biggest factor that explains why the Sun appears so much brighter than any other star from Earth?_____

_____

_____

_____

_____

_____