Stars

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Target Grade: 2nd grade

Time Required: 95 minutes

Standards:

S2E1. Obtain, evaluate & communicate information about stars having different sizes

A. Ask questions to describe the physical attributes of stars

Lesson Objectives:

Students will:

- Identify the different types of stars in the universe.
- Will describe the attributes of different stars.
- Will construct a model of a star's life cycle.

Central Focus:

Even though the second-grade standard is just based on learning about stars and their attributes, students will extend their knowledge by applying what they have learned to construct a model of the life cycle of stars.

Background Information:

Before beginning this lesson, the teacher will read the story Stars by Steve Tomecek and Sachiko Yoshikawa. This will help build a foundation for the activity. Students should also be aware of the vocabulary words: Inferring, Synthesizing, and questioning.

Materials

- Stars by Steve Tomecek
- I-pad

- Laptops
- Styrofoam balls
- T-chart
- White copy paper
- Markers
- Scissors
- Glue
- Black poster board
- Copy of star life cycle
- Sheet with arrows
- Sheet with names of stars
- pencils

Instruction

Introduction (Whole group, 15 minutes):

Step 1: The teacher will engage the students by saying, "Think about our universe. What do you know about our universe? Then, think about stars. Why do you think stars are important?". Allow some quiet thinking time and have students turn and talk to a neighbor. Students can even jot their ideas before sharing. Pass out sticky notes to each student and instruct them to wait for further instructions. They will write on their sticky notes while the teacher reads the story and will be placed on the provided T-chart at the appropriate time.

Step 2, **Inferring**: Explain that I have a book to share. Show the cover of the book, Stars. Then introduce the author. Ask students, "What are you thinking this story is about? Why do you think so?".

Step 3, **Synthesizing**: Begin to read the book to the students and stop after page 4. Ask the students, "What are you thinking this text is about?". While reading, stop at key points and think aloud to the class.

Step 4, **Questioning**: Make sure the T-chart is in visible view as the teacher reads the story (see materials page for example). The T-chart will have "What I Know About Stars," on one side and, "Questions I Have About Stars," on the other. Students will write on their sticky notes as the teacher reads the book. While reading, the teacher and students will discuss what is already know about stars and answer questions that relate to stars.

Step 5, **Synthesizing**: The teacher will ask the students, "Now since I have read the text, what wonderings do you have about stars. What are some facts that you have learned about stars? Did you learn anything new?". Students responses will be placed on sticky notes and added to the T-Chart.

Activity:

Step 6, **prior to this lesson**: In advance the teacher will locate these websites:

http://www.kidsastronomy.com/stars.htm, https://www.slideshare.net/winga1sm/star-powerpoint-3308182

The teacher will place websites on students I-pads and student laptops.

Step 7, **separate students into groups of 4**: Explain to students that they will be researching facts about different types of stars using the two different websites. Each group will be given attachment A. As the students explore the websites, the groups will compose facts about each star and write their findings on attachment A (Groups are also required to illustrate each star on Attachment A).

Step 8, **bring class back together to share**: Groups will then sit on the floor and share with the class several attributes that they learned about each star. After students have researched and written facts about the different types of stars. The teacher will clear up/explain any misconceptions that the students have about stars. The teacher will also ask questions such as:

Questions are as followed:

- What did you notice about the stars you researched?
- How are stars different?
- How are stars the same?
- What is a star?
- Is our sun a star?
- How is our sun different from the other stars?
- What other interesting facts did you learn about stars?

Extended Stem Activity (3o minutes):

Groups will be asked to create a model of the life cycle of a star.

Directions are as followed:

Groups will be given 7 minutes to determine who in the group will have the task of either drawing, coloring, pasting, cutting, and gluing. They will also need to decide how they will create their title, “Life Cycle of a Star”. Groups will either type the title using Microsoft Word or groups can create the title using one white sheet of copying paper.

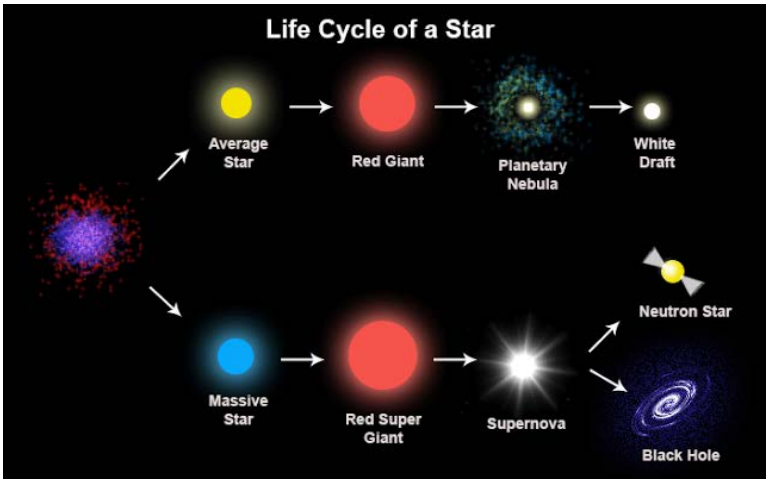
Remind the students that all students in each group must have a task to complete the project. They will be instructed to raise their hand when they are ready, and the teacher will give each group their supplies.

Groups will be given 1 black poster board, 6 Styrofoam balls of different sizes. (1 extra-large ball, 1 large Styrofoam ball, 3 medium sized Styrofoam balls and 1 small Styrofoam ball, 1 sheet with red arrows, 1 sheet with labels (names of stars), 5 white sheets of copy paper (see attachment B for the labels and arrows), and a diagram of the life cycle of a star.

Each group will use markers to color the 6 Styrofoam balls. The extra-large Styrofoam ball will be colored red. It will represent the red super giant star. The large Styrofoam ball will be colored red. It will represent the red giant star. The three-medium sized Styrofoam balls will be colored yellow and blue. These will represent the blue massive star and the yellow dwarf star. The white dwarf star will not be colored because the color is white. The small Styrofoam ball will be colored black. It will represent the black dwarf star.

Groups will use the 4 white sheets of paper to draw the stellar and planetary nebula, supernova, neutron star and black hole.

Each group will be given this diagram, Attachment C to use as a visual as they create the model of the life cycle of a star.



- Groups will paste each of the six Styrofoam balls and their illustrations on the black poster board. Groups will also paste the red arrows to represent the correct order of the star's life cycle.
- Students will cut out the labels and paste the labels correctly underneath each star.
- Students will label the poster board "Life Cycle of a Star". Students can either create the title by writing it on a white sheet of paper and pasting it on their poster board, or groups can use the computer to type, print the title, and paste it on their poster board.

Closing:

Once groups have completed all of their task, hang the posters in the classrooms. As students are sitting on the floor, the teacher will select 1-2 students to share their assessment with the class. Then students will turn and talk to a partner and tell their partner what they learned about stars.

Differentiation

Students will work in heterogeneous groups to complete all group activities.

ESOL learners will draw a picture of their favorite star and use sentence frames to name the star they drew and write two attributes about the star they drew. "This is the name of the star that I drew. It is... This is one fact I learned about this star. It is.... This is another fact I learned about this star. It is..."

Gifted students will compose an informational report about stars and their attributes.

Assessment

Formative:

Ticket out the door: Students will create a summary sheet. See Attachment D.

Each student will:

- Illustrate a picture of their favorite star.
- Write the name of the star they drew
- Write two attributes about the star they drew.

T-Chart	
What I Know About Stars	What I Want to Know About Stars

Attachment B

STELLAR NEBULA

YELLOW DWARF

PLANETARY NEBULA

SUPER NOVA

WHITE DWARF

NEUTRON STAR

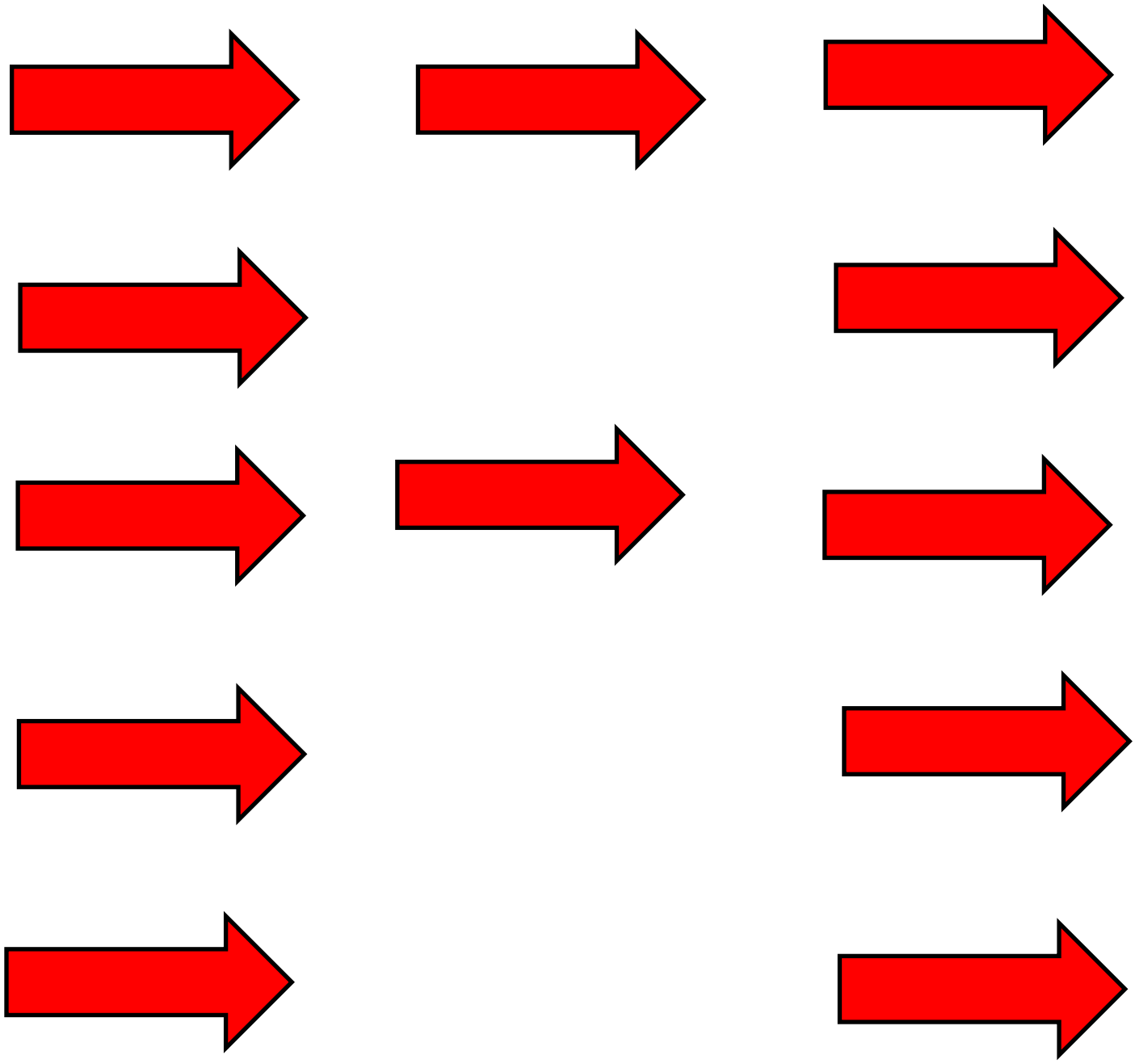
BLACK DWARF

BLACK HOLE

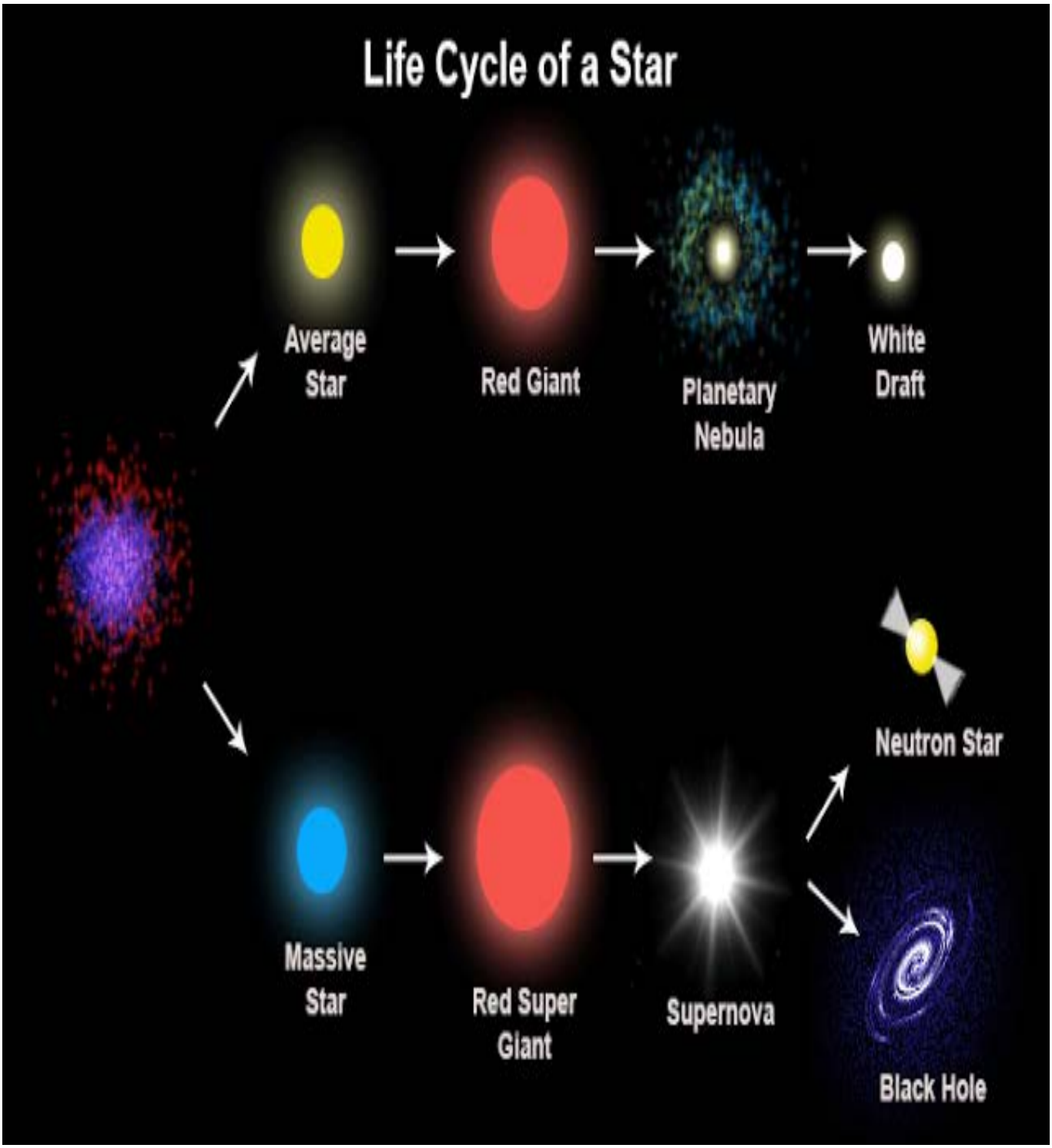
BLUE MASSIVE STAR

RED GIANT

RED SUPER GIANT



Attachment C



Attachment D

Assessment

Name_____ **Date**_____

Illustrate a picture of your favorite star.

Write the name of the star you illustrated.

_____
_____
_____

Write two attributes about the star you illustrated.

_____
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