Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Period: \_\_\_\_\_

Virtual Field Trip (VFT) To The Beginning of Time

General Directions: You are about to take trip to the beginning of time. For this field trip you will not be constrained by space or time. Travel to your destinations by using the links on this document. Go to the physical science website <https://www.washoeschools.net/dmenicucci>. As you travel to each destination, be sure to read directions carefully and click on the links to go to the websites. Answer any questions about the website or pick up your site souvenirs as directed. Occasionally, you will be given an opportunity to search for more information if you feel the need. Make sure that you go only to relevant sites. Anyone caught at an inappropriate site will be given an automatic zero for this assignment. Your teacher is the final judge on relevance. This assignment is worth 20 points except for the 2 site souvenirs (total 15 pts), You will finish the souvenirs for homework if you need extra time. 35 points possible.

Before starting your journey through time you must understand what a red shift is. While you are still here on earth, go to this website to see what it’s all about. Answer the questions as you read the article.

[Doppler Shift](https://www.exploratorium.edu/origins/hubble/tools/doppler.html) **OR**  <https://www.exploratorium.edu/origins/hubble/tools/doppler.html>

1. What is the “Doppler Shift”?
2. What is “blueshifted”?
3. What is “redshifted”?
4. What happens to the color of light as stars move closer to Earth?

The exploratorium also has some thoughts about the universe. On the right is a picture is that has a timeline of events that happened after the big bang. (You can click on it to enlarge if you want to, but the questions are from the article.) Remember, this is a theory which means it is a generally acceptable scientific explanation for a scientific principle. Here is the link:

 [The Big Bang](http://www.exploratorium.edu/origins/cern/ideas/bang.html) OR <http://www.exploratorium.edu/origins/cern/ideas/bang.html>

 5. Approximately how old is the universe according to the article?

1. Scroll down to the section titled “How do we know the Big Bang Happened?” Name the first two discoveries that tend to support the theory.

a.

b.

You are ready to time travel. Now that you know what the Big Bang is about, NOVA online will take you from the beginning of time and into the future. This is the ultimate time traveling experience. When you arrive at this site, there is picture on the left. Underneath the picture is a small link that says “Non-Interactive version”. Click on “Non-Interactive version” link. Read about each picture beginning with “The Big Bang” and continue until you have answered the questions below.

 <https://wonderopolis.org/wonder/what-caused-the-big-bang>

1. What do scientists think caused the big bang?
2. What is the singularity?
3. What is the big bounce?
4. What is a multiverse?

It’s time to take a side trip to visit a supernova. Go to this site, launch the interactive, read the paragraphs and answer the questions. Create the site souvenir later. Your goal today is to answer the questions first.

[The Supernova](http://www.pbs.org/wgbh/nova/universe/supernova.html) <http://www.pbs.org/wgbh/nova/universe/supernova.html>

1. What is happening to the expansion rate of the universe?
2. Underneath the article is a place to explore supernova, type Ia. Click on the “non-flash version” under the article. You will need this pic to create a site souvenir after answering questions 12 & 13. Click through all the pages (they show all the stages of type 1A). There are 6 pages. Why is this type of supernova so bright?
3. From the last page (page 6) of type Ia, click on the “Birth of a Supernova” link at the bottom. You will be back where you started. Scroll and click on supernova type II, non-flash version. Read and scroll through the pages. There are 11 total pages. How is this supernova different from type Ia?

**Site souvenir:** Draw any stage of supernova type Ia. Your drawing must clearly show what stage the supernova is at. You should create the souvenir after your journey & submit on a separate paper with the other souvenir.

Supernova site souvenir rubric:

**1 point\_\_\_\_\_\_\_\_ Picture is correctly drawn**

**1 point\_\_\_\_\_\_\_\_ Parts are correctly labeled**

**1 point\_\_\_\_\_\_\_\_ Parts are correctly and appropriately placed**

**1 point\_\_\_\_\_\_\_\_ The stage is apparent**

**1 point\_\_\_\_\_\_\_\_ Picture is colored**

You have spent the day discovering the supernova. It is time to prepare to continue your journey to the distant past and into the future. Research to find the answers to the following 3 questions on the next page.

1. What’s the name of our galaxy?
2. What do scientists think will be the fate of our galaxy?
3. (2 pts) Describe the death of the universe according to the current theory.

It is time to go back to the beginning. NASA will take you there. Go to the following link. Scroll down toward the bottom of the page after “Release Videos” and click on “Big Bang Animation”. Play the video and answer the questions. Skip through any commercial that might appear at the beginning.

[Big Bang Animation (youtube.com)](https://www.youtube.com/watch?v=McYJOYoeCcA)

1. What is the first thing you notice at the beginning of the video?
2. What is the size of the beginning of time on the video compared to the end of the video?
3. What do you think the temperature was like at the beginning of time?

**SITE SOUVENIR**

At this site you are going to journal your thoughts about this trip. You must use complete sentences. You must write about six different things you have learned about the beginning of time. You must include 2 additional sentences concerning your thoughts and feelings. This souvenir will have a total of at least 8 sentences. You may write more if you like. You must submit the site souvenirs separately from the computer questions.

Back to the Beginning site souvenir rubric:

**6 points \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ 6 things you have learned from Back to the Beginning Site**

**2 points \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ 2 thoughts and feelings about the Back to Beginning Site**

**2 points \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ used at least 8 complete clearly legible sentences**

**10 points possible**

**up to 3 extra credit points for especially well written, well thought out souvenir with a picture**