Cosmic Times Keyword Match Pre-test
Match the keywords and phrases in the left column with their definitions in the right column.

| 1. ___ Einstein’s General Theory of Relativity | A. A shift in the observed spectrum of an object due to its motion |
| 2. ___ Dark energy | B. Stars that light up suddenly to great brightness and then fade away |
| 3. ___ Cosmic microwave background | C. Rapid expansion of the Universe after the Big Bang |
| 4. ___ John Mather | D. Galaxies which are farther away are moving away faster |
| 5. ___ Supernovae | E. Matter whose existence is known only through its gravitational pull on other |
| 6. ___ Big bang | F. The light from the early Universe |
| 7. ___ Hubble’s Law | G. COBE satellite |
| 8. ___ Red shift | H. Explains how gravity works |
| 9. ___ Inflation | I. Leading theory of the origin of the Universe |
| 10. ___ Dark matter | J. Hypothesized form of energy that causes the expansion of the Universe |
KCLWM Chart
Fill out this chart as your teacher instructs. Use additional sheets as necessary.

Understanding the Universe

K  What I think I know

C  What I confirmed

L  What I have learned

W  What I wonder

M  What misconceptions

Big Question
How and why has our understanding of the Universe changed over time?
Cosmic Times Post-test

Circle the correct answer.

1. What immediately followed the Big Bang?
   A. Microwave Radiation  
   B. Dark Energy  
   C. Dark Matter  
   D. Inflation

2. What phenomenon is used to measure the expansion of the Universe?
   A. Gravity  
   B. Redshift  
   C. Inflation  
   D. Blueshift

3. The theory of relativity explains:
   A. Space & Time  
   B. Gravity  
   C. Energy & Mass  
   D. All of the above

4. Which of the following defines “cosmic microwave background”?
   A. radiation left over by the Big Bang  
   B. rapid expansion of the Universe  
   C. a form of matter  
   D. none of the above

5. Who first mapped the cosmic microwave background?
   A. Penzias & Wilson  
   B. Albert Einstein  
   C. John Mather  
   D. Alan Guth

6. Who originated the inflationary Universe theory?
   A. Vera Rubens  
   B. Alan Guth  
   C. Penzias & Wilson  
   D. John Mather

7. Who was Albert Einstein?
   A. Chemist  
   B. Anthropologist  
   C. Astronomer  
   D. Theoretical Physicist

8. What is the difference between dark energy and dark matter?
   A. One is a hypothesized form of energy, the other is matter detected by its effect on other matter.  
   B. One is a theory of gravity, the other a theory of energy  
   C. One is a light source, the other radiation.  
   D. There is no difference

9. What do we call stars that get very bright suddenly, then fade away?
   A. Red Dwarfs  
   B. Blue Giants  
   C. Neutron Stars  
   D. Supernovae

10. In what year of the 6 Cosmic Times Posters was the Big Bang first mentioned?
    A. 1919  
    B. 1929  
    C. 1955  
    D. 1965  
    E. 1993  
    F. 2006
Universe Mash-up Project Overview and Planning
You will be creating a media mash-up project about how we understand our Universe using NASA’s Cosmic Times for inspiration. You’ll be using existing video clips, audio clips, and images from the Universe Mash-up media archive to explore an aspect of the Cosmic Times materials.

This worksheet gives an overview of the video production process and includes a checklist for your project to help you keep on track. Your teacher will give you additional resources as you work your way through the production process.

Video production process
There are three main phases to making a video: pre-production, production and post-production.

### Phase 1: Pre-Production
Pre-production is the planning phase of the project. These steps happen before the camera is turned on or the video-editing software is fired up. The steps should be followed in order.

- **Choose a topic**
- **Research the topic**
- **Write a treatment script** – outline the main points and flow
- **Sketch out a storyboard** – a visual flow of the scenes
- **Write the final script**

### Phase 2: Production
Production is the process of creating all pieces of the final video. These steps can happen in any order.

- **Produce video footage**
- **Create graphics** such as images, photos, or slides
- **Record voice-overs** as required by the final script
- **Choose music** for the background as appropriate
Phase 3: Post-Production
In post-production, the final video comes together.

- **Edit** video clips and footage and place the clips in order
- **Add audio** tracks to the video
- **Insert transitions, titles and music** to the final video
- **Encode** video and output in a format that others can view
- **Share** your video with your class, friends, family, and the world!

**Project checklist and due dates**

<table>
<thead>
<tr>
<th>Due date</th>
<th>Done?</th>
<th>Task Description</th>
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<tbody>
<tr>
<td></td>
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<td>Pick topic and develop essential question</td>
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<td>Research (take notes, record citations, find media)</td>
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<td></td>
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<td>Write treatment script</td>
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<td>Make storyboard</td>
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<td>Write final script</td>
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<td>Download media to use</td>
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<td>Produce additional footage and graphics, if needed</td>
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<td>Record narration</td>
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<td></td>
<td>Create title, credits graphics</td>
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<td></td>
<td></td>
<td>Insert all pieces into presentation software and edit</td>
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<td></td>
<td>Score project using rubric and score sheet</td>
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<td>Turn in to instructor</td>
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</tbody>
</table>

**Guidelines for video**

- Your final video should be 3-5 minutes long and should be accurate and engaging, using the part of the Cosmic Times story that most interests you.
- You will be graded using the Universe Mash-up Project Grading Rubric.
- Make sure the images, videos, and audio you select help tell your story, and make sure to give proper credit for all of the media you use.
- Use only copyright-free materials; if you want to use media that has a copyright, you will need to get permission to use it from the person who holds the copyright.
- Stay with visuals as long as it is interesting – too short a time will make your video seem choppy, while too long will make it drag.
- Make sure your story flows with transitions between different visuals and narration connecting different ideas.
- Speak with a strong, clear voice when narrating.
## Universe Mash-up Grading Rubric

<table>
<thead>
<tr>
<th>Category</th>
<th>4 points</th>
<th>3 points</th>
<th>2 points</th>
<th>1 point</th>
<th>Score</th>
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</thead>
<tbody>
<tr>
<td><strong>Content</strong></td>
<td>- Covers topic in-depth with a strong central idea</td>
<td>- Covers topic with a central idea</td>
<td>- Covers essential information about topic</td>
<td>- Content is minimal</td>
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<td></td>
<td>- Subject knowledge is excellent</td>
<td>- Subject knowledge is good</td>
<td>- Contains 1-2 factual errors</td>
<td>- Contains several factual errors</td>
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<td></td>
<td>- Uses at least 5 facts and 5 details or examples</td>
<td>- Uses at least 4 facts and 4 details or examples</td>
<td>- Uses at least 3 facts and 3 details or examples</td>
<td>- Uses at least 2 facts and 2 details or examples</td>
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<tr>
<td></td>
<td>- Uses MLA bibliography and credits</td>
<td>- Uses MLA bibliography and credits</td>
<td>- Uses MLA bibliography and credits</td>
<td>- Missing MLA bibliography or credits</td>
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<tr>
<td><strong>Creativity</strong></td>
<td>- Product shows a large amount of original thought</td>
<td>- Product shows some original thought</td>
<td>- Product uses other people’s ideas (giving credit), but little evidence of original thought</td>
<td>- Uses other people’s ideas, but does not give them credit</td>
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<td></td>
<td>- Ideas are creative and inventive</td>
<td>- Uses at least 2 ideas that are expressed uniquely that can benefit others</td>
<td>- Uses at least 1 idea that is expressed uniquely that can benefit others</td>
<td>- Does express any ideas uniquely in a way that can benefit others</td>
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<td>- Uses 3 or more original ideas based on research that helps others understand the topic</td>
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<tr>
<td><strong>Pre-production</strong></td>
<td>- Treatment script shows strong evidence of high-level research and detailed planning</td>
<td>- Treatment script shows evidence of research and planning</td>
<td>- Treatment script shows some evidence of research and planning</td>
<td>- Treatment script shows little evidence of research and planning</td>
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<tr>
<td></td>
<td>- Storyboard has at least 10 detailed thumbnail sketches</td>
<td>- Storyboard contains at least 8 thumbnail sketches</td>
<td>- Storyboard contains at least 5 thumbnail sketches</td>
<td>- Storyboard contains fewer than 5 thumbnail sketches</td>
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<td></td>
<td>- Final script shows a logical sequence, good pacing, interesting dialogue and effects</td>
<td>- Final script shows flow of ideas, pacing, dialogue and effects</td>
<td>- Final script does not flow well between ideas, dialogue and effects</td>
<td>- Final script is incomplete</td>
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</table>
### Production

- **Outstanding technical skills**
- Clarity of video and audio throughout the video
- Uses at least: 10 images, 8 digital effects, one video clip and/or audio clip, and 5 voice-overs
- If using text: no more than 8 words per scene, allows time to read, and text is easy to read.
- Includes credits and does not use copyrighted resources

- **Technical skills**
- Clarity of video and audio is achieved
- Uses at least: 8 images, 6 digital effects, and 3 voice-overs
- If using text: no more than 12 words per scene, allows time to read, and text is easy to read.
- Includes credits and does not use copyrighted resources

- **Beginner level skills**
- Clarity of video and audio is evident
- Uses at least: 5 images and 1 voice-over
- If using text: uses too many words per scene, does not allow time to read, or text is hard to read
- Includes credits and does not use copyrighted resources

- **Production skills are not evident**
- Ideas do not flow
- Clarity of video and audio is not achieved
- Uses fewer than 5 images and no voice-over
- If using text: uses too many words per scene, does not allow time to read, and text is hard to read
- Does not include credits and/or uses copyrighted resources

### Organization

- **Well organized**
- Content is well organized by grouping related ideas and using correct sequence
- An overall unity and coherence producing a connected flow of content is established

- **Organized**
- Content is organized by grouping related ideas and using sequence
- There is unity and coherence

- **Logically organized**
- Content is logically organized for the most part

- **No clear organizational structure**
- There was no clear or logical organizational structure, just lots of facts

### Overall effectiveness

- **Strong message is conveyed**
- Video covers topic accurately, clearly, and in depth
- Highly engages and impacts the audience

- **Central message is conveyed**
- Video covers topic accurately and clearly
- Video engages and impacts the audience

- **Central theme is present**
- Video covers topic with some engagement and impact

- **Video is scattered and confusing**
- Video is scattered and confusing with no central message evident
- Video is not engaging
Treatment Script

A treatment script is an outline of the main elements of a video or how you treat the video. You may think of the treatment script as the guide of what you will create.

1. Watch the Universe Mash-up example, *From the Inside Out*. Put yourself in the place of the creator of the video and answer the following questions to better understand the video’s main elements. These main elements would be the treatment script.
   • What’s the theme or central message?
   • Who is the audience?
   • What’s the purpose of the video?
   • What’s the desired outcome – what do you want the viewer to do, think or feel?
   • What style has been successful with this particular audience in the past?
   • What’s new or different about this subject?
   • What’s the budget for the production?
   • How long will the finished video be?

2. Think about the project you want to create and then answer those same questions. Use your answers as guidelines as you write your treatment script for your Universe Mash-up.
Storyboard
A storyboard is a visual outline of a video. Essentially it is a blueprint for your video so that you know each clip that you'll use and any additional media you'll need to produce to make your final project.

Fill in the following template for your storyboard – use additional pages as necessary. For all clips and images, record where to find them and how the credit for using the image should appear under “Source.” If you need to create the video or image, put “original” under the Source.
**Universe Mash-up Production Checklist**

You will need to take an inventory of the media you will need for your mash-up. Look through your final script and identify all the elements – video clips, audio clips, and images. Fill out the lists below. Only when you have all the pieces assembled can you move on to the post-production phase of your project.

**Video Clips**

<table>
<thead>
<tr>
<th>Pre-made clips</th>
<th>Original clips (need to be filmed)</th>
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<tbody>
<tr>
<td>Downloaded?</td>
<td>Title or description</td>
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<tr>
<td>Produced?</td>
<td>Title or description</td>
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**Audio Clips or Voice-Overs**

<table>
<thead>
<tr>
<th>Pre-made clips</th>
<th>Original clips (need to be recorded)</th>
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</thead>
<tbody>
<tr>
<td>Downloaded?</td>
<td>Title or description</td>
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<tr>
<td>Produced?</td>
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Universe Mash-up Production Checklist (page 2)

Images

<table>
<thead>
<tr>
<th>Pre-made images</th>
<th>Original images (need to be made)</th>
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<tbody>
<tr>
<td>Downloaded?</td>
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Universe Mash-up Self Evaluation
Use the Universe Mash-up Grading rubric to determine the score you believe your project has earned. List the evidence to justify your score.

My Cosmic Times Media Mash-up deserves a score of: ________________

Justification
  My project’s Content deserves ______ points, because:

  My project’s Creativity deserves ______ points, because:

  My project’s Pre-production deserves ______ points, because:

  My project’s Production deserves ______ points, because:

  My project’s Organization deserves ______ points, because:

  My project’s Overall effectiveness deserves ______ points, because:

Teacher’s comments