

## Unit 11: Cosmology & Earth's Place in the Universe

### Learning Targets Guide

Self Evaluation			Learning Targets	Date
I've got it!  <input type="checkbox"/>	I've sort of got it.  <input type="checkbox"/>	I don't get it.  <input type="checkbox"/>	<b>E5.1A:</b> I can describe the position and motion of our solar system in our galaxy and the overall scale, structure, and age of the universe.	
Example or Explain:				
I've got it!  <input type="checkbox"/>	I've sort of got it.  <input type="checkbox"/>	I don't get it.  <input type="checkbox"/>	<b>E5.1b:</b> I can describe how the Big Bang theory accounts for the formation of the universe.	
Example or Explain:				
I've got it!  <input type="checkbox"/>	I've sort of got it.  <input type="checkbox"/>	I don't get it.  <input type="checkbox"/>	<b>E5.1c:</b> I can explain how observations of the cosmic background radiation have helped determine the age of the universe.	
Example or Explain:				
I've got it!  <input type="checkbox"/>	I've sort of got it.  <input type="checkbox"/>	I don't get it.  <input type="checkbox"/>	<b>E5.1d:</b> I can differentiate between the cosmological and Doppler red shift.	
Example or Explain:				

Self Evaluation			Learning Targets	Date
I've got it! <input type="checkbox"/>	I've sort of got it. <input type="checkbox"/>	I don't get it. <input type="checkbox"/>	<b>E5.3A:</b> I can explain how the solar system formed from a nebula of dust and gas in a spiral arm of the Milky Way Galaxy about 4.6 Ga (billion years ago).	
Example or Explain:				
<b>Real World Context:</b>				
<p>The Doppler Redshift results from the relative motion of the light emitting object and an observer. If the source of light is moving away from an observer the wavelength of the light is shifted towards the red due to an apparent increase in wavelength from that perspective. If the source of light is moving toward an observer, the wavelength of the light is shifted toward the blue due to an apparent shortening of wavelength. These effects, called the redshift and the blueshift, respectively are together known as doppler shifts.</p> <p>The Cosmological Redshift (or Hubble Redshift) is a redshift caused by the expansion of space. The wavelength of light increases as it traverses the expanding universe between its point of emission and its point of detection proportional to the expansion of space during the crossing time.</p> <p>Cosmic background radiation is considered a remnant of the big bang.</p>				
<b>Unit Notes &amp; Clarifications:</b>				