# Earth Science 11 Unit 1 Worksheet

**Chapter 28.1**

1. What is light?

2. At what speed do light waves travel?

3. Define *wavelength.*

4. When the various types of electromagnetic radiation are arranged in a continuum from longest wavelength to shortest, what is the result called?

5. Make your own sketch of the Electromagnetic Spectrum on p. 613.

6. Describe how a spectroscope works.

7. Describe how an emission spectrum and an absorption spectrum are different than a continuous spectrum.

8. How do astronomers use a star's absorption spectrum?

9. What is the Doppler effect?

10. What is meant by a redshift or blueshift in the observed spectral lines?

11. If astronomers observe a redshift in a star's spectrum, is the star moving closer or farther away?

12. How do astronomers use the redshift or blueshift to determine how fast a star is moving relative to the earth?

## Chapter 28.2

1. What is the nearest star to our sun? How far away is it?

2. What are constellations? Would they look the same if you were on a planet circling a distant star? Why or why not?

3. Why do constellations appear to move across our night sky?

4. Why are Ursa Major, Ursa Minor and Cassiopeia called circumpolar constellations?

5. Define apparent magnitude.

6. How much brighter is a first-magnitude star than a third magnitude star?

7. What distance is an astronomical unit based on? How many kilometres are in one AU?

8. Define a light year. How many kilometres are in a light year.

9. What is parallax?

10. How many light years are in a parsec?

11. What two elements make up the majority of stars' composition?

12. Why is each star's spectrum unique?

13. What is the definition of a *solar mass?*

14. How much bigger than the sun is the largest known star?

15. What does the colour of a star tell you about it's temperature?

16. What does luminosity mean?

17. What is the difference between apparent magnitude and absolute magnitude?

18. Describe two kinds of variable stars.

## Chapter 28.3

1. Make your own sketch of the Hertzsprung-Russell Diagram.

2. What characteristic separates the giants from the super giants?

3. In your own words, describe the birth of a star.

4. What happens to a star when the hydrogen is used up? At what point does the star begin to die?

5. How is a planetary nebula formed?

6. How does the death of a massive star differ from that of a star like the sun?

7. Describe the characteristics of a neutron star.

8. What evidence is there for the existence of black holes?

## Chapter 28.4

1. How old is the universe estimated to be?

2. What are galaxies? To which galaxy do we belong?

3. Sketch and describe the three main types of galaxies.

4. What is a quasar?

5. In your own words, describe the big bang model thought to explain the origin of the universe. What evidence is there to support this theory?