The BIG BANG Theory Worksheet:

1. List 4 pieces of evidence that support a heliocentric view of the solar system over a geocentric view.
2. What is the “Copernican Revolution”?
3. Approximately when did scientists/natural philosophers realize (with evidence) that the Sun was a star? What evidence led to this realization?
4. Briefly describe the significance of the work of Sir Isaac Newton in the formulation of the heliocentric model.
5. What is the *Electromagnetic Spectrum*?
6. Describe 3 ways in which people make use of radio waves.
7. Which type of electromagnetic radiation is most dangerous?
8. List the following from longest wavelength to shortest wavelength.

A. Visible red light B. X-rays C. Microwaves D. Blue visible light E. Ultra-violet

1. List the following from lowest frequency to highest frequency.

A. Visible red light B. X-rays C. Microwaves D. Blue visible light E. Ultra-violet

1. List the following from lowest energy to highest energy.

A. Visible red light B. X-rays C. Microwaves D. Blue visible light E. Ultra-violet

1. List the following from least dangerous to most dangerous.

A. Visible red light B. X-rays C. Microwaves D. Blue visible light E. Ultra-violet

1. What is the universe?
2. What is parallax?
3. How long does it take the Earth to orbit the Sun in days?
4. How long does it take the Earth to complete one revolution about its axis in hours?
5. What is the Doppler effect?
6. What is 1 astronomical unit (au)?
7. What is 1 parsec (pc)?
8. What is 1 lightyear?
9. What is a Doppler red-shift?
10. Given that the speed of light is 3.00x105km/s, what distance will light travel in one day?
11. Galileo Galilei discovered several moons orbiting Jupiter in 1610. Explain why this evidence helped to strengthen the belief that the Sun rather than the Earth was at the center of our solar system.
12. Explain how the theory of an expanding universe helped lead to the Big Bang theory?
13. What is cosmic background radiation?
14. Given: 1 astronomical unit (AU) = 150 000 000km

1 parsec (pc) = 206 000 AU

1 light year (ly) = 0.307 pc

Convert the following, showing correct conversion factors:

1. 2.0x1014 km to AU
2. 335 pc to AU
3. 14 Mpc to AU
4. 2500 ly to pc
5. 7.7x108 pc to km

750nm 400nm

The above diagram shows the reference spectrum for a certain element

1. Which of the following shows the same spectrum red-shifted?

CV

CV

CV

1. Which of the following formed first according to the big bang theory?
2. Large nuclei
3. Nebulae
4. Small atoms (like hydrogen and helium)
5. quarks
6. Small nuclei
7. Protons and neutrons
8. Which phase of the universe was/is shortest?
9. Phase 1 – Zero to quarks
10. Phase 2 – Nuclear age
11. Phase 3 – Atomic Age
12. Phase 4 – A Star(s) is Born
13. Phase 5 – Heavy Metal
14. Which phase of the universe was/is longest?
15. Phase 1 – Zero to quarks
16. Phase 2 – Nuclear age
17. Phase 3 – Atomic Age
18. Phase 4 – A Star(s) is Born
19. Phase 5 – Heavy Metal
20. During which phase of the universe does gravity become an important force?
21. Phase 1 – Zero to quarks
22. Phase 2 – Nuclear age
23. Phase 3 – Atomic Age
24. Phase 4 – A Star(s) is Born
25. Phase 5 – Heavy Metal