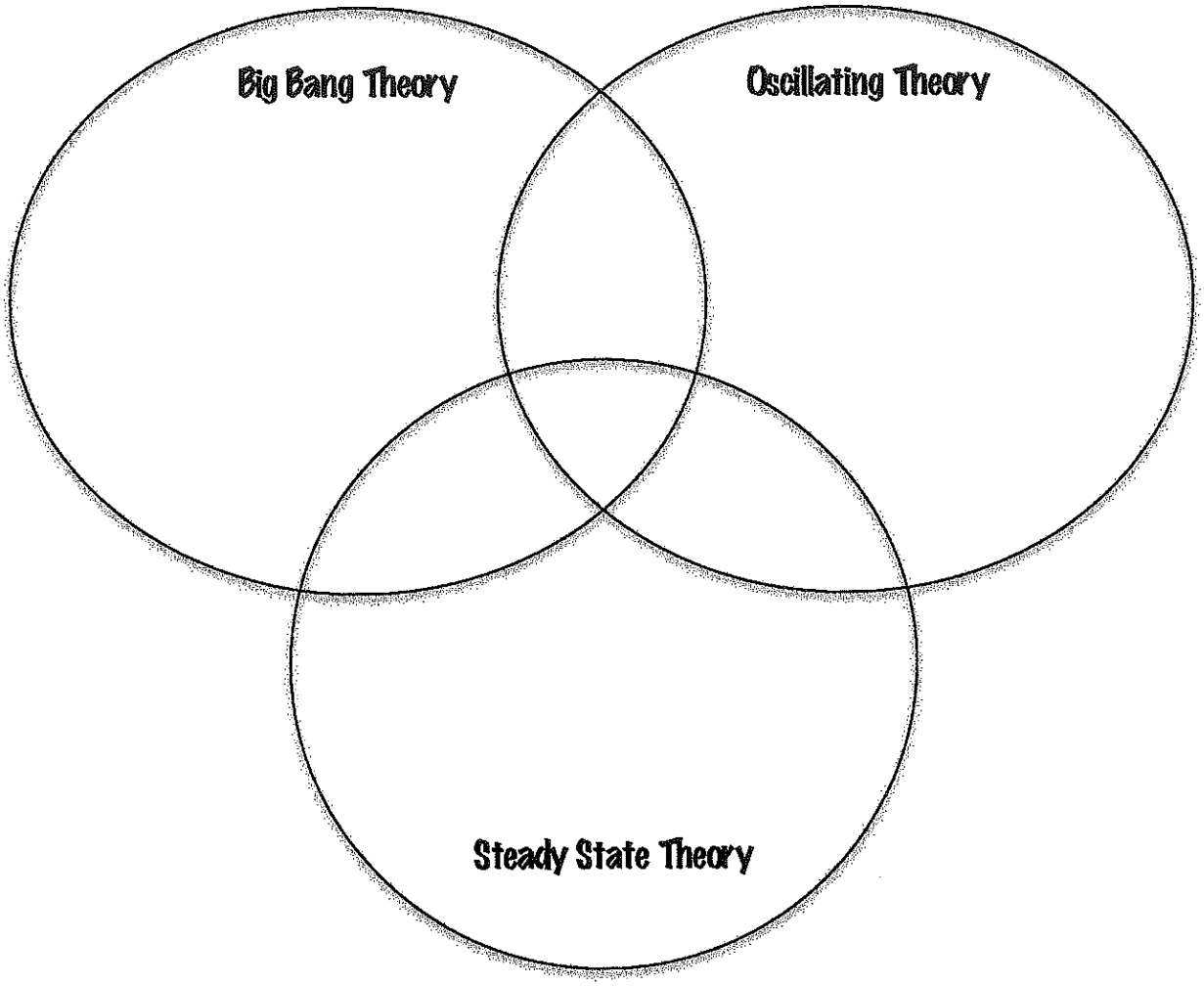
Name:
Class/Period:

Universe Study Guide

1. Complete the Venn Diagram below.



2. Explain the Heliocentric model of the Solar System.

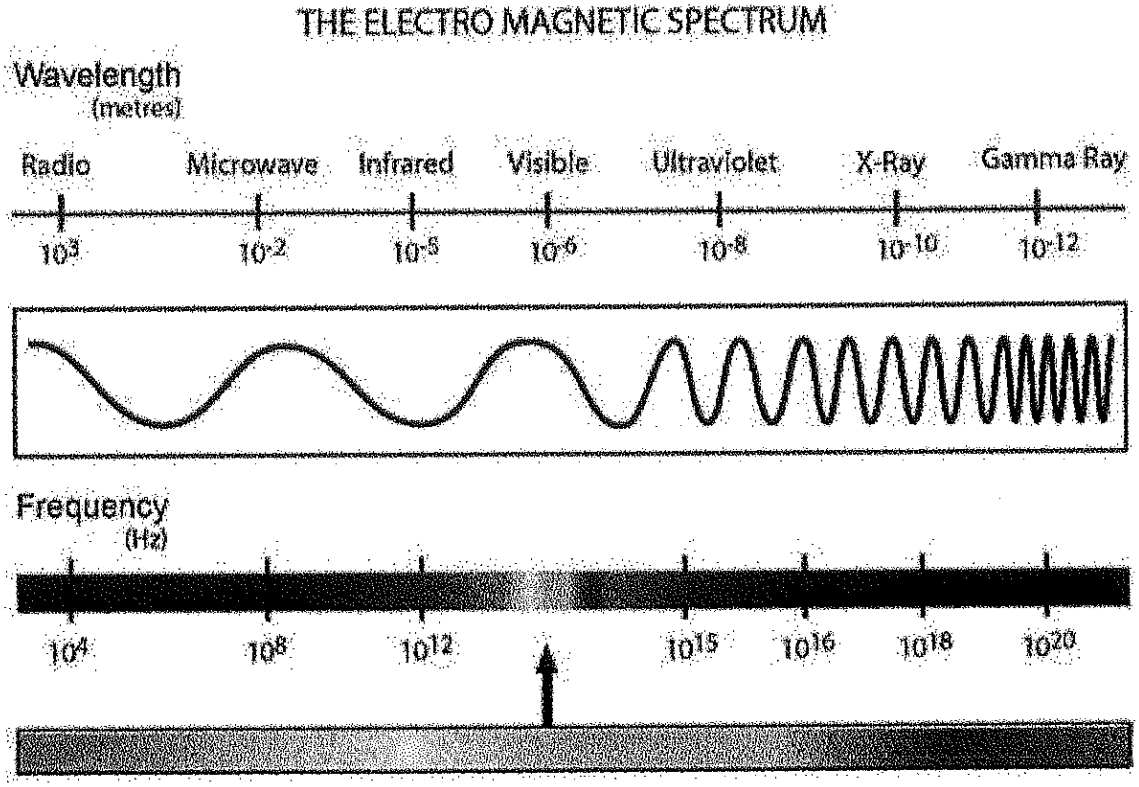
3. What scientists supported this model, and who was the scientist that first theorized the Heliocentric Model?

4. Put the following components of the universe in order from smallest to largest.

Star	Universe	Star Cluster
Solar System	Galaxy Cluster	Galaxy

5. How do scientists use the emission and absorption spectra from stars?

Use the EM spectrum below to answer the following questions.



6. What type of wave has a long wavelength?

7. What type of wave has a shortest wavelength?

8. What type of wave has the highest frequency?

9. What type of wave has the shortest frequency?

10. What type of wave has the highest amount of energy?

11. What type of wave has the lowest amount of energy?

12. What are the 7 types of waves in order?

13. What do all electromagnetic waves have in common?

14. Define light-year.

15. About how many kilometers is in 1 light-year? (Do NOT use exponential form.)

16. If the light from our Sun left right at this moment, in what year would it reach Betelgeuse? (Betelgeuse is 640 light-years away.)

17. Use the information you found in question 6 to answer this question. How many kilometers away is Proxima Centauri if it is 4.3 light-years from Earth?

18. How do scientists classify galaxies?

19. Name the 3 types of galaxies and describe their characteristics including the amount of gas and dust, age of stars, unique qualities, and shape.

20. What type of galaxy do we live in?

21. Explain what a blue shift or red shift indicates. Why does it indicate this?

22. Think back to our galaxy stations. We made a model of our galaxy using sand. List some limitations of this model.

23. How are stars classified?

24. What is the size, color, and temperature of our Sun compared to other stars?

25. What process has to happen in order for a star to be "born"?

26. Describe the difference between absolute magnitude and apparent magnitude and give an example of when they would be very different.

27. What does mass tell us about a star's lifetime?

28. Draw out the lifecycle of low/medium mass stars, and high mass stars.

REVIEW

29. What 2 elements must be present in order for a compound to be organic?

Use the chemical formula for sugar $C_6H_{12}O_6$ to answer the following questions.

30. How many carbon atoms would be in 3 molecules of sugar?

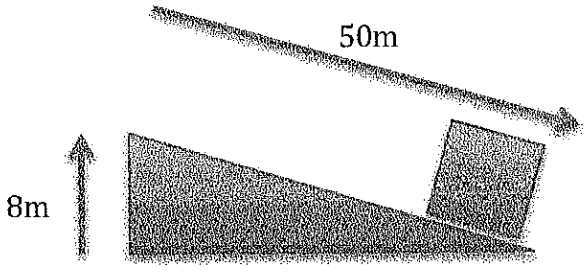
31. How many hydrogen atoms would be in 3 molecules of sugar?

32. How many oxygen atoms would be in 3 molecules of sugar?

33. You have a block of copper that has a mass of 55 grams, and has the following dimensions- 4cm X 5cm X 4cm. What is the density of the block?

34. You have a cube with a side length of 3cm. You measure the mass to be 57grams. What is the density of the cube?

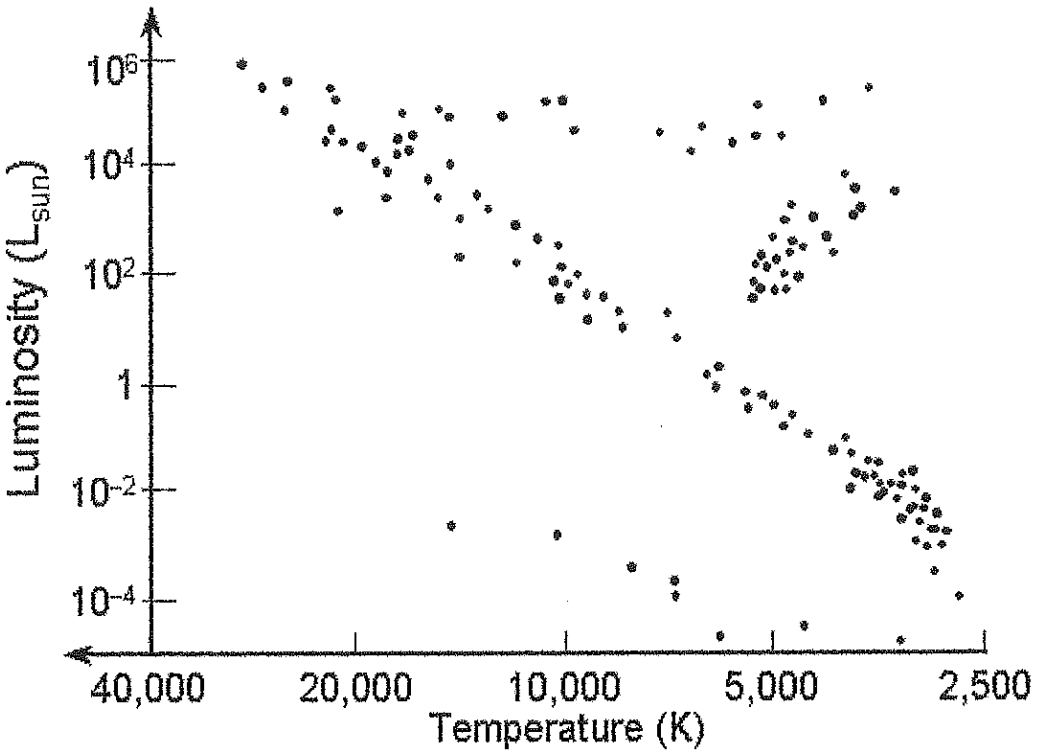
Use the diagram to answer the following question.



35. If it takes 50N of force to move the box up the ramp, how much work have you done?

36. Can you lessen the amount of work you would need to do by making the ramp longer? Explain why or why not.

HR Diagram- Use the diagram below to answer the following questions.



1. Label the graph with the following characteristics.
   - Hot, Bright
   - Hot, Dull
   - Cool, Bright
   - Cool, Dull

2. Label the graph with the following-
   - Main Sequence
   - White Dwarfs
   - Giants
   - Super Giants

3. What trend do you see for the main sequence stars?

4. Where is our Sun located on this graph?

5. Where will our Sun be located on this graph in the next stage of its life?

6. Which stars are the hottest?

7. Which stars are the coldest?

8. Can a star start at the top of main sequence and travel down through main sequence during its lifetime?