

Unit 4: Star Chemistry Review Worksheet

Make sure to review Quiz 1 Review for the first part of this units material!!

1. What is the formula for density? What are the units of density?

Density = mass ÷ volume

Density is measured in g/ml or g/cm³

2. Calculate the density of a marble that has a mass of 15g and a volume of 7mL.

Density = 15 g ÷ 7 mL = 2.14 g/mL

3. What the formula for percent error?

% error = $\frac{|actual - calculated|}{actual} \times 100$

4. Calculate the percent error of an experiment if you calculated the density of gold to be 18.65 g/mL but the true (accepted) value is 19.32g/mL.

% error = $\frac{|19.32 - 18.65|}{19.32} \times 100 = 3.37\%$ error

5. The sun rotates on its axis once every 27 days. Do the poles and the equator rotate at the same speed? (Yes or No) Which area is faster? (Poles or Equator)

6. What are the two most abundant elements in the sun? 92% Hydrogen, 8% Helium

7. Where does fusion take place in the sun? in the core

8. What is the product of fusion? Hydrogen + Hydrogen → Helium (and TONS of energy!)

9. What type of fusion is taking place in the sun? Hydrogen fusion – two light nuclei forming one heavier nuclei

10. Fusion is what makes the Sun's energy = light and heat!

11. The inner layers of the sun are called the inner zones & outer layers are called the atmosphere.

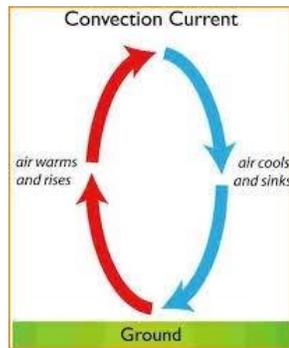
12. List the three inner layers. Core, Radiative Zone, and Convection Zone

13. List the three outer layers. Photosphere, Chromosphere, and Corona

14. How does energy travel in the radiative zone? Energy travels in waves/electromagnetic

15. Energy moves through convection in the convection zone. What is convection? Convection is heat transferred through the rising of warm and sinking of cold gases/liquids.

16. Draw a picture of a convection cell.



17. The photosphere is the “**sphere of light**” of the sun.

18. Energy from the sun is given off in the form of **light** that we see on earth.

19. What is a granulation? **A convection cell that can be seen in the photosphere, usually near sunspots.**

20. The Chromosphere is also called the sphere of **sphere of color**. This makes the sun glow with a **reddish** color.

21. Describe the corona. **The outer most layer of the sun. It stretches very far and varies in temperature.**

22. When can we see the corona? **Only during the solar eclipse.**

23. How big is the corona? **Extends millions of kilometers into space.**

24. How hot is the corona? **Millions of degrees but diffuses throughout the large space.**

25. Which is the hottest layer of the sun? Why? **The core, 15 million degrees Celsius – needs to be this hot in order for fusion to occur.**

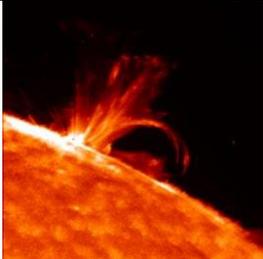
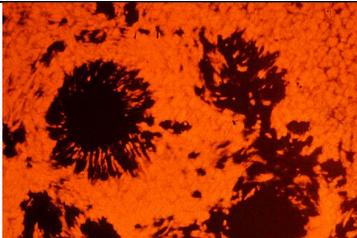
26. Where on earth do you have to be to see auroras? (**Poles or Equator**) Explain why? **The solar material released is attracted to Earth’s magnetic fields/poles.**

27. What causes sunspots? **Sunspots are caused by magnetic field in the photosphere (between the equator and the poles).**

28. What feature can sometimes connect 2 sunspots? **Prominence**

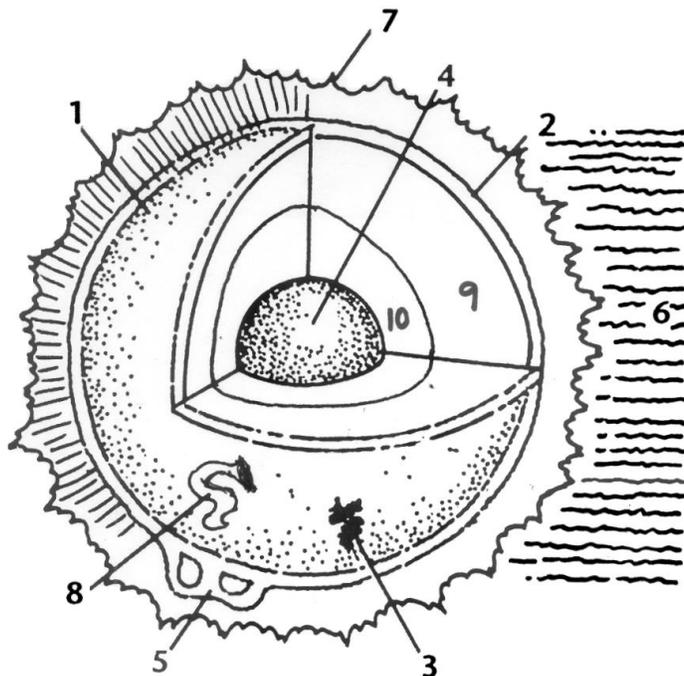
29. What happens when 2 sunspots merge? **Solar flares (and possibly auroras)**

30. Describe & Draw the following solar features

Describe/define	Draw
Prominence – connection between two sunspots with an arch/loop	
Solar Flare – when two sunspots merge and release a large amount of material, causing auroras	
Solar Winds – a stream of particles released from the corona	
Aurora – solar flare materials that are attracted to Earth’s magnetic field (poles)	
Sun Spot – magnetic fields poking through the photosphere, appearing cooler and darker than the surrounding area.	

31. Sun Layers. Fill in the blanks below.

1. Photosphere
2. Chromosphere
3. Sunspot
4. Core
5. Prominence
6. Solar Winds
7. Corona
8. Solar Flare
9. Convection Zone
10. Radiative Zone



32. Fill in the blanks below

Layer giving off visible light as seen from earth = **photosphere**

Color layer seen as a reddish glow = **chromosphere**

Energy transferred by electromagnetic waves = **radiation/radiative diffusion – radiative zone**

Energy transferred by the movement of hot gasses = **convection – convection zone**

Layer where fusion occurs = **core**

Outer most layer of the sun = **corona**

The surface of the sun = **photosphere**

The layer where sunspots occur = **photosphere**

The hottest layer of the sun = **core**

This layer can only be seen during a solar eclipse = **corona**