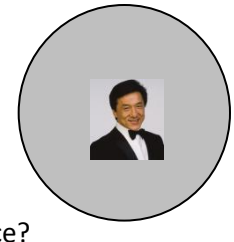
Cell Theory and Microbiology Unit Test Study Guide

Microscopes

1. If you want to center/improve the image in the eyepiece view, what do you do with the slide/microscope if it looks like this? (and…can you name the mini celebrities?)


2. What is the magnification of the eyepiece?

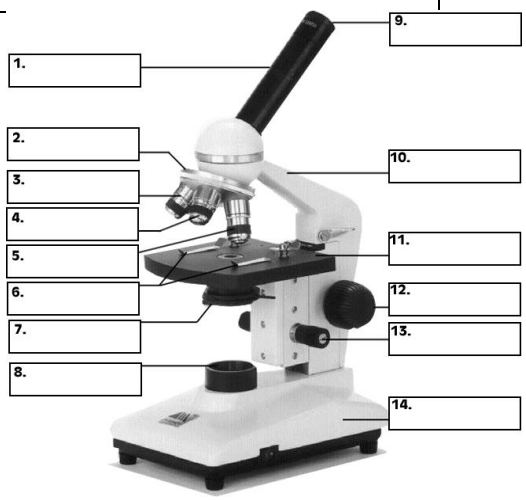
3. If the objective lens you are using has a magnification power of _____, what is the TOTAL MAGNIFICATION?

Objective lens magnification	TOTAL magnification (how did you figure this out?)
10x	
500x	
25x	

4. Describe something important each scientist discovered/studied:

Scientist	**Time**	**Discovery/Area of study**
Zacharias Janssen	Late 1500s	
Robert Hooke	Mid-1600s	
Anton van Leeuwenhoek	Late-1600s	
Matthias Schleiden Theodor Schwann Rudolf Virchow	Mid-1800s	

5. - **Label** the microscope parts on the microscope on the side.
   - Put a **star** next to the part(s) you use to <u>focus in low and medium</u> power.
   - **Circle** the part(s) you use to <u>focus in high power</u>
   - Draw a **smiley** next to the part(s) that <u>holds the slide</u>
   - Put a **square** next to the part(s) that you use to <u>carry the microscope.</u>
   - Draw a **triangle** next to the <u>first 2 things</u> you should move <u>before taking the slide off</u> – number them 1 and 2 inside the triangles and explain what you do with them.



6. Draw an image of the cork cells Robert Hooke saw (hint: you did this in the ABCs of life…was there anything inside?).

Cell Theory

7. What is the most basic unit of all living things?

8. Know the three scientists who developed cell theory: Matthias Schleiden, Theodor Schwann, Rudolf Virchow. Come up with a way to remember their names.

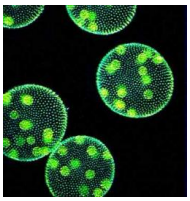
9. First, write the three main concepts of cell theory. Then, draw a picture that illustrates them.

10. From **smallest to largest**, what is the organization of life?

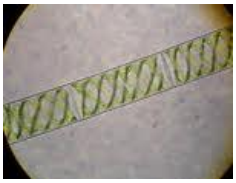
_____ → _____ → _____ → _____ → _____

Protists

11. Identify each protist.
12. Using a ruler, draw a line and label each protist's special feature.
13. Describe the function of each special feature.





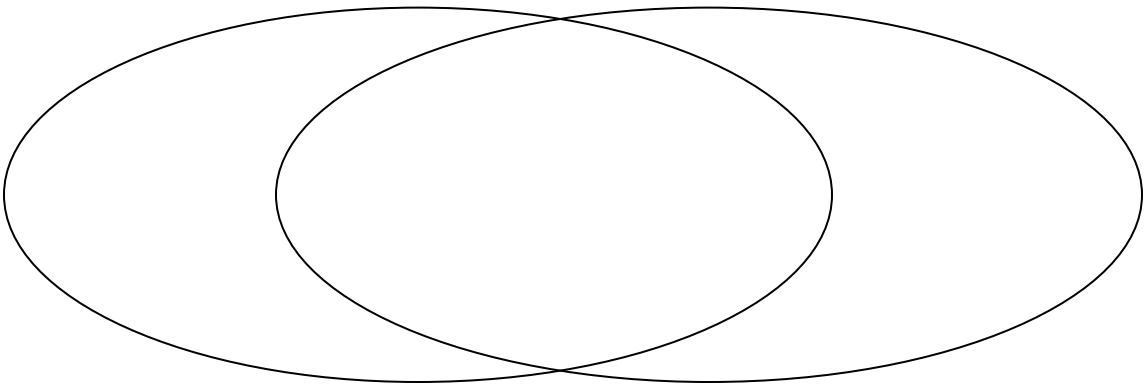


14. Explain the following statement and **use examples** from the last question: "Protists are extremely diverse."

Cell Organelles and Functions

15. What is the difference between a prokaryotic organism and a eukaryotic organism? Give an example of each.

16. Make a Venn diagram for what makes a plant cells and animal cells both different and similar**.**



17. What will ALL cells have in common (both prokaryotic and eukaryotic)?
18. List the cell organelles we have studied in the chart below:

Cell organelle	What does it do?	If the CELL is a COUNTRY, what would this organelle be?

19. Why is a muscle cell long and flexible? Why is a nervous cell so looooooong? Why do blood cells have no nucleus and the specific bowl shape they have? Why are they all not the same? How does cell form related to cell functions.

Life Processes

20. Draw a picture for/explain the following life processes

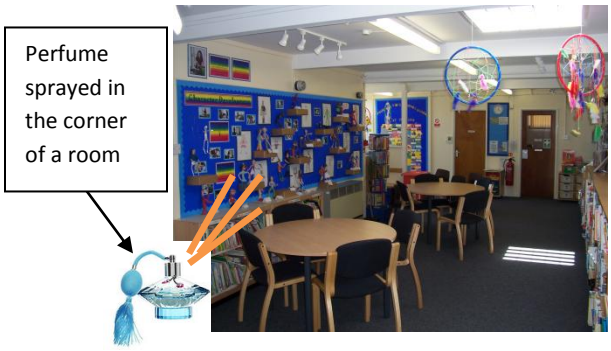
Ingestion	**Digestion**	**Respiration**	**Regulation**
Reproduction	**Transport**	**Excretion**	**Photosynthesis (do all organisms have this process?)**

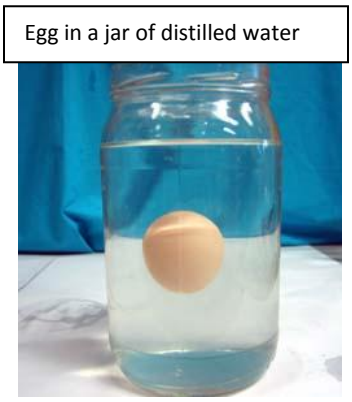
21. Which life process do mitosis and meiosis fall under?

22. Human have 46 chromosomes. In mitosis, how many chromosomes will there be in a new cell? In meiosis, how many chromosomes will there be in a new cell?

23. What kind of cells does **mitosis** make? Give examples.

24. Explain what will happen in the following pictures. Use words like: **diffusion, selective permeability, osmosis, water, concentration, high, low**





25. What is the difference between passive and active transport?

Bacteria, viruses, and disease

26. Know: bacteria reproduce through **binary fission**.
27. What is a **pathogen**? Give an example.
28. Know: Infectious disease can be spread through food, water, animals, air, but NOT CHEMICALS.
29. Give an example of a direct transmission of a disease. Give an example of an indirect transmission of a disease. How are they different?

30. What is the definition of a **vector**? What is the definition of a **carrier**? What is the difference?

31. What are some important features of viruses?

Biotechnology and Genetic Engineering

32. What might be some risks of genetic engineering?

33. What is gene therapy? How might it be used in medicine?

34. Where you can see biotechnology in the real world? What fields might use it in their industries?