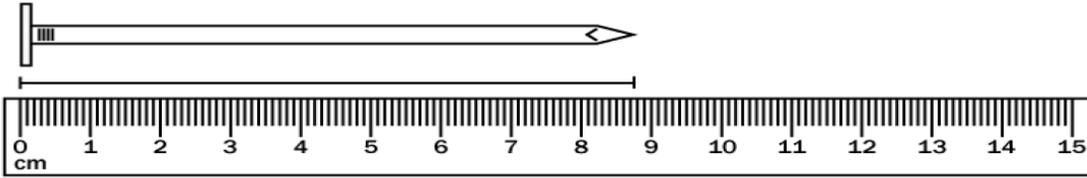
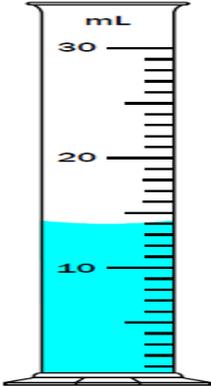


Science Benchmark # 1 STUDY GUIDE!!!!!!

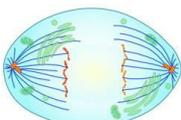
1. How long is the nail shown below? 8.8 cm



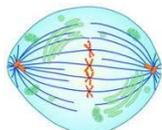
2. How much liquid is in the graduated cylinder below? 14 mL



3. Which type of cell does NOT have a nucleus? Prokaryotic or Eukaryotic
4. A cell membrane is selectively permeable; it lets some things in or out but not others, it shows direction of flow, the final net movement, and the rate of movement of molecules.
5. The plant's leaves contain the most chlorophyll so this is where the light is absorbed.
6. Don't do--- Add the parts of the CELL CYCLE: Interphase, mitosis, cytokinesis
7. Don't do
8. Don't do
9. Match the following organelles with the correct job: (write the correct # by the letter)
- | | |
|----------------------------|--|
| a. 4 Nucleus | 1. Contains green pigment where photosynthesis takes place |
| b. 8 Cell membrane | 2. Transports materials throughout the cell |
| c. 3 Vacuole | 3. Storage center, larger in plants |
| d. 6 Mitochondria | 4. Controls the cell's activities; where DNA is located |
| e. 2 Endoplasmic reticulum | 5. Provides the plant cell with support and structure |
| f. 7 Cytoplasm | 6. Provides the cell with energy |
| g. 1 Chloroplast | 7. jellylike substance that holds the organelles in place |
| h. 5 Cell wall | 8. Selectively permeable, lets things in and out of the cell |
10. Robert Hooke was the first person to observe cells from a cork in a microscope.
11. Which invention best helped scientists to develop the cell theory? microscope
12. Plant cells have a chloroplast that helps them go through photosynthesis.
13. Which stages of mitosis are shown below:



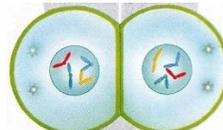
Anaphase



metaphase



prophase



telophase

14. Use the Venn diagram below to show the differences and similarities of organelles in the plant and animal cell. (the middle is for similar organelles)

<u>Plant</u>	<u>Both</u>	<u>Animal</u>
Chloroplast	mitochondria	smaller vacuole
Cell wall	nucleus	circular
Larger vacuole	cytoplasm	
Rectangular	endoplasmic reticulum	
	Cell membrane	

15. List the stages of mitosis in order: prophase, metaphase, anaphase, telophase (PMAT)

16. The nucleus stores hereditary material and controls the cell's activities.

17. The cell wall provides structural support for the plant cell.

18. The cell membrane allows materials to pass into and out of cells.

19. The chloroplast helps the plant to make food using sunlight.

20. Use the table below to answer the true or false question.

** TRUE or FALSE: *The length of the incubation period does not increase when the eggs are longer.* **

Type of Bird	Length of Egg (Average)	Incubation Period (How long it takes to hatch)
chicken	57mm	21 days
duck	76mm	27 days
eagle	75mm	36 days
finch	16mm	11 days
goose	86mm	25 days
hummingbird	13mm	16 days
mockingbird	25mm	12 days
ostrich	160mm	45 days
pheasant	45mm	26 days
swan	113mm	36 days

21. Which type of graph is used for the following questions?

a. Comparisons: bar graph

b. Percentage: circle/pie graph

c. Trends or changes over time: line graph

22. What is the best way to show data? graphs

23. Before a scientist can publish their findings, they should repeat the experiment and have at least 3 trials.

24. Read the chart below and answer the following question

-What most likely caused the number of bacteria to be lower in dish 4? low temperature

Dish	Temperature	# of bacteria
1	80	305
2	75	278
3	70	245
4	65	156

25. Read the following experiment. Underline the dependent variable and circle the independent variable.

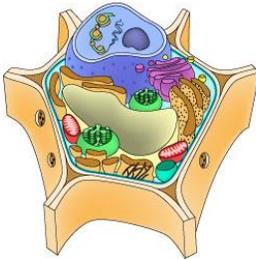
Bobby wanted to see which type of candy dissolved the fastest. He placed skittles in one cup of water, m&ms in another cup of water, and a jelly bean in the last cup of water. He checked how much each candy had dissolved every 5 minutes.

26. Read the following experiment.

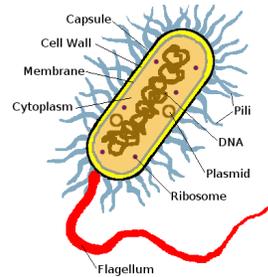
Lucy wanted to see which type of fertilizer works the best on plants. She got 3 different plants: corn, tomatoes, and string beans. She added chemical fertilizer to the corn, natural fertilizer to the tomatoes, and no fertilizer to the string beans. Each plant received the same amount of water and sunlight. She checked the growth of her plants each day and recorded the results.

**How could Lucy improve her experiment? Only test 1 type of plant

27. Below are pictures of 1 cell from 2 different organisms. Write below each picture if you think it comes from a unicellular organism (bacteria) or a multicellular organism (plant or animal).



Eukaryotic/multicellular/plant-animal



prokaryotic/unicellular/bacteria

28. Use a thermometer to measure temperature.

29. Use a triple beam balance or scale to measure mass.

30. Use a ruler to measure length.

31. Chris and Lilly wanted to see which type of plant grew better with fertilizer so they conducted a test. In the chart below are their results.

Plant	Height w/ fertilizer	Height w/out fertilizer
1	12cm	10cm
2	10cm	8cm
3	8 cm	???
4	15cm	13cm

** Based on the information in the table above, what is a good estimate of the missing value for plant 3? 6 ** look at the pattern

32. mitosis is the division of body cells (skin, brain, blood)

33. meiosis is the division of sex cells (sperm, egg)

34. If an organism has 30 chromosomes, how many chromosomes are in the ending cells of meiosis? 15 /How many chromosomes are in the ending cells of mitosis? 30

35. Which type of cell division creates cells that are IDENTICAL to the parent cell?
mitosis

36. List the 3 parts of the cell theory: all cells come from existing cells, cells are the basic unit of life, and all organisms are composed of 1 or more cells

