Part 1:SCIENTIFIC ROOT WORDS (aka- horrible 100)

-The main reason students find it difficult to understand science is because of all the hard to write, spell and read words.

-scientific vocabulary is a mix of small words that are linked together to have much different meanings.

-If you learn the meanings of the little words, you'll find scientific vocabulary much easier to understand.

⊠Below is a list of 100 prefixes and suffixes to learn.
These root words will be included in your weekly quizzes starting WEEK 2 of the school year!

ORIGIN	MEANING	EXAMPLE
a, an	not or non, without	anemia
ab	away from	
ad	to, toward	adaxial
aer	oxygen, air	aerobic
anti	against	antibody
arthr	jointed	arthropod
ase	forms names of enzymes	
auto	self	autoimmune
bi	two,twice,double	bipedal
bio	life,living	biosphere
brachi	arm	
card	heart	
caryo/karyo	cell nucleus	
caud	tail	
cephalo	head	cephalopod
chloro	green	chlorophyll
chromo	color	chromosome
cide	killer,kill	insecticide
cyan	blue	
cyst	sac,pouch,bladder	
cyto,cyte	cell	cytoplasm
dactyl	finger	pterodactyl
dendr	tree,branching	dendrite
derm	skim	epidermis
di	two,twice,double	dicot

eco	house	ecosystem
ecto	outside	ectotherm
endo	within	endotherm
epi	on,over,surface	epidermis
erythro	red	erythrocyte
eu	TRUE	eukaryote
ex	out	exoskeleton
fer	produce	fertilization
game	marriage	gamates
gastro	stomach	gastro-
gymno	naked	gymnosperm
hemo	blood	hemophillia
hetero	different	herterozygous
homo	same	homologous
hyrdo	liquid	hydraulics
hyper	over	hypertonic
hypo	under	hypoglycemia
inter	between	interstate
intra	within	intravenous
iso	equal	isotonic
it is	inflamation	laryngitis
kin	movement	kinetic
lac	milk	lactose
leuco	white	leucocytes
lip	fat	lipids

logy	study of	Biology
lysis	split	analysis
macro	big,large	macroevolution
melan	pgment	melanin
mer,mere	part	centromere
meso	middle	mesoderm
micro	small	microscopic
mono	one	monohybrid
morpho	shape	amorphous
multi	many	multicellular
myo	muscle	myofiliment
nema	thread	nematocysts
nephr	kidney	nephritis
neuro	nerve	neurologists
oma	tumor	melanoma
omni	all	omnipen
oo	egg	oocyte
ortho	straighten	orthodontist
ose	sugar	ribose
osteo	bone	osteoporosis
para	beside,near	parabiosis
ped	pod	foot
peri	around	pericardium
phago	eat	phagocytosis
pheno	appearance	phenotype

photo	light	photosynthesis
phyte, phyto	plant	epiphyte
pino	drink	pinocytosis
poly	many	polysaccharide
proto	first	prototype
pseudo	FALSE	pseudopod
ptero	wing	pterodactyl
pulmo	lung	pulmonary
renal	kidney	adrenal
rhin	nose,horn	rhinoplasty
rhiz	root	rhizome
rhod	red	rhodophyta
sacchar	sugar	monosaccharide
saur	lizard	dinosaur
sub	beneath	subway, subphylum
syn	together	synapsis
therm	heat	endotherm
thigmo	touch	thigotrophic
tomy	cut	appendectomy
troph	feed	autotroph
viv	life,living	survive
vore	eat	omnivore
xanthro	yellow	xanthrophyll
xer	dry	xerophyte
zo	animal	zoology

Part 2: BIOLOGY ON-LINE BOOK PRACTICE

➲Using the on-line book resource instructions (www.glencoe.com) complete the following questions:
-instructions can be found on the class website.

1- How many UNITS are in this book?   _____

2- How many CHAPTERS are in UNIT 1?   _____

3- In your own words name 4 ACTIVITIES that are found at BIOLOGY ONLINE:

   -_____

   -_____

   -_____

   -_____

4-What is the TITLE and MAIN IDEA for the following sections-
   -Section 1.1
      title: _____

      main idea: _____

   -Section 1.2
      title: _____

      main idea: _____

   -Section 1.3
      title: _____

      main idea: _____

5- Using LOOSE LEAF NOTEBOOK or COMPUTER PAPER ONLY…
      -follow the directions on how to make a foldable for *Chapter 1.*
      -Once you have stapled your foldable…STOP!
      -<u>DO NOT LABEL</u> ANYTHING ON YOUR FOLDABLE; we will *complete the labeling in class*! (🗋)

★6- Visit the Biology Online resource- (www.biologygmh.com)
         -Find the Review section for Chapter 1.1
         -Once there find the SELF-CHECK QUIZZES for Chapter 1 Section 1
         -How many questions are there for you to answer about this section?   _____

Part 3: METRIC BACKGROUND CHECK

☒ **Measuring Length**

1-What does each unit represent?

      a. mm =_____   b. m=_____   c. cm= _____   d. km= _____

2-Convert the following:

      a. 1 m= _____ cm   b. 1 cm= _____mm   c. 1 km= _____m

➲Remember… If you go from Bigger → Smaller, move the decimal to the RIGHT.

          If you go from Bigger ← Smaller (smaller to bigger), move the decimal to the LEFT.

Kilo   Hecta   Deca   UNIT-(meter, gram, liter)   Deci   Centi   Milli

➲Each of the units above counts as one decimal point. For example, if you are converting 3,000 mm to meters (the unit), you are going from smaller to bigger, so you will move the decimal to the left 3 spots. 3,000 mm = 3m.

3-Which measurement is larger? (Circle one)

      a. 14 mm or 1cm   d. 145 m or 145 km

      b. 334 m or 1 km   e. 3.4 cm or 30 mm

      c. 1 m or 990 cm   f. 10km or 1000 cm

➲HINT: If it says "nearest", you need <u>to round</u> your answer so you do not have a decimal point.

4-Use a metric ruler to find each measurement

      a. Length of the line in centimeters: _____

      b. Length of the line to the <u>nearest</u> cm: _____

      c. Height of the rectangle to the <u>nearest</u> millimeter: _____

      d. Width of rectangle to <u>nearest</u> mm: _____
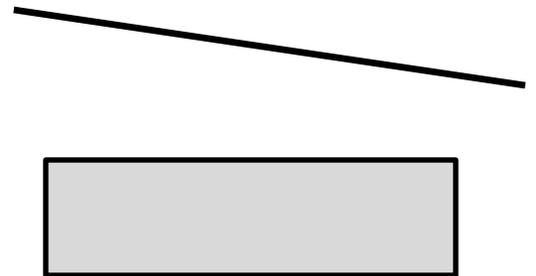
5-Find the length of an unsharpened pencil (including eraser) in mm: _____

6 -<u>Circle the BEST</u> metric unit to measure each of the following:

      a. The length of an eyelash: mm   cm   m   km

      b. The height of a flagpole: mm   cm   m   km

      c. The length of a strand of spaghetti: mm   cm   m   km

      d. The distance from Olathe to Lawrence: mm   cm   m   km

☒ **Measuring Volume**

7- What does each unit represent?

      a. mL = _____   b. L= _____

8- Convert the following:

      a. 1 mL= _____ L b. 1,500 mL= _____L   c. 2.4 L = _____mL

9- What types of instruments can we measure volume with? _____

10- What is a meniscus, and how do you read it? _____

Part 4: SCIENTIFIC METHOD REVIEW

☒ **Multiple Choice:** Please identify the choice that best completes the statement or answers the question.

1. A condition that can change or differ during an experiment is called a(n)
   a. unknown
   b. control
   c. observation
   d. variable

2. Measurements of a plant's growth over a two-week period represent
   a. inferences
   b. data
   c. variables
   d. hypotheses

3. In science, a hypothesis is useful only if
   a. it is proven correct
   b. the explanation is already known
   c. it can be proven incorrect
   d. it can be tested

4. Which of the following might be a valid hypothesis for why a plant appears to be dying?
   a. The plant is not being watered enough
   b. The plant is being watered too much
   c. The plant is receiving too much sunlight
   d. all of the above

5. What is the best way to eliminate unwanted variables that might affect the outcome of an experiment?
   a. include a control
   b. conduct all experiments in a laboratory
   c. do not introduce the unwanted variables to you experiment
   d. predict the impact of these unwanted variables in advance

6. You suggest that the presence of water could accelerate the growth of bread mold. This is a(an)
   a. conclusion
   b. experiment
   c. hypothesis
   d. analysis

7. A controlled experiment allows the scientist to isolate and test
   a. a conclusion
   b. several variable
   c. a mass of information
   d. a single variable

8. Which of the following is an example of data that could be collected?
   a. You record the air temperature every day for a week.
   b. You propose that a cold front is approaching.
   c. You hypothesize that the temperature will increase tomorrow.
   d. You conclude that the season is changing.

9. Tasha is testing the effect of blue-colored light on the growth of tomato plans. Which is the independent variable in this experiment?
   a. Light color
   b. Light intensity
   c. Amount of light
   d. Temperature of light

10. A researcher is interested in the effects of nitrate and phosphate on plant growth. He sets up an experiment in which groups of five plants are given 1, 2, and 3 grams of nitrate and 1, 2, and 3 grams of phosphate in all combinations over a period of one month. He makes sure that all the plants receive the same amount of water and sunlight. The researcher measures plant height and weight at the end of the experiment. What is missing in this experiment design?
    a. A control
    b. An independent variable
   c. A dependent variable
    d. A constant

⊠**Short Answer**: use the information in the figure below to answer the questions.
 -A scientist conducted an experiment to determine the effect of environment on the color of fur of a Himalayan rabbit.
-The Himalayan rabbit typically has a white coat except for its colder nose, feet, tail, and ears, which are black.
-The scientist shaved an area of hair on the back of each rabbit, then placed an ice pack over the shaved area on one
  rabbit (A).

11- IDENTIFY which rabbit is the control?

12- IDENTIFY the independent variable in this experiment?

13- IDENTIFY the dependent variable in this experiment?
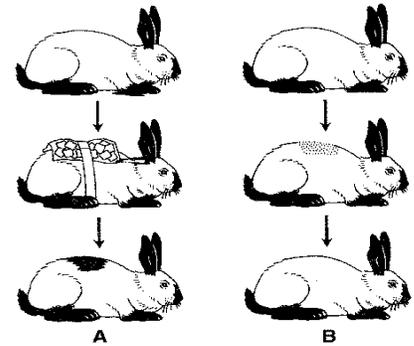
14- DEVELOP a HYPOTHESIS: Before completing the experiment, the scientist made a hypothesis.
        - What is the hypothesis she is testing? (IF…THEN…)

15- EXPLAIN why Rabbit B essential to the experiment?

16- IDENTIFY- Are the observations in the experiment quantitative or qualitative data?

17- ANALYZE- Based on your observations, conclude what effect temperature has on Himalayan rabbits.

⊠**Sponge Bob and his Bikini Bottom pals have been busy doing a little research.**
-Mr. Krabs created a secret ingredient for a breath mint that he thinks will "cure" the bad breath people get from eating crabby patties at the Krusty Krab. He asked 100 customers with a history of bad breath to try his new breath mint. He had fifty customers (Group A) eat a breath mint after they finished eating a crabby patty. The other fifty (Group B) also received a breath mint after they finished the sandwich; however, it was just a regular breath mint and did not have the secret ingredient. Both groups were told that they were getting the breath mint that would cure their bad breath. Two hours after eating the crabby patties, thirty customers in Group A and ten customers in Group B reported having better breath than they normally had after eating crabby patties.

18- DEVELOP a hypothesis for the experiment. It needs to be in an IF…THEN…statement.

19- IDENTIFY the control group?

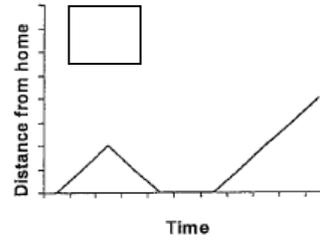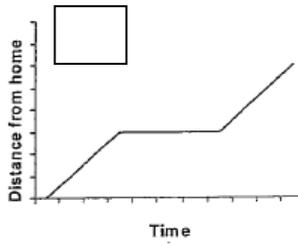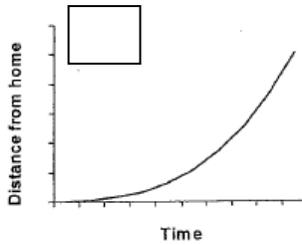20- IDENTIFY the independent variable?

21- IDENTIFY the dependent variable?

22- DETERMINE what type of data was collected – quantitative or qualitative?

23- LIST one constant in this experiment?

Part 5: INTERPRETING/ANALYZING Graphs and Data

⊠**Graph 1:** Identify the graph that matches each of the following stories. Place the LETTER in the CORRECT BOX.


A- I had just left home when I realized I had forgotten my books so I went back to pick them up. Then I realized I went to school.

B- Things went fine until I had a flat tire. I put on my spare tire and continued to school.

C- I started out calmly, but sped up when I realized I was going to be late.

⊠**Graph 2:** The graph below represents the typical day of a teenager. Answer the following questions.
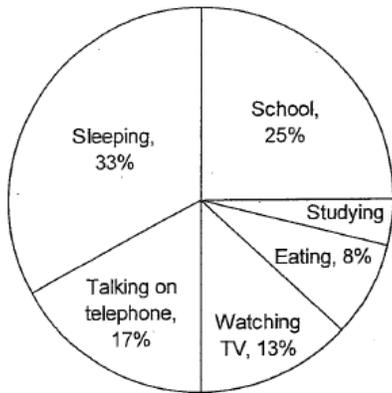
A-What percent of the day is spent studying?   _____%

B-How many hours are spent sleeping?   _____%

C-What activity takes up the least amount of time?   _____

D-What activity takes up a quarter of the day?   _____

E-What two activities take up 50% of the day?   _____&_____

F-What two activities take up 25% of the day?   _____&_____

⊠**Graph 3:** Answer the following questions using the graph below.
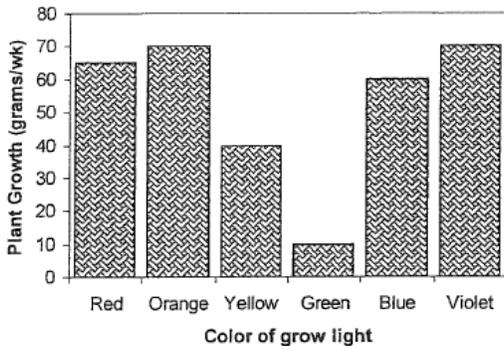
A- Identify the dependent variable on this graph:

B- What two colors of light create the highest plant growth?

C- What is the plant growth in green light?

⊠**Graph 4:** Use the data in the following table/paragraph to make an *appropriate type of graph*

-The graph illustrates the depletion of helper T cells during the progression of an HIV infection.

Year of T-cell count	T_H cells per mL
1985	980
1986	940
1987	860
1988	700
1989	480
1990	340
1991	260
1992	180
1993	160
1994	120
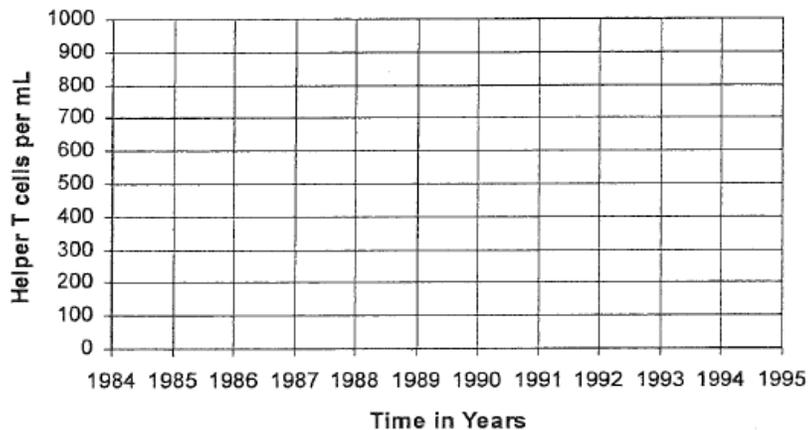
Part 6: ACT PRACTICE

➲This is a research summary type set of questions. This means that there is a description of two to five experiments provide and you will be asked to determine what the experiments mean and conclusion that can be drawn from them.

The clearing of rain forests results in *forest fragmentation* (the breakup of large forest tracts into small patches). Researchers predicted that fragmentation would result in a decrease in animal populations and *aboveground tree biomass* (AGTB) in the resulting fragments. Four studies were completed to test this prediction.

⊠Study 1
The researchers monitored the AGTB of twenty-five 100m x 100m forest plots near areas that had recently been cleared of vegetation. The distance from the center of each plot to the nearest clearing was measured. Figure 1 shows the average change per plot in AGTB in metric tons per year (t/yr) over 17 yr.

⊠Study 2
Twenty-five 100m x 100m forest plots were monitored as in Study 1. The center of each of these plots was at least 500m from the nearest clearing. The average change in AGTB over 17 yr for these 25 plots was 0 t/yr.

⊠Study 3
Researchers monitored sixteen 100m x 100m forest plots near areas that had recently been cleared of vegetation. Each plot was bordered on 1 side by a clearing. Figure 2 shows the average cumulative percent change in AGTB at these plots following fragmentation. (Note: Year 0 represents results prior to fragmentation).
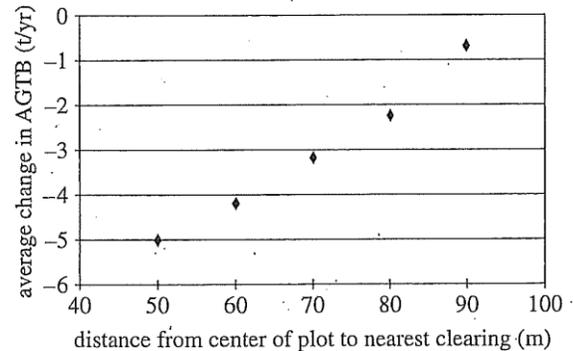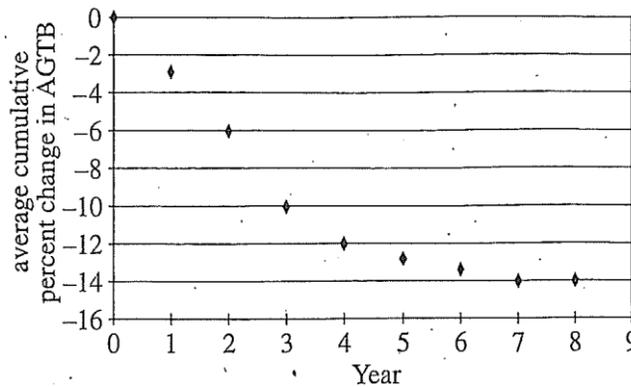

Figure 1

Figure 2

⊠Study 4
Researchers trapped and released birds in 10 forest fragments adjacent to areas that had recently been cleared of vegetation. Three types of birds were monitored: insectivores, frugivores (fruit eaters), and hummingbirds. Figure 3 shows the number of captures per 1,000 hours (hr) of trapping. (Note: Year 0 represent results prior to fragmentation.)
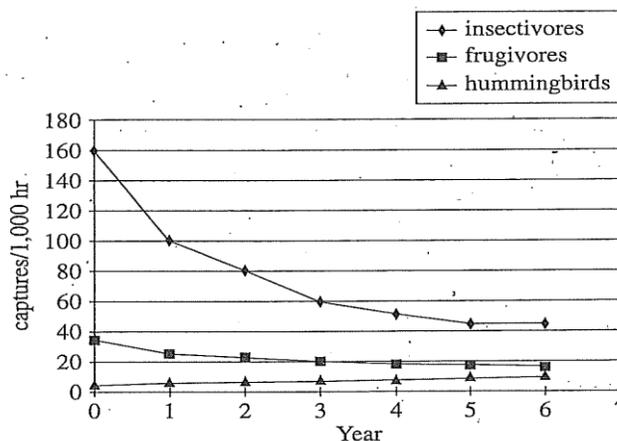

Figure 3

⊃CIRCLE the letter the BEST answers the question.

1. In study 4, as time increased from Year 0 to Year 6, the captures/1,000 hr of frugivores:
    a. Decreased only.
    b. Increased only.
    c. Decreased, then increased.
    d. Increased, then decreased.

2. Based on the results of Study 4, how did fragmentation most likely affect the population sixes of insectivores and hummingbirds in the fragments studied?
    a. Fragmentation increased the population sizes of both insectivores and hummingbirds.
    b. Fragmentation decreased the population sizes of both insectivores and hummingbirds.
    c. Fragmentation increased the population size of insectivores and decreased the population size of hummingbirds.
    d. Fragmentation decreased the population size of insectivores and increased the population size of hummingbirds.

3. Based on the results of Study 1, if the distance from the center of a 100m x 100m plot were 75m from the nearest clearing, the expected average change in AGTB at the plot over 17yr would be closest to which of the following values?
    a. -1.1 t/yr
    b. -2.6 t/yr
    c. +1.1 t/yr
    d. +2.6 t/yr

4. After examining the results of Study 2, a student concluded that the AGTB at each of the 25 plots remained constant. Which of the following alternative explanations is also consistent with the results?
    a. The AGTB at all 25 plots increased.
    b. The AGTB at all 25 plots decreased.
    c. The AGTB at some of the plots increased and the AGTB at some of the plots decreased.
    d. The AGTB at plots bounded by forest increased and the AGTB at plots bounded by clearings remained constant.

5. Which of the following sets of results from the studies is *least* consistent with the prediction proposed by the researchers?
    a. The results of Study 1 for AGTB.
    b. The results for Study 3 for AGTB.
    c. The results of Study 4 for frugivores.
    d. The results of Study 4 for hummingbirds.

6. In Study 4, the researchers trapped birds for 10,000hr per year. Thurs, how many insectivores were trapped in Year 2?
    a. 80
    b. 100
    c. 800
    d. 1,000

* Modeled after a release and published ACT practice test.