

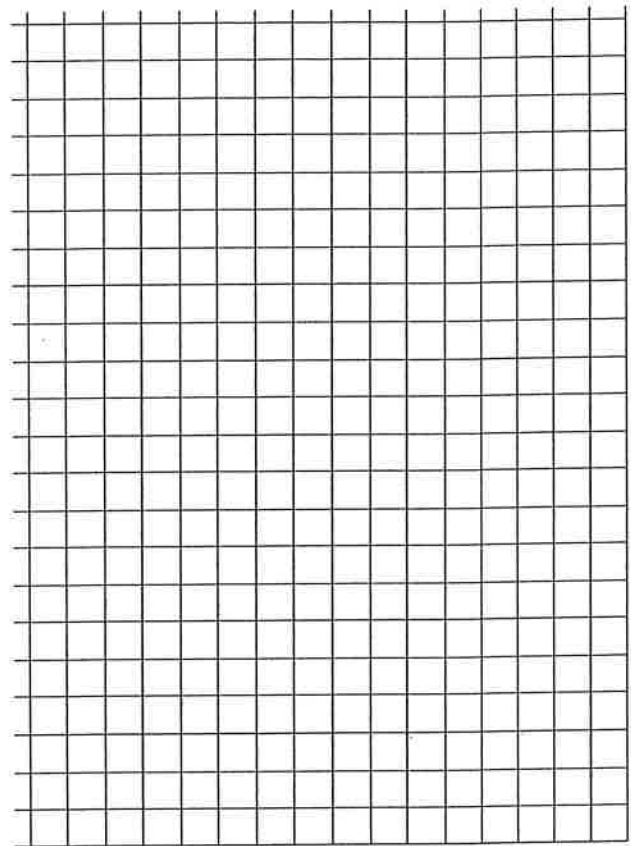
NAME: _____

****ALSO review your other materials from class!!!**

You leave an unripe bunch of bananas on the counter, and notice that a few days later, all of the bananas are ripe! You wonder how this happens, and you do a bit of research. You learn that a ripening banana releases the plant hormone ethylene (the stimulus). Ethylene speeds up the ripening of unripe fruit so nearby fruit also ripens, releasing more ethylene (the response). All the fruit quickly becomes ripe together.

You design an experiment to measure ethylene levels of bananas. You purchase bananas and put them under a cover with a sensor inside, and record ethylene levels over several days. The data is shown below.

Time (days)	Ethylene concentration (ppm)
0	5
1	20
2	103
3	357



1. Graph the data on the axes provided:

2. What is the independent variable in this experiment?
3. What is the dependent variable in this experiment?
4. Are the bananas ripening due to ethylene an example of positive or negative feedback? Create an argument, and make sure to use evidence to support your answer.

5. Examine the chemical reaction below, and use it to answer the following questions.



- a) What reaction is summarized by this equation?
- b) Where does this reaction take place?
- c) What is the major energy conversion that occurs during this reaction?
- d) What do plants do with the glucose produced from this reaction?
- e) How do plants obtain the carbon dioxide for this reaction?
- f) A friend tells you that the products of this equation must have more mass than the reactants because glucose weighs more than carbon dioxide and water. But you know this is incorrect! Explain why.
- g) Use the space below to draw a model that summarizes this chemical reaction.
- h) Is this the only chemical reaction that plants perform? Explain your answer.

You find a seed and you plant it in some soil. You come back and observe it, and notice it is growing quite rapidly. Over several days you observe the following:



You want to know HOW the plant is doing this- growing larger, starting from only a few cells (in the seed). Use this information to answer the following:

6a. How do multicellular organisms grow larger? Briefly explain.

6b. How do multicellular organisms develop specialized structures like roots and stems (in plants) or like muscles and nerve cells (in animals)?

6c. Compare the genetic material inside the cells of the starting seed (parent cells) with the genetic material inside the cells of the developing plant (daughter cells).

7. A scientist is studying the effects of exercise on heart rate. She has test subjects exercise for different amounts of time, and then measures the change in heart rate. One test subject does no exercise at all, one exercises for 10 minutes, and one exercises for 30 minutes. She observes that as they exercise, their heart beats faster, they sweat, and they also breathe faster.

a) What is the independent variable?

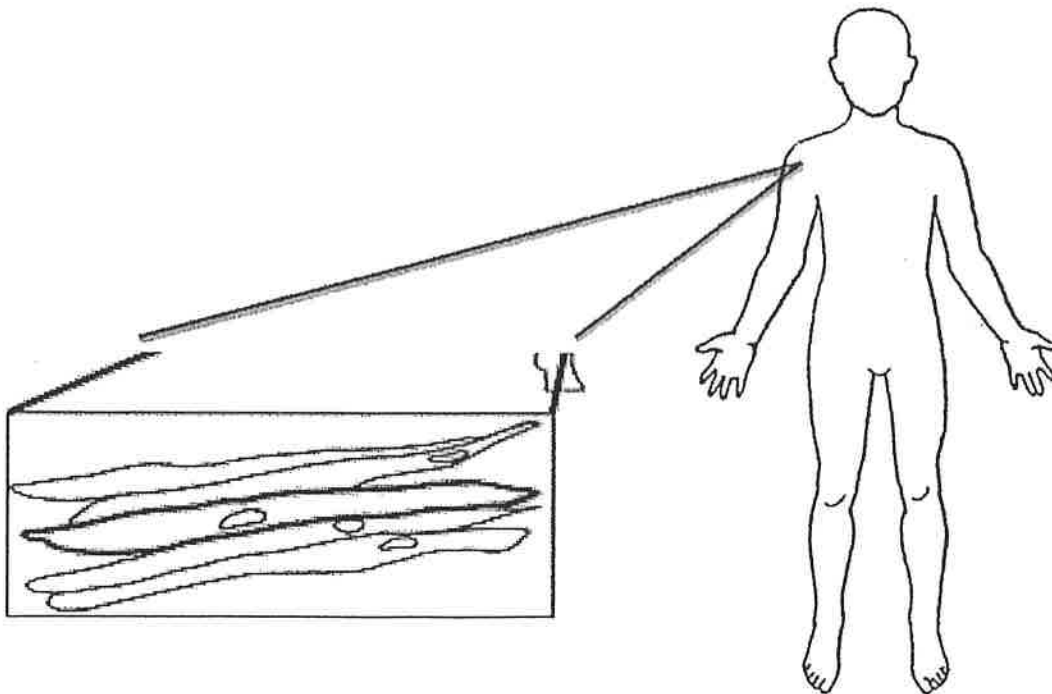
b) What is the dependent variable?

c) Which systems work together to increase heart rate when you exercise?

d) What are some examples of different levels of organization that work together to effect these changes?

e) How did the test subjects get the energy they needed to perform the exercise?

f) Draw a model of this chemical reaction below:



Semester 1 Biology vocabulary terms

Homeostasis

- cell
- hierarchical organization
- homeostasis
- multicellular
- negative feedback
- organ
- organism
- organ system
- positive feedback
- negative feedback
- specialized cell
- structure
- function
- system
- tissue
- claim
- evidence
- reasoning
- experiment
- variable
- independent variable
- dependent variable
- hypothesis
- data

For each topic, make a concept map, comic, poem, or tweet that includes at least 5 terms. Your example should make it obvious that you understand the connections and definitions. Highlight the terms used in each example. There are 5 different topics, so you should have 5 vocabulary reviews. You can use any combination of examples.

System and scale

System
chemical reaction
bond
matter
mass
atom
energy
chemical energy
mechanical energy
organic
protein
lipid
carbohydrate
molecule

Animals

- Aerobic
- Anaerobic
- Fermentation
- Lactic acid
- bond
- carbon dioxide

- Cellular respiration
- chemical element
- chemical energy
- chemical reaction
- energy
- enzyme
- Glucose
- matter
- mitochondria
- oxygen
- products
- reactants
- biosynthesis
- digestion

Specialized cells / Mitosis

- differentiation
- stem cell
- mitosis
- meiosis
- cellular division
- multicellular
- organ systems (circulatory, muscular, integumentary, nervous, Immune, digestive, skeletal, respiratory)
- cell
- tissue
- organ
- organelles
- mitochondria
- chloroplasts
- nucleus
- ribosome
- cytoplasm
- structure
- function
- gene
- mutation
- cancer
- chromosome
- embryo
- gamete
- sperm
- egg

Plants

- biosynthesis
- cellular respiration
- energy
- photosynthesis
- light energy
- chemical energy

- carbon dioxide
- oxygen
- glucose
- reactants
products