

Honors Biology Summer Work₍₂₀₂₁₎

Ms. Hunter

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DUE: On or before September 3rd! LATE work will NOT be accepted. Answers should be written in complete sentences and reflect honors level ability. You may write on these worksheets or you may rewrite questions and answers. Papers with **answers only** will NOT be accepted.

Answer all questions to the best of your ability. Use the link or URL provided or search for the video titles.

Scientific Method - Steps

Amoeba Sisters "Nature of Science" [HERE](#)

<https://www.youtube.com/watch?v=3nAETHZTObk>

1. Name the steps in the scientific method
2. Explain a scientist's first step in the scientific method.
3. Give an example of an observation that a scientist might make.
4. Scientists use their _____ to make observations.
5. What is a hypothesis?
6. A hypothesis must be _____ and it _____ an outcome.
7. Some hypotheses are written as _____ statements.
8. Write a hypothesis for the observation you wrote in question 3.
9. What is an experiment?
10. What part of an experiment is the manipulated variable?
11. How many manipulated variables should there be in a good experiment?

Controls and Variables

12. An experimenter changes _____ factor and then observes and _____ what happens.
13. Other factors in an experiment must be kept _____ so they won't affect the
14. What are these constant factors called?
15. What is the purpose of having a control in an experiment?
16. Name the two types of variables in an experiment.
17. What is the responding variable?
18. What is the manipulated variable?
19. The best experiments make _____ trials with the manipulated variable.

Valid Experiments

20. What do you need to have a valid experiment?
21. What is data?
22. What are THE TWO TYPES of data?
23. If the data is numbers, this is called _____ data.
24. To be useful, collected data must be
25. Name 3 ways of organizing data.
26. What is the conclusion of an experiment?
27. What must be done to verify the results of an experiment?

Practice

Jack loves music. He believes that he does his HW better and faster when he listens to music. His parents say that music is distracting when studying.

Answer using complete sentences.

1. State the problem.
2. Write a testable hypothesis in the correct format.
3. Describe in 3-6 sentences an experiment Jack could do to test his hypothesis.
4. What would be the IV?
5. What would be the DV?
6. What would the control be?
7. What would some of the constants be?

Identify the IV, and the DV in each of the following scenarios. Then write a hypothesis using the correct format.

8. Does the amount of water affect plant growth height?
 - IV:
 - DV:
 - Hypothesis:
9. Will a rubber band or string hold more weight without breaking?
 - IV:
 - DV:
 - Hypothesis:

10. Design your own experiment, listing the question, the IV, the DV and the hypothesis.

Experiment (what you are trying to find out):

Question:

IV:

DV:

Hypothesis:

CER (Claim, Evidence, Reasoning)

Amoeba Sisters "CER in Biology" [HERE](#)

<https://www.youtube.com/watch?v=15aWaGYheJs>

Read the following article [HERE](#):

<https://www.ck12.org/c/biology/variation-in-cells/lesson/Cell-Size-and-Shape-Advanced-BIO-ADV/>

and find evidence that would support the claim. Then, write a reasoning paragraph that includes why your evidence is true.

Claim: Cells can have lots of different shapes.

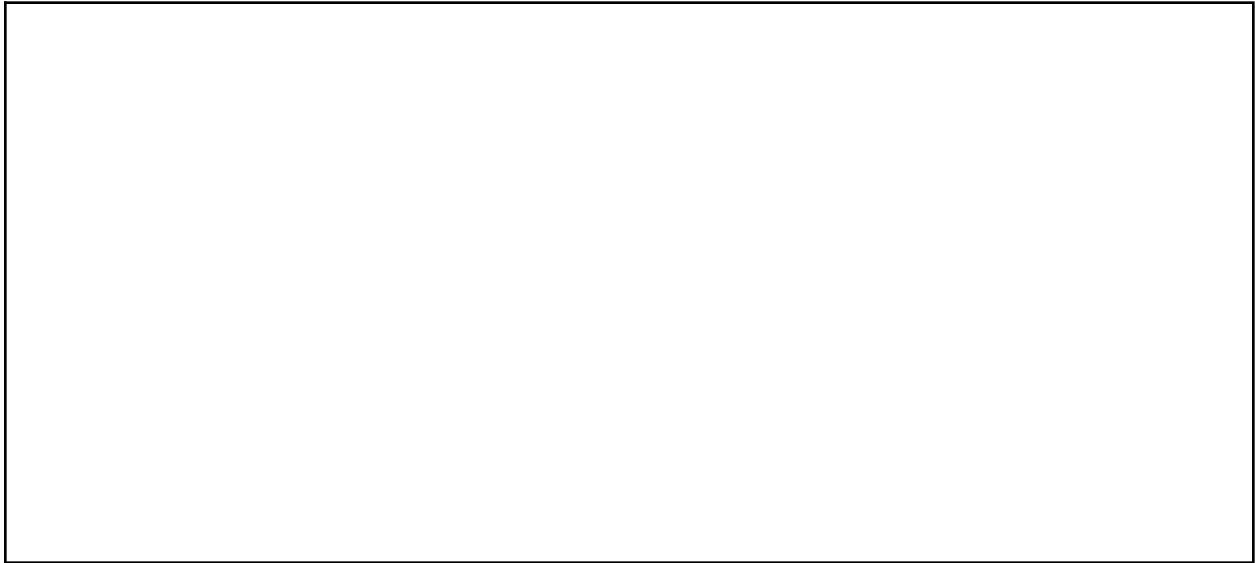
Evidence:

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Reasoning:



Scientific Model

Models help us learn, explain, understand and predict things about the natural world.

Create a model to show how light affects plant growth. Include as many components that you can think of, any interactions taking place, and any science phenomena that you think are relevant.

Model should be hand drawn and attached to these worksheets.