DR. ROLANDO ESPINOSA K-8 CENTER

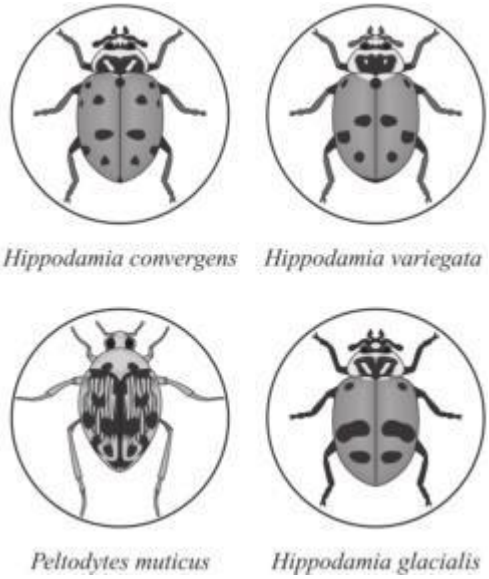
SUMMER HOME LEARNING

BIOLOGY

Answer all parts of the following questions on a separate sheet of paper:

1. A mushroom is a member of the Kingdom Fungi. Members of Kingdom Fungi are unique because they digest their food outside their bodies and then absorb the nutrients.
You may organize your answer for parts a, b, and c in a chart.
   a. Name two other Kingdoms of living organisms.
   b. Give one example of an organism that is classified into each Kingdom you described in part a.
   c. For each Kingdom that you selected, describe two characteristics that are used to classify organisms into that Kingdom.

2. A student is studying four beetles.



Three of the beetles belong to the same genus, and one does not.

   a. Identify whether Hippodamia convergens and Hippodamia variegata can mate and produce fertile offspring. Explain your answer.
   b. Which of the beetles must belong to the same family? Explain your answer.
   c. Describe another type of evidence, other than mating and producing fertile offspring, that scientists can use to determine taxonomic classification and relationships among insects.

3. The following structures are found in both plant and animal cells.
- Nucleus
- Chromosomes
- Cell membrane
- Cytoplasm
- Mitochondria

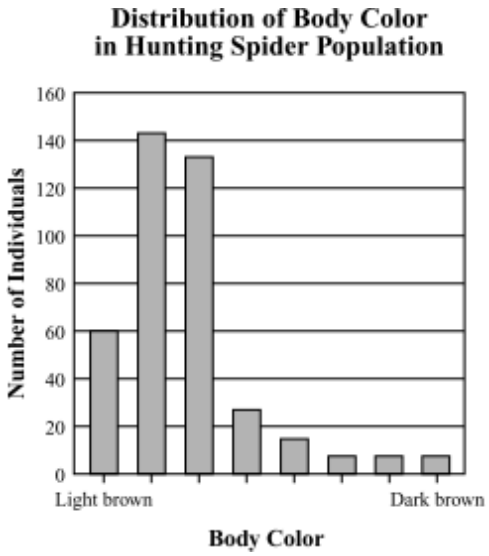
a. Pick two of the above structures and describe their functions.
b. Name two additional cell parts found in plants but not in animals. Describe one function of each of these plant cell structures.

4. In watermelons, solid dark green color (G) is dominant to stripes (g). A student crosses two watermelon plants that are heterozygous for melon color (Gg).
   a. Make a Punnett square to show this cross. What are the expected percentages of phenotypes of the offspring?
   b. The student's cross produces one hundred watermelon plants. Of those 100 plants, 78 plants produce solid dark green watermelons, and 22 produce striped watermelons. Explain these results based on the Punnett square and predictions you made in part (a).

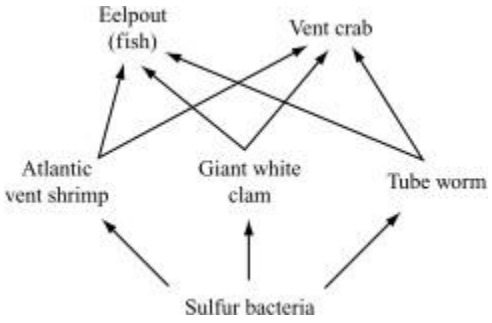
5. In contrast to web-building spiders, hunting spiders spend most of their time on the ground hunting prey. In a population of hunting spiders, a range of body colors from light brown to dark brown is observed. The graph below shows the distribution of body color in this spider population.
   a. Describe the most likely appearance of the ground on which the spiders live and hunt. Explain your answer.

Suppose the spiders' main prey begins to dwell primarily on dark vegetation rather than on the ground.

   b. What will most likely happen to the distribution of body color in the spider population over the next 50 years? Make a graph to show the expected distribution and explain your answer.



6. A partial food web for a deep-sea vent is below.



a. Which organism or organisms are the producers, primary consumers and secondary consumers in this food web? Explain your answer using evidence from the food web.
b. Compare how much of the energy initially entering the vent ecosystem is available to the Atlantic vent shrimp and to the eelpout based on their trophic levels. Explain why there is a difference in the amount of energy available to each species.