Genetics and Heredity

Chapter 7

Life Science Standard 2

Students will recognize that offspring can resemble parents in inherited traits and learned behaviors.

a. Compare and contrast the characteristics of learned behaviors and of inherited traits.

b. Discuss what a gene is and the role genes play in the transfer of traits.

Lesson 1

I. Vocabulary (page 311)

1. metamorphosis - a complete change of form, structure, or substance.
2. life cycle
3. mitosis
4. chromosome

II. EQ: How do organisms grow and develop? (pages 314-315)

Read text and answer guiding comprehension questions in Science Notebook

1. When a chick begins life, how many cells does it have?
2. How does the chick grow?
3. How do you think that a single cell develops into a chick with bones and feathers?
4. What are some of the ways in which different kinds of organisms begin their life cycles?
5. How do animals change as they mature?
6. How does cell division help organisms grow?

III. Article: "The Maggots Tale"

IV. Video: "TLC Elementary School Life Cycles

V. EQ: How do cells divide? (Pages 316-317)

Read text and answer reading comprehension questions in your Science Notebook.

1. What is mitosis?
2. What are chromosomes?
3. Before an animal cell divides, what happens to its chromosomes?
4. When do the chromosomes make copies of themselves?
5. What happens to the nuclear membrane as mitosis begins?
6. When does a new nuclear membrane form?
7. What is asexual reproduction?
8. What is one way organisms reproduce asexually?

VI. Stages of Mitosis: Science Up Close (Pages 316-317)

Go to the e-book on my webpage. Draw and label each stage of mitosis in your Science Notebook.

VII. Insta-Lab: Separating Chromosomes (Page 317)

What happened when you pull apart one of the threads into two threads?

What happened when you pull apart the second thread, but you started in the middle?

Write a summary of your investigation.

VIII. Vocabulary

5. asexual reproduction – the production of new organisms without two different parents
6. sexual reproduction – when multicellular organisms reproduce by the joining of cells from two different individuals
7. zygote – a fertilized egg that receives chromosomes from each parent
8. gametes – reproductive cells that contain only half the number of chromosomes of body cells

IX. What is reproduction? (Pages 318-319)

Read text and answer reading comprehension questions in your Science Notebook.

1. What is sexual reproduction?
2. How does the number of chromosomes in a zygote compare with the number of chromosomes in a gamete?
3. How does the number of chromosomes in a zygote compare with the number of chromosomes in a body cell?
4. What is formed during meiosis?
5. How many times during the process of meiosis do chromosomes duplicate themselves?
6. Why do the four reproductive cells formed contain only half of the DNA an organism needs?

X. Mitosis vs. Meiosis

- How are they the same?
- How are they different?
- What is their purpose?

XI. Lesson 1 Review: Interactive Text

Lesson 2: How Are Characteristics Inherited?

XII. Vocabulary (Page 325)

9. inherited trait – a characteristic pass from parents to their offspring
10. dominant trait – a trait that appears even if an organism has only one factor for the trait
11. recessive trait – a trait that appears only if an organism has two factors for the trait
12. gene – the part of a chromosome that contains the DNA code for an inherited trait

XIII. How are characteristics inherited? (Pages 328-329)

1. What traits did the puppies on this page inherit from their parents?
2. Do all of the puppies look alike?
3. Did the puppy that looks different inherit traits from its parents?
4. How were two tall parents from the second generation of plants able to produce any short offspring?
5. Where do organisms get inherited characteristics?
6. What were the results in the first generation?

XIV. How are characteristics inherited? (Pages 330-331))

1. When does a trait that is recessive appear?
2. If a smooth-skinned organism received a factor for smooth skin from one parent and a factor for rough skin from the other, which factor is dominant? How can you tell?
3. Under what circumstances can the offspring of two tall pea plants be short?
4. Is the factor for hairlessness dominant or recessive?
5. What factors must each parent of this dog (page 331) have had?

XV. What are genes? (Pages 332-333)

1. What do genes control?
2. Where are genes located?
3. Judging by the illustration on page 332, how many genes do you think are found on each chromosome?
4. What do the banded drawings of the genes tell you?
5. What makes you different from everyone else?
6. What role do genes play in the transfer of traits?

XVI.Punnett Square Game

XVII. Bill Nye the Science Guy: Genes and Video Questions

XVIII. Lesson 2 Review: Interactive Text

XIX. Vocabulary (Page 339)

13. instinct – a behavior that an organism inherits
14. learned behavior – a behavior that an animal acquires through experience
15. environment – all the living and nonliving things that surround and affect an organism

XX. What are instincts? (Pages 342-343)

1. What are instincts?
2. What are some examples of instincts?
3. How do instincts affect all members of a population?
4. What instinctive behavior are the ants showing?
5. How does the ants' behavior help them meet their needs?

XXI. What are learned behaviors? (Pages 344-345)

1. What is a learned behavior?
2. How do learned behaviors impact survival?
3. Is hunting a learned behavior or an instinct?
4. How do instincts differ from learned behaviors?
5. How can learned behaviors in animals be used to help humans?
6. What kind of behaviors does this whale carry out?

XXII. What are environmental Influences? (Pages 346-347)

1. What do plants need from their environment?
2. What do animals need from their environment?
3. What happens when an environment changes?
4. How did human activities affect the environment?
5. How were the populations of animals living in or near the water affected?
6. What is reclamation?
7. Why do you think reclamation is costly?
8. Why is reclamation important?
9. How can humans protect future generations?

XXIII. Lesson 3 Review: Interactive Text

XXIV. Science Stations

XXV. Chapter 7 Review (Pages 352-353) Due Friday!

XXVI. Unit Test (Tuesday, November 18th)