Distance Learning Assignment Week 2 (April 27- May 1st) Due May 4th (Mon)

Class: ELD Biology

Teacher: Mrs. Ceja

Content: Genetics Ch. 14

Student Assignment:

1) "Who gets the money?" Activity
2) " Bloody Mystery" Activity

**Student Instructions**:

All Assignments are to be copied into your notebooks. You will later take pictures of your completed work and send them to me via remind.

1) "Who gets the money?"
   - Copy all of the information into your notebook along with the boxes or data tables.
   - In this story, Mr. Jones and Mrs. Jones had one son. When they died without a will, all these men (Carl, Ray, Dale, Earl, Robert) say they are that son. Your job is to use your knowledge of Genetics to solve the mystery of who is the true son and should inherit their money.
   - Part 1- **Monohybrid Cross**: Based on eye color determine who can be eliminated as their son. Fill out the Punnett squares and data tables to show your work.
   - Part 2- **Co-dominance and Incomplete Dominance:** Based on blood types eliminate more of the men as the potential son. Fill out the Punnett squares and data tables
   - Part 3-**Sex linked Inheritance :** Using your knowledge of Sex linked traits fill out the Punnett squares and data table.
2) Bloody Mystery (pg 3 and pg 4)
   - Copy down the questions in your notebook (answer the questions)
   - Take pictures of your work and send back to me via remind.

Name: _____

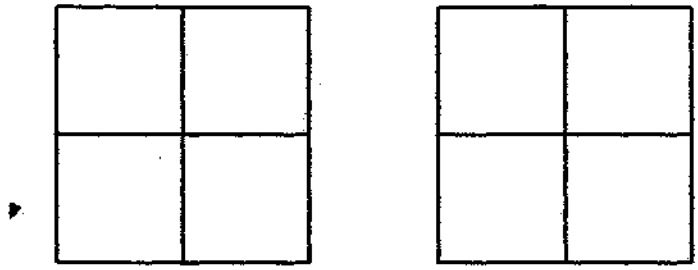
# Who Gets the Money? Worksheet

## Part One: Monohybrid Cross

Brown eyes are dominant over blue eyes, free earlobes are dominant over attached earlobes.

| | |
|---|---|
| Mr. Jones | heterozygous, free earlobes, and homozygous brown-eyed. |
| Mrs. Jones | heterozygous, free earlobes, and heterozygous brown-eyed. |
| Carl | homozygous brown-eyed, and attached earlobes |
| Ray | homozygous free earlobes, blue-eyed |
| Dale | heterozygous free earlobes, homozygous brown-eyed, |
| Earl | heterozygous free earlobes, and heterozygous brown-eyed. |
| Robert | homozygous free earlobes, blue-eyed |

In the space below, draw two Punnett Squares showing the possible offspring of Mr. and Mrs. Jones: one for eye color and one for earlobes.



Write each person's genotypes in the chart below.

| Person | Eye Color | Earlobes |
|---|---|---|
| Mr. Jones | | |
| Mrs. Jones | | |
| Carl | | |
| Ray | | |
| Dale | | |
| Earl | | |
| Robert | | |

Which men can be eliminated by these traits? Explain your reasoning for each man.

Name: _____

# Who Gets the Money? Worksheet

## Part Two: Co-dominance and Incomplete dominance

Now that _____ have been eliminated, lawyers order blood tests to try to prove their claims. The lawyers have also done some research and read that hair texture is inherited.

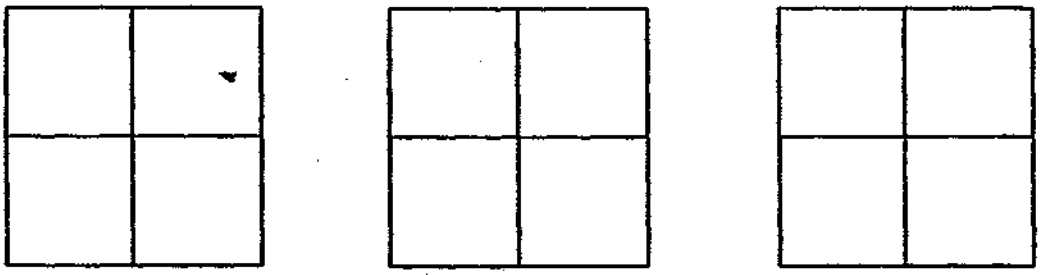
*Type A and type B blood are co-dominant over type O.*

*Rh + blood is dominant over Rh– blood.*

*Hair texture exhibits incomplete dominance. Homozygous dominants (HH) have curly hair. Homozygous recessives (hh) have straight hair. Heterozygotes (Hh) have wavy hair.*

| | |
|---|---|
| Mr. Jones | homozygous type A blood, heterozygous Rh +, straight hair |
| Mrs. Jones | heterozygous type B blood, homozygous Rh +, wavy hair |
| Carl | heterozygous type A blood, heterozygous Rh +, wavy hair |
| Dale | heterozygous type A blood, homozygous Rh +, wavy hair |
| Earl | type O blood, Rh–, straight hair |

In the space below, draw three Punnett Squares showing the possible offspring of Mr. and Mrs. Jones: for blood type, Rh type, and hair texture.



Write each person's genotypes in the chart below.

| Person | Blood Type | Rh Type | Hair Texture |
|---|---|---|---|
| Mr. Jones | | | |
| Mrs. Jones | | | |
| Carl | | | |
| Dale | | | |
| Earl | | | |

Which men can be eliminated now? Justify your answers for each man.

Name:_____

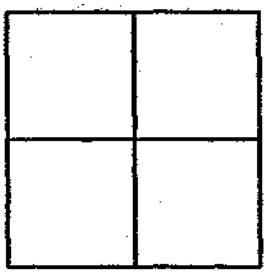
# Who Gets the Money? Worksheet

## Part Three: Sex-linked Inheritance

We're down to just _____. The lawyer now orders that a vision test be performed to test for red-green color blindness.

| | |
|---|---|
| Mr. Jones | color blind |
| Mrs. Jones | homozygous for normal vision |
| Carl | color blind |
| Dale | normal vision |

In the space below, draw a Punnett Squares showing the possible offspring of Mr. and Mrs. Jones for color blindness.



Write the genotypes of the persons in the table below:

| Person | Vision |
|---|---|
| Mr. Jones | |
| Mrs. Jones | |
| Carl | |
| Dale | |

SO: WHO GETS THE MONEY? (Don't forget to justify your answer!)

**Lesson 5: Multiple Alleles**
**Using Blood Types to Solve a Mystery**

**Purpose:** The purpose of this lesson is to explore Multiple Allele Traits. Students will learn how to perform Punnett Square crosses for blood type, a multiple allele trait. They will then apply this knowledge to mystery scenario.

**Objectives:**
The Students Will Be Able To:
~Explain what a Multiple Allele Trait is.
~Identify blood type as a multiple allele trait.
~Create Punnett Squares to interpret crosses of Multiple Allele Traits.

**Related Standards:**
SOLs: BIO.5 The student will investigate and understand life functions of archaebacteria, monerans (eubacteria), protsits, fungi, plants, and animals including humans. Key concepts include:
e) human health issues, human anatomy, body systems, and life functions.

BIO.6 The student will investigate and understand common mechanisms of inheritance and protein synthesis. Key concepts will include:
d) Prediction of inheritance of traits based on the Mendelian laws of heredity.
h) use, limitations, and misuse of genetic information

NSES Content Standard A: Science as Inquiry
- Abilities necessary to do scientific inquiry
- Understandings about scientific inquiry

NSES: Life Science Content Standard C
- Molecular basis of heredity

NSES Content Standard F: Science in Personal and Social Perspectives
- Personal and community health

**Materials and Resources:**
Multiple Allele Activity Sheet; Books and other resources on Multiple Alleles; *A Bloody Mystery* activity sheet
For "Bloody Hand" demonstration: Large beaker, Ammonia, Goldenrod paper, Paper towels, goggles

**Class Management and Safety:**
The "Bloody Hand" demonstration involves the use of the household chemical, Ammonia. A MSDS for this chemical should be obtained, and teacher should take safety precautions when handling the chemical. Teacher will wear safety goggles. In addition, if students are in close vicinity to the demonstration, they should also wear safety goggles.

**Procedures:**

**Engage** (5 min, 5 min)

1. Opening Question (on board):
   What is your blood type?
   What other blood types are there?
   What do you think determines blood type?
2. "Bloody Hand" demonstration (ammonia on goldenrod paper)

**Explore** (20 min)

2. Students will be given an Activity Sheet. Using their book and other resources, they are to determine the possible phenotypes and genotypes involved in blood typing. Students will also attempt a Multiple Allele Punnett Square for blood typing

**Explain** (10 min.)

3. Mini-Lecture: Multiple Alleles

**Elaborate** (10 min. in class, finish for HW)

4. Students will be given a *A Bloody Mystery,* a mystery scenario in which they will apply their knowledge of blood typing and Punnett Squares to solve the mystery.

**Evaluate**

Students will be evaluated on the completion of the *A Bloody Mystery* activity sheet.

| Performance Criteria | Evidence | Points Awarded* |
|---|---|---|
| Student can construct a Punnett Square for multiple allele traits | Accurate construction of at least two Punnett Squares related to the mystery | / 10 |
| Student can interpret Punnett Squares as they relate to multiple allele traits. | Student correctly identifies the genotype of each individual in the mystery | / 5 |
| Student can draw conclusions from Punnett Squares. | Student correctly identifies whether Charlie is a son or an imposter. | / 5 |
| Student can apply scientific evidence to defend conclusions. | Student explains, in detail, a case defending their conclusions; Student uses evidence from Punnett squares to defend their case. | / 5 |
| | Total Score | /25 |

# Multiple Alleles Investigation:
# Blood Types

1. What is a multiple allele trait?

2. What are the possible alleles for blood groups?

3. What are 4 the possible phenotypes for blood? What are the possible genotypes for each of these phenotypes?

4. What is Co-dominance, and how does this term relate to blood groups?

5. Construct a Punnett Square for the cross between a man with type O blood and a woman with type AB blood.

If this man and woman have a baby, what possible blood types could the baby have?

What is the probability that the baby will have each of these blood types?

# Multiple Alleles Investigation: A Bloody Mystery

You are a lawyer for the following:

Mr. Cash died and left all of his money to his two children. Because of Mr. Cash's prominent role in society, his death made headlines. Shortly after, a young man named Charlie, who claims to be Mr. Cash's long lost son arrives and demands his share of the inheritance. Mr. Cash's two children and their lawyers are skeptical and refuse this young man the money, so he sues. The judge orders blood tests for all of the family. Mr. Cash's blood type, as it appears on his hospital records, is AB. His wife had blood type A. Mr. Cash's two known children were both type B. The young man claiming to be a long lost son had blood type O.

Based on the blood tests, prove to the judge whether or not Charlie could be a child of Mr. Cash. Create a case (1 paragraph) defending your conclusion. Determine the genotypes for each individual involved, and use at least two Punnett Squares as evidence.

Distance Learning Assignment Week 3 (May 4-8) Due May 11th (Mon)

Class: ELD Biology

Teacher: Mrs. Ceja

Content: Evolution Ch. 15 (pg.369-386)

Student Assignment:

1) Ch. 15 Outline (pg. 369-386)
2) Assessment Questions
   - Ch. 15.1 ( questions 1-4 pg.372)
   - Ch. 15.2 (questions 1-4 pg. 377)
   - Ch. 15.3 (questions 1-3 pg.386)

**Student Instructions**: Outline format should be in this manner. (1 sentence per paragraph summarizing what that paragraph was about. I have made the format with all the bold headings, students should fill out the "P's" with one sentence summarizing each paragraph from the book)

I. The Puzzle of Life's diversity (15.1)

A. Voyage of the Beagle

P1:

P2:

B. Darwin's Observations

1) Patterns of Diversity

P1:

P2:

2) Living Organisms and Fossils

P1:

3) The Galapagos Islands

P1:

P2:

P3:

4) The Journey Home

P1:

II. Ideas that shaped Darwin's Thinking

P1:

P2:

P3:

A. An Ancient Changing Earth

P1:

1) Hutton and Geological Change

P1:

2) Lyell's Principles of Geology

P1:

P2:

P3:

B. Lamarck's Evolution Hypothesis

P1:

1) Tendency Towards Perfection
P1:
2) Use and Disuse
P1:
3) Inheritance of Acquired Traits
P1:
4) Evaluating Lamarck's Hypothesis
P1:

C. Population Growth

P1:
P2:
P3:

III. Darwin Presents His Case

P1:

A. Publication of "On the Origin of Species"

P1:

P2:

P3:

B. Inherited Variation and Artificial Selection

P1:

P2:

C. Evolution by Natural Selection

P1:

1) The Struggle for Existence

P1:

2) Survival of the Fittest
P1:
P2:
P3:

3) Descent with Modification

P1:

P2:

D. Evidence of Evolution

P1:

1) The Fossil Record
P1:
P2:

2) Geographic Distribution of Living Species
P1:
P2:

3) Homologous Body Structures

P1:

P2:

P3:

P4:

P5:

4) Similarities in Embryology

P1:

P2:

E. Summary of Darwin's Theory

P1:
P2:
P3:
P4:
P5:

F. Strengths and Weaknesses of Evolutionary Theory

P1:

P2: