Genes and Traits

Directions: Use pages 291-298 and answer the following.

**Pre-Read: Before reading, put a + next to the terms you fully understand, a – next to the ones you have no clue about, and a ? next to the ones you sort of know.**

\_\_\_Phenotype \_\_\_Genotype \_\_\_Gene \_\_\_Gamete

\_\_\_Homozygous \_\_\_Heterozygous \_\_\_Incomplete Dominance

\_\_\_ Codominance \_\_\_ Heredity

**During Read: Answer the following as you read each section.**

1. How can we breed offspring to have traits that we want?
2. Why did Gregor Mendel choose to use pea plants in his experiments?
3. What four main traits of peas did Mendel study?
4. Using the chart at the top of page 292, what can you infer about purple flowers, yellow seeds, smooth seed surface, and green pods in peas? What evidence led you to this?
5. Why did white flowers, green seeds, wrinkled seeds, and yellow pods all reappear after Mendel created an F2 generation?
6. What three principles of heredity did Mendel propose after his pea study?
7. What is a “gamete”? How do gametes pass traits on to offspring?
8. What is “incomplete dominance”? What is the result of incomplete dominance?
9. What is “codominance”? What is one example of codominance?
10. Explain how environment can also affect certain traits in organisms.
11. The following chart describes traits in plants and animals. Determine if the traits described are examples of simple dominance, codominance, or incomplete dominance. Explain your reasoning!

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| --- | --- | --- | --- |
| Trait | Description | Type of dominance | Reasoning |
| Feather color in chickens | The feathers of a species of chicken can be black, white, or “erminette”. Erminette chickens have both black feathers and white feathers, but not gray feathers. |  |  |
| Color of horses | In horses when a chestnut colored horse is bred with a white horse, the offspring are a golden tan color. |  |  |
| Fur in cattle | When a red cattle is bred with a white cattle, a roan cattle (red and white together) results. |  |  |
| Sweet Pea Tendrils | When sweet pea plants with tendrils (structures that grow from the stem and help the plant attach and climb) are crossed with sweet pea plants without tendrils, all of the offspring have tendrils. |  |  |
| Rabbit hair length | Longhaired rabbits crossed with shorthaired rabbits produce off-spring that have medium length hair. |  |  |
| Hair type in humans | A father has straight hair, the mother has curly hair. The daughter has wavy hair. |  |  |
| Scales in fish | When certain red fish are crossed with certain blue fish, the offspring has red and blue scales. |  |  |
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