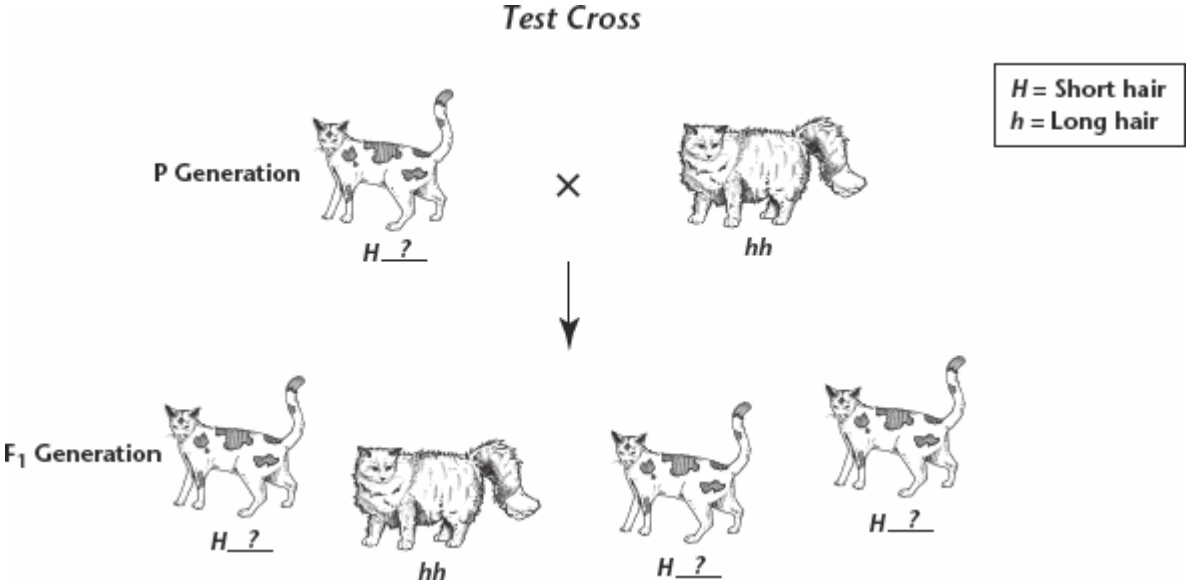
Name _____ Date _____ Class _____

Warm-Up: # What Is Heredity?

When an organism has a trait controlled by a dominant allele, it can either be a hybrid or a purebred. To find out which, geneticists use a test cross. Read the passage and study the diagram below. Then use a separate sheet of paper to answer the questions that follow the diagram.

The Test Cross

In a test cross, the organism with the trait controlled by a dominant allele is crossed with an organism with a trait controlled by a recessive allele. If all offspring have the trait controlled by the dominant allele, then the parent is probably a purebred. If any offspring has the recessive strait, then the dominant parent is a hybrid.



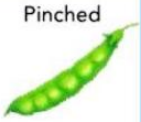
1. Is the long-haired cat in the P generation a hybrid or a purebred? Explain your answer.

2. Is the short-haired cat in the P generation a hybrid or a purebred? Explain your answer.

3. If the short-haired cat in the P generation were purebred, what would you expect the offspring to look like?

Mendel studied the inheritance of seven different traits in pea plants. Use the table to answer the questions.

Inheritance of Pea Plants Studied by Mendel

	Seed Shape	Seed Color	Pod Shape	Pod Color	Flower Color	Flower Position	Stem Height
P	Wrinkled  X  Round	Yellow  X  Green	Pinched  X  Smooth	Green  X  Yellow	Purple  X  White	Tip of stem  X  Side of stem	Tall  X  Short
F_1	 Round	 Yellow	 Smooth	 Green	 Purple	 Side of stem	 Tall

1. **Infer**. What are the two kinds of seed color?

2. **Infer**. Which color is the result of a dominant allele?

3. **Predict**. What combinations of alleles will produce yellow seeds?

4. **Identify**. In Mendel's cross for flower position, what contrasting traits did the pea plants in the **P** generation exhibit?

5. **Draw Conclusions**. Circle the picture of each dominant form of the trait in the **P** generation.

6. **Predict**. Under what conditions would the recessive form of one of these traits appear?