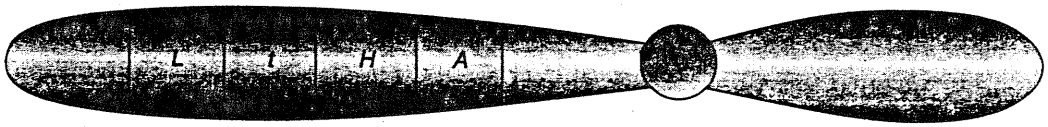
Name _____ Class _____ Date _____



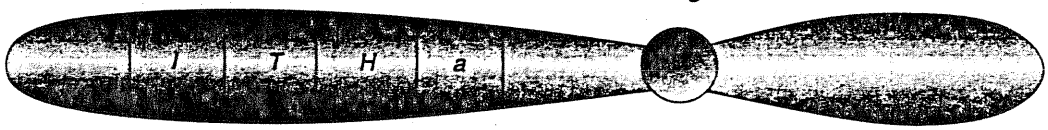
# *Should This Dog Be Called Spot?*

Imagine this microscopic drama. A sperm cell from a male dog fuses with an egg cell from a female dog. Each dog's gamete carries 39 chromosomes. The zygote that results from the fusion of the gametes contains 78 chromosomes—one set of 39 chromosomes from each parent. One pair of the zygote's chromosomes are shown below.

**Chromosome from the Female Dog**




**Chromosome from the Male Dog**




Each chromosome of the homologous pair contains alleles for the same traits. But one chromosome may have a dominant allele and the other a recessive allele. Use the drawings and the table to answer the questions.

| Trait | Dominant Gene | Recessive Gene |
|---|---|---|
| Hair length | Short (*L*) | Long (*l*) |
| Hair texture | Wiry (*T*) | Silky (*t*) |
| Hair curliness | Curly (*H*) | Straight (*h*) |
| Coat pattern | Spotted (*A*) | Solid (*a*) |

**1.** Will the new puppy have a spotted coat? Explain. _____

_____

_____

_____

2. Does the female dog have a spotted coat? Explain. _____

_____

_____

3. Does the male dog have a spotted coat? Explain. _____

_____

_____

4. What will be the texture of the puppy's coat? _____

5. Will the texture of the puppy's coat resemble that of either of its parents? Explain. _____

_____

_____

6. Will the puppy have curly hair or straight hair? _____

7. **a.** Does the female dog have curly hair? _____

**b.** Does the male dog have curly hair? _____

8. **a.** Define the term heterozygous. _____

_____

_____

**b.** For which traits is the puppy heterozygous? _____

_____

_____

9. **a.** Define the term homozygous. _____

_____

_____

**b.** For which traits is the puppy homozygous? _____

_____

_____

10. Explain why you cannot completely describe the puppy's parents even though you can accurately describe the puppy. _____

_____

_____

_____

_____