

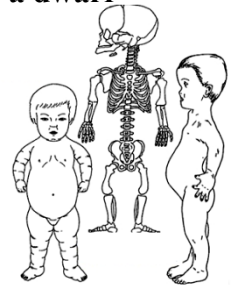
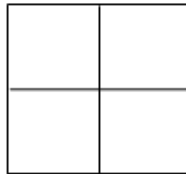
Name \_\_\_\_\_

Date \_\_\_\_\_

### Warm-Up: Monohybrid Cross Practice Problems

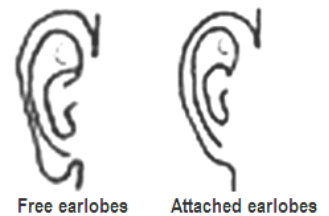
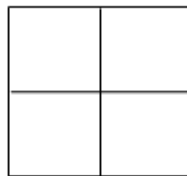
Show ALL work and solution.

1. In humans, **Achondroplasia** “dwarfism” (D) is dominant over normal (d). A homozygous dominant (DD) person dies before the age of one. A heterozygous (Dd) person is dwarf. A homozygous recessive individual is normal. A heterozygous dwarf man marries a dwarf heterozygous woman.



- a) What is the probability of having normal children? \_\_\_\_\_
- b) What is the probability that the next child will **also** be normal? \_\_\_\_\_
- c) What is the probability of having a child that is dwarf? \_\_\_\_\_
- d) What is the probability of having a child that dies at one from this disorder? \_\_\_\_\_

2. In humans, free earlobes (F) is dominant over attached earlobes (f). If one parent is homozygous dominant for free earlobes while the other has attached earlobes, can they produce children with attached earlobes? \_\_\_\_\_



- a) What is the genotypic ratio of the offspring? \_\_\_\_\_
- b) What is the phenotypic ratio of the offspring? \_\_\_\_\_

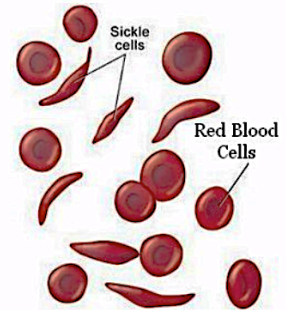
3. In humans widow’s peak (W) is dominant over straight hairline (w). A heterozygous man for this trait marries a woman who is also heterozygous.



- a) List the possible genotypes of their offspring. \_\_\_\_\_
- b) List the phenotypic ratio for their children. \_\_\_\_\_

For each of the problem below, show your solution step by step.

- A. One gene with two alleles controls the expression of red blood cell shape in humans. There are three different phenotypes: 1. Normal blood cells only resulting in no anemia (**SS**), 2. A few sickled cells resulting in a carrier state with mild anemia (**Ss**), and 3. A usually fatal condition with mostly sickled cells and severe anemia (**ss**).



Three couples go to get genetic counseling before marriage. In the first couple, both people are homozygous for the normal allele. In the second, the man is heterozygous, while the woman is homozygous for the normal allele. In the third couple, both parents are heterozygous. Show the expected genotypic and phenotypic ratios for the children of each couple. What is the probability that each couple will have a child with fatal sickle cell anemia?

COUPLE 1: \_\_\_\_\_ X \_\_\_\_\_

Genotypic ratio: \_\_\_\_\_

Phenotypic ratio: \_\_\_\_\_


COUPLE 2: \_\_\_\_\_ X \_\_\_\_\_

Genotypic ratio: \_\_\_\_\_

Phenotypic ratio: \_\_\_\_\_


COUPLE 3: \_\_\_\_\_ X \_\_\_\_\_

Genotypic ratio: \_\_\_\_\_

Phenotypic ratio: \_\_\_\_\_
