

# Steps to Complete Punnett Squares

## Consider the following:

Black is dominant over white for dog fur color. If a heterozygous/hybrid female mates or crosses with a homozygous/pure white male, what is the chance or probability they will have white puppies?

### 1. Assign letters to the traits.

Black is dominant so it will get a capital letter.

**Black=B**

White is recessive so it will get a lowercase letter.

**White=b**

\*\*\*Since we are referring to the same trait, fur color, the same letters are used.

### 2. Write out the cross. (Female x Male)

**Heterozygous/Hybrid x Homozygous/Pure White**

Heterozygous/Hybrid means two different alleles in the pair.

**Female=Bb**

Homozygous/Pure means both alleles are the same.

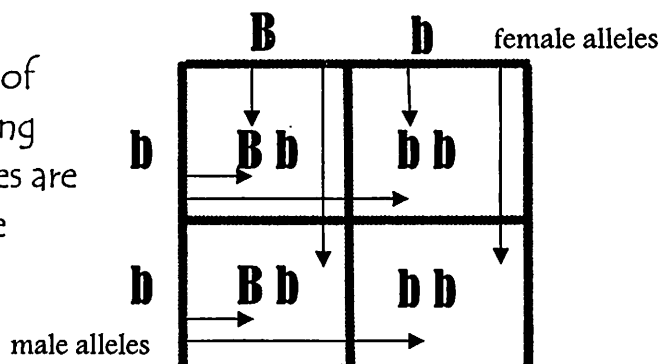
**Male=bb**

**Cross: Bb x bb**

### 3. Fill in the Punnett square.

One set of alleles goes along the top of the square and the other set goes along the side of the square. Then the boxes are filled in according to the arrows. The capital letter always goes first.

**"Top Drop, Side Slide"**



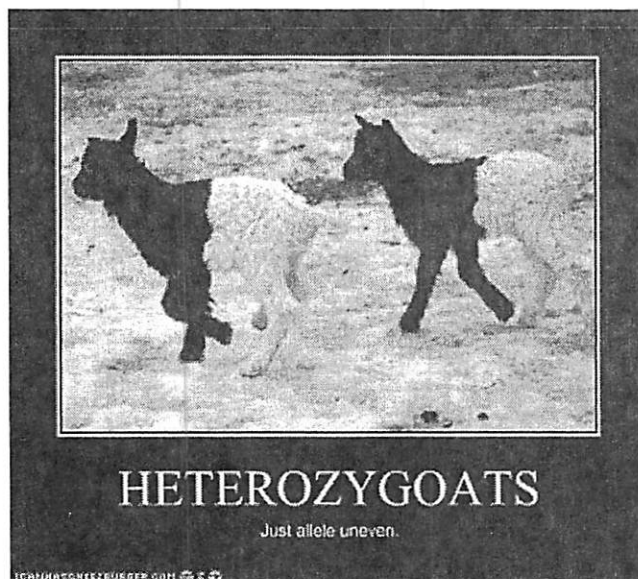
### 4. Determine probability.

Since there are four boxes in a Punnett square, each box is worth 25%.

Two of the boxes have a Bb which would produce a black puppy. Two boxes have a bb which would produce a white puppy. Each of the two boxes are worth 25%, so together, it would be 50%. There is a 50% chance of getting a white puppy if these two parents mated.

## "Heterozygoats"

**Directions:** Answer the questions in the spaces provided.



1. How do the goats in the picture relate to a heterozygous (hybrid) genotype?

---

---

---

2. Which allele, dominant or recessive, gets expressed in a heterozygous (hybrid) genotype? Explain.

---

---

---

---

3. When you are determining an organism's genotype, how is this different than an organism's phenotype? \_\_\_\_\_

---

---

---