

1. When filling in the Punnett square below, use a capital “H” for dominant and a lower case “h” for recessive.

Mom goes here ↓	H	H ← Dad goes here
h	Hh	Hh
h	Hh	Hh

2. What would be the chance that their child would have blonde hair? **0%**
3. What would be the chance the child had black hair? **100%**

All of the offspring would have black hair, so it would be 100% chance of having black hair black hair, and 0% chance blonde hair.

In this case, one of the cats has long hair. In the paragraph, we said that this is the recessive trait. So this means that we know the genotype of the female cat is hh (since she is showing the recessive phenotype). However, the male cat has short hair. In the paragraph, we stated that short hair is the dominant trait. This means that the male cat could either be HH (homozygous dominant) **OR** Hh (heterozygous dominant). There is no possible way to tell which genotype the male cat has just by looking on at his outside appearance. So we have to account for both possibilities. That is why we need 2 Punnett squares: one for the possibility of the male cat being homozygous dominant and one for the possibility of the male cat being heterozygous.

Female Cat ↓	H	H ← Male cat (Homozygous dominant)
h	Hh	Hh
h	Hh	Hh

4. How many would have short hair? **100%**
5. How many would have long hair? **0%**

Female Cat ↓	H	h ← Male cat (Heterozygous)
h	Hh	hh
h	Hh	hh

6. How many would have short hair? **50%**
7. How many would have long hair? **50%**