Name: _____ Period: _____

5.3 PART 1 PUNNETT SQUARES PRACTICE REVIEW #3
ATTACK OF THE GUINEA PIGS!

GUINEA PIG PHENOTYPES:

LONG HAIRED BLACK   LONG HAIRED WHITE   SHORT HAIRED BLACK   SHORT HAIRED WHITE

PHENOTYPES:

BB = black   Bb = black   bb = white

HH = short hair   Hh = short hair   hh = long hair

1. Cross a long-haired black (BBhh) guinea pig with a short-haired black (BbHH) guinea pig. Complete the Punnett square below to determine the possible offspring genotypes. Then determine the number of each phenotype.

Possible Offspring:

Long-haired black:

    Fraction:_____   %: _____

Long-haired white:

    Fraction:_____   %: _____

Short-haired black:

    Fraction:_____   %: _____

Short-haired white:

    Fraction:_____   %: _____

2. Cross a heterozygous short-haired white guinea pig with a heterozygous short-haired heterozygous black guinea pig. Complete the Punnett square below to determine the possible offspring genotypes. Then determine the number of each phenotype.

Possible Offspring:

Long-haired black:

Fraction:_____   %: _____

Long-haired white:

Fraction:_____   %: _____

Short-haired black:

Fraction:_____   %: _____

Short-haired white:

Fraction:_____   %: _____

3. You want to start a guinea pig farm. After becoming involved with the "Guinea Pig Lovers Association of America", you determine that most people want the coveted long-haired white guinea pig, aka "The White Wizard", with the genotype hhbb, as a pet (mostly so they can do Guinea pig *Lord of the Rings* reenactments). However, most members of the GPLAA don't have the amazing genetics background you do. If you can buy only TWO guinea pigs to start your farm, BUT there aren't <u>any</u> long-haired white guinea pigs available for purchase. Using the Punnett square process, determine what two guinea pig genotypes you should buy in order to achieve <u>at least</u> 25% (4/16) offspring with the genotype hhbb. In addition, Guinea pigs are super picky about their mates. They will NOT reproduce with another Guinea pig has the same phenotypes (looks the same!). **(Hint: work backwards by filling out your Punnett square first!)**

Genotypes of guinea pigs you will buy:

_____

Phenotypes of the guinea pigs you will buy:

_____