

Name: _____

Date: _____ Class Hour _____

In rabbits, black fur is dominant to white fur. A homozygous dominant male is mated with a heterozygous female. What are the genotypes of the parents? (make a Punnett square)

Genotype of Parent 1: BB mate

B B

B BB BB

b Bb Bb

Genotype of Parent 2: Bb female

List the probability of having black fur in this cross: 100

List the probability of having white fur in this cross: 0

In humans, free-ear lobes are dominant to attached ear lobes. Two parents that are both heterozygous free are expecting a child. What are the genotypes of the parents? What are the phenotypes and genotypes of the possible offspring? (make a Punnett square)

Genotype of Parent 1: Ff

Genotype of Parent 2: Ff free : attached

F f
F F F f
f F f ff

Phenotype of offspring: 3:1 F to f

Genotype of offspring: FF: Ff: ff
1 : 2 : 1

In fruit flies, red eyes are dominant over white eyes. A homozygous dominant male is mated with a homozygous recessive female. What are the genotypes of the parents? (make a Punnett square)

Genotype of Parent 1: RR

R Rr Rr
r Rr Rr

Genotype of Parent 2: rr

List the probability of having red eyes in this cross: 100

List the probability of having white eyes in this cross: 0

Black hair is homozygous dominant. Brown hair is heterozygous. Blonde hair is homozygous recessive. (This is an example of incomplete dominance.) A woman with brown hair marries a man with brown hair. What are the possible outcomes for their kids?

What are the genotypes of the parents? (make a Punnett square)

Genotype of Parent 1: Bb

B b
B B B b
b B b bb

Genotype of Parent 2: Bb

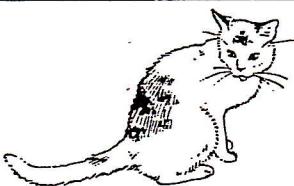
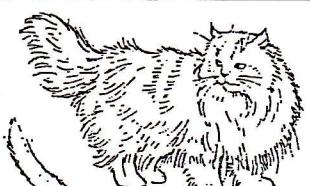
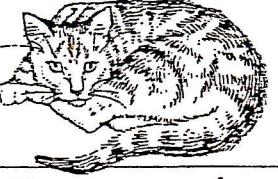
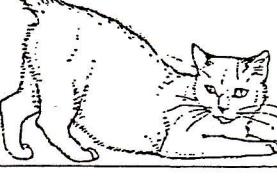
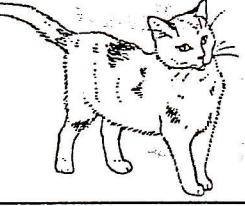
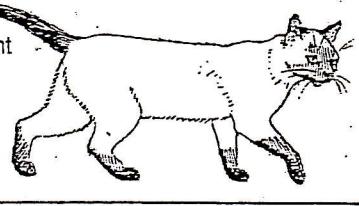
List the probability of having black hair in this cross: 25%

List the probability of having brown hair in this cross: 50%

List the probability of having blonde hair in this cross: 25%

Name _____ Class _____ Date _____

Using Punnett Squares: Practicing Skills

SELECTED TRAITS IN CATS		
Trait	Dominant Allele	Recessive Allele
Coat length	Short hair (H)	
		Long hair (h) 
Tabby stripes	Tabby (T)	
		Stripeless (t) 
Colorpoint (markings on nose, ears, paws, and tail)	Normal (no colorpoint) (N)	
		Colorpoint (n) 

Show the results of the following crosses using Punnett squares and the information in the accompanying figure.

1. Heterozygous short-hair X heterozygous short-hair

$$\begin{array}{c}
 H \cdot h \\
 H \quad HH \quad Hh \\
 \cdot \quad h \quad Hh \quad hh
 \end{array}$$

Genotypic ratio:

$$1:2:1$$

Phenotypic ratio:

$$3:1$$

2. Heterozygous tabby X stripeless

$$\begin{array}{c}
 T \cdot t \\
 T \quad Tt \quad tt \\
 \cdot \quad Tt \quad tt
 \end{array}$$

Genotypic ratio:

$$2:2 (1:1)$$

Phenotypic ratio:

$$2:2 (1:1)$$

3. Colorpoint X homozygous normal

$$\begin{array}{c}
 n \quad n \\
 N \quad Nn \quad Nn \\
 N \quad Nn \quad Nn
 \end{array}$$

Genotypic ratio:

$$4:0$$

Phenotypic ratio:

$$4:0$$

PUNNETT SQUARE ACTIVITY

Copy the Punnett Square.

Fill in the Punnett Square.

What are the phenotypes for the offspring?

What are the genotypes for the offspring?

	A	a
a	Aaa	aa
a	aaa	aa

2 : 2
blue : pink

Blue feet are dominant to pink feet.

A = Blue feet.

a = pink feet.

PUNNETT SQUARE ACTIVITY

Copy the Punnett Square.

Fill in the Punnett Square.

What are the phenotypic ratios for the offspring?

What are the genotypic ratios for the offspring?

	A	A
a	Aa	Aa
a	Aa	Aa

4:0

4:0 Unattached

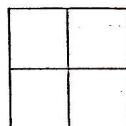
Unattached ear lobes are dominant to attached ear lobes.

A = Unattached ear lobe.

a = Attached ear lobe

PUNNETT SQUARE ACTIVITY

- One horse carries homozygous, cremello color traits (bb), and its mate carries homozygous, chestnut color traits (BB). A third trait, palomino color, is the heterozygous condition (Bb). Use Punnett squares to determine ALL the possible crosses between all the possible phenotypes.



What are the phenotypes for ALL of the offspring?

What are the genotypes for ALL of the offspring?

b b B B
b bb b_h B BB B_h
b bb b_h B BBBB

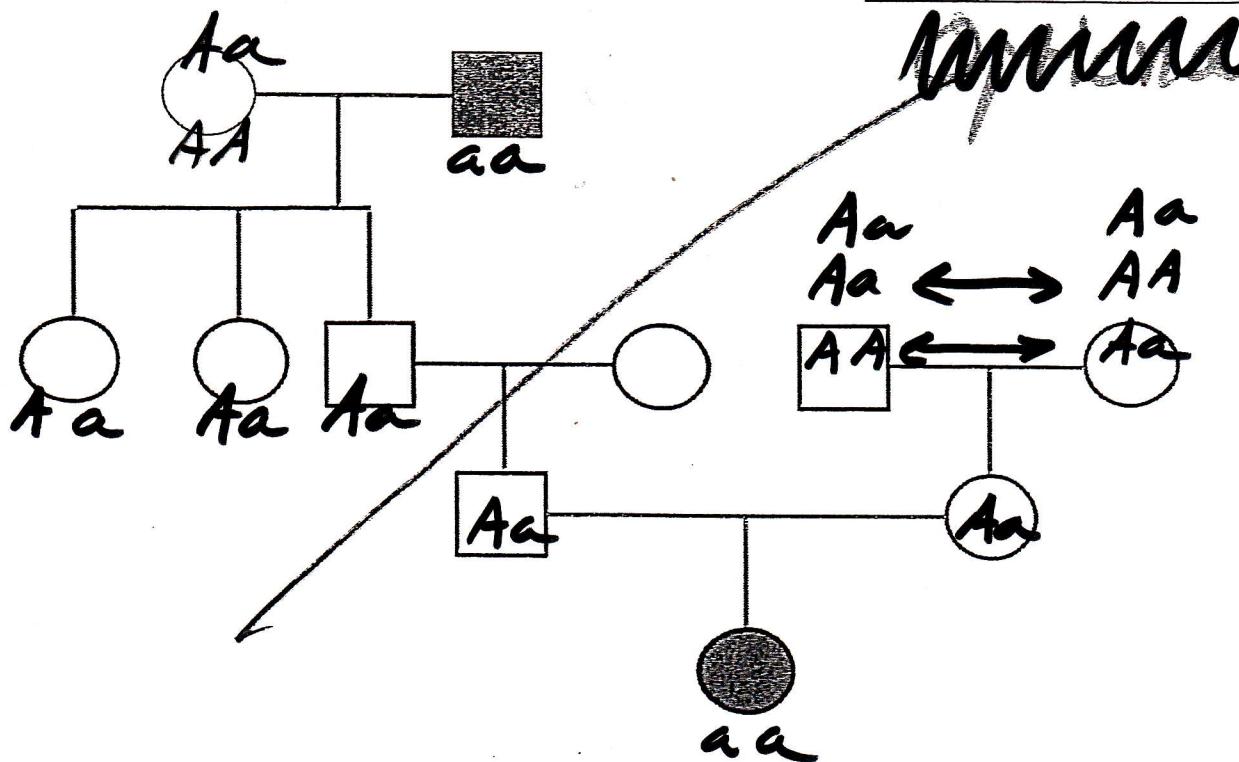
4:0 palomino

B b B. b
B BB B_h b B_h bb
b B_h bb B B_h bb

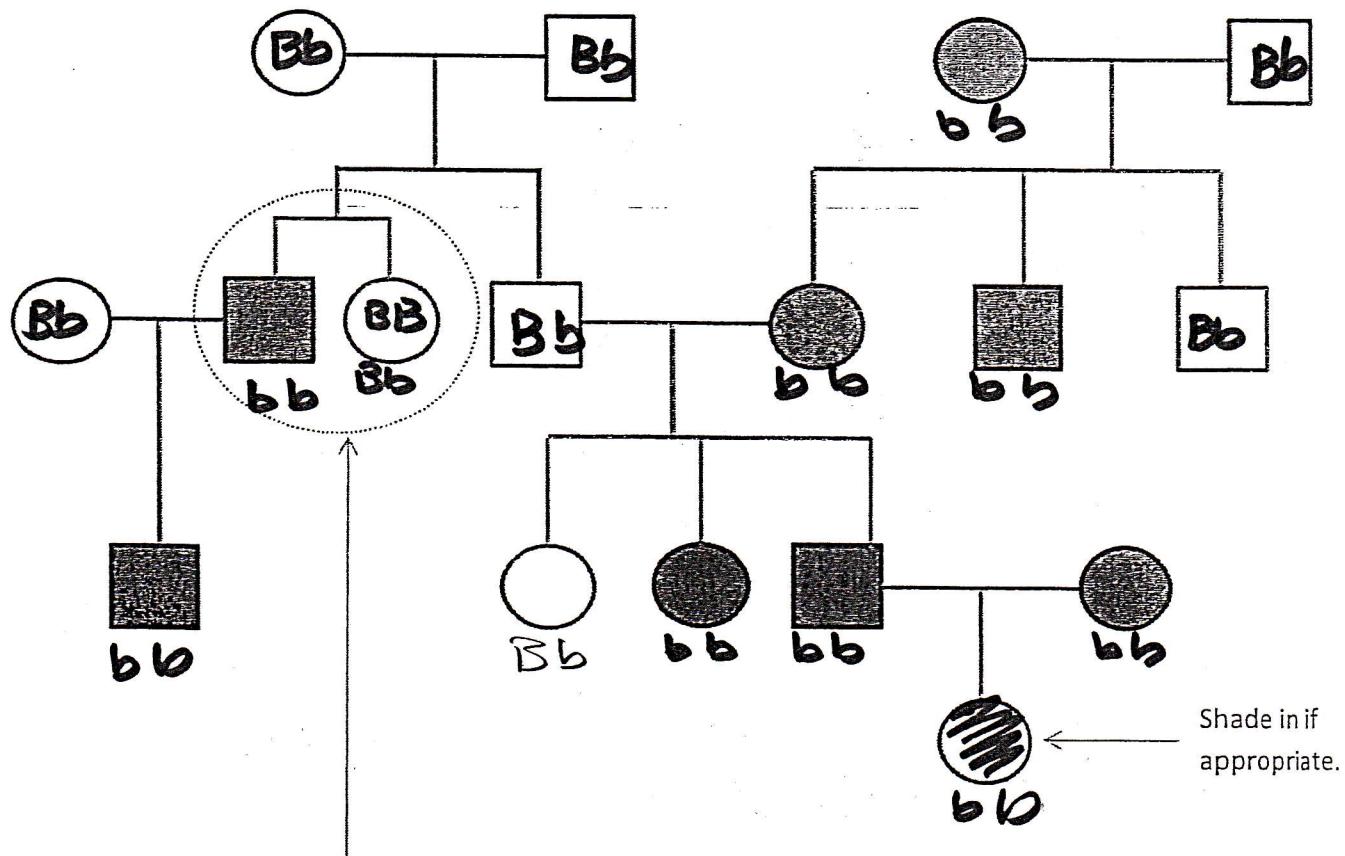
B b b b
B BB B_h B B_h B_h
B BB B_h B B_h B_h

List the genotype for as many individuals as possible.

Extra Problems



List the genotype for all individuals



This is a pair of twins. Explain how one sibling can have one trait and the other sibling another.

'dad' twins, two separate eggs fertilized

Is the shaded trait dominant or recessive?

b. How do you know? Explain your reasoning and circle the section of the pedigree that supports your answer.

c. How many generations are shown?

d. List the genotype for as many individuals as possible.

