Name: _____ Date: _____ Class: _____

Monohybrid Cross Worksheet

Directions: *Answer each of the following questions using a Punnett Square and the rules of monohybrid crosses.*

1.) The allele for dimples (D) is dominant to the allele for no dimples (d). A man heterozygous for dimples marries a woman who is also heterozygous for dimples.

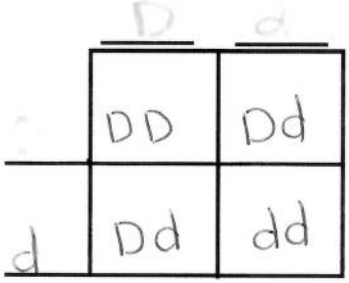
a.) What is the man's genotype and the woman's genotype?

man= Dd woman= Dd

b.) What is the man's phenotype and the woman's phenotype?

man= dimples woman= dimples

c.) Do a cross to determine all potential dimple genotypes and phenotypes for the offspring of this man and woman.



Offspring genotypes:
DD, Dd, dd

Offspring phenotypes:
Dimples, no dimples

2.) The allele for hitchhiker's thumb (h) is recessive to straight thumb (H). If a man and his wife are both homozygous recessive, will any of their offspring potentially have hitchhikers thumb?

a. What is the man's genotype and the woman's genotype?

man= hh woman= hh

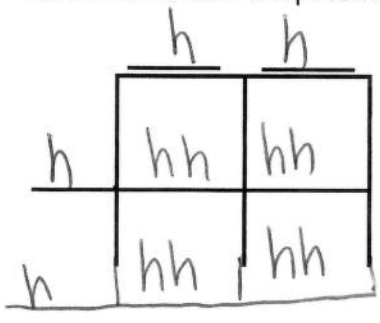
b. What is the man's phenotype and the woman's phenotype?

man= hitchhiker's thumb woman= hitchhikers thumb

c. What genotype(s) must the offspring have in order to have the phenotypic trait of hitchhiker's thumb?

Genotypes for hitchhiker's thumb: hh

d. Do a cross to determine all potential hitchhiker's thumb genotypes and phenotypes for the offspring of this man and woman. Is it possible for any offspring of the F_1 generation to have hitchhiker's thumb?



Offspring genotypes: hh

Offspring phenotypes: hitchhikers thumb

Can the offspring (F_1) generation have a hitchhiker's thumb?

No

3.) In a certain breed of dogs, a gene codes for hair length. The dominant trait is short hair (L) and the recessive is long hair (l). Suppose a heterozygous female dog and a homozygous recessive male dog mate.

a. What is the male dog's genotype and the female dog's genotype?

male= ll female= Ll

b. What is the male dog's phenotype and the female dog's phenotype?

male= long hair female= short hair

c. Do a cross between the two dogs to determine the offspring.

	L	l
l	Ll	ll
l	Ll	ll

Offspring genotypes:
Ll or ll

Offspring phenotypes:
Long hair, short hair

d. What will be the genotypic ratio of the F_1 generation?

Genotypic ratio for F_1: 2:2

e. What will be the phenotypic ratio of the F_1 generation?

Phenotypic ratio for F_1: 2:2

4.) In fruit flies, the allele for normal wings (V) is dominant to the allele for short wings (v). Suppose two fruit flies heterozygous for the trait are mated.

a. What is the male fruit fly's genotype and the female fruit fly's genotype?

Male= Vv female= Vv

b. What is the male fruit fly's phenotype and the female fruit fly's phenotype?

Male= normal wings female= normal wings

c. What will be the genotypic ratio of the F_1 generation?

Genotypic ratio for F1: 1:2:1

d. What will be the phenotypic ration of the F_1 generation?

Phenotypic ratio for F1: 3:1

Do your cross below ↓

	V	v
V	VV	Vv
v	Vv	vv

5.) A genetic engineer is going to cross two watermelon plants to produce seeds for a spring planting. He is breeding for size, and wants to have as many watermelons with the phenotype for long shape as possible. In watermelons. the allele for short shape (R) is dominant to the allele for long shape (r). Show a Punnett square for each possible cross between watermelons. Which cross would yield the highest number of long watermelons?

R = short
r = long

	R	R
R	RR	RR
R	RR	RR

0% long

	R	R
r	Rr	Rr
r	Rr	Rr

0% long

	R	R
R	RR	RR
r	Rr	Rr

0% long

	r	r
R	Rr	Rr
r	rr	rr

50% long

	r	r
r	rr	rr
r	rr	rr

100% long

	R	r
R	RR	Rr
r	Rr	rr

25% long