

# Genetics Packet ~ Punnett Square Practice **KEY**

## Basics

1. The following pairs of letters represent alleles of different genotypes. Indicate which pairs are Heterozygous and which are Homozygous. Also indicate whether the homozygous pairs are Dominant or Recessive (\*note heterozygous pairs don't need either dominant nor recessive labels.)

A. BB = Homozygous dominant

D. gg = Homozygous recessive

B. Bb = Heterozygous

E. aa = Homozygous recessive

C. Gg = Heterozygous

F. Ee = Heterozygous

2. In humans, brown eye color (B), is dominant over blue eye color (b). What are the phenotypes of the following genotypes?

A. Bb =

Brown eyes

B. BB =

Brown eyes

C. bb

blue eyes

## Monohybrid Crosses with Complete Dominance

3. A heterozygous smooth pea pod plant is crossed with a wrinkled pea pod plant. There are two alleles for pea pod, smooth and wrinkled. Use R for seed texture. Predict the offspring from this cross.

a. What is the genotype of the parents? Rr x rr

b. Set up a Punnett square with possible gametes.

	R	r
r	Rr	rr
r	Rr	rr

c. Fill in the Punnett square for the resultant offspring.

d. What is the predicted genotypic ratio for the offspring? 1Rr : 1rr

e. What is the predicted phenotypic ratio for the offspring? 1 smooth : 1 wrinkled

f. If this cross produced 50 seeds how many would you predict to have a wrinkled pod? 25

4. In humans, achondroplasia "dwarfism" (D) is dominant over normal (d).

A homozygous dominant (DD) person dies before the age of one.

A heterozygous (Dd) person is dwarfed. A homozygous recessive individual is normal.

A heterozygous dwarf man marries a heterozygous dwarf woman...

	D	d
D	<del>DD</del>	Dd
d	Dd	dd

a. What is the probability of having a normal child? 1/3... 33.3%

b. What is the probability that the next child will also be normal? 1/3... 33.3%

each child is a new shot at the same punnett square!

c. What is the probability of having a child that is a dwarf? 2/3... 66.6%

d. What is the probability of having a child that dies at one from this disorder? 25%

# Genetic Engineering Packet Answers

**W. Steven Burke**



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