

Genetics Problems-Check for Understanding

Name _____

Also, quiz preparation!!

1) Fill in the Punnett Squares below showing all possible gametes and F₁ (possible offspring) for the following parents:

a) BB x bb

b) Bb x Bb

2) Using the information, write **all possible genotypes** for a person who:

L = long fingers

R = dark hair

F = freckles

l = short fingers

r = blonde hair

f = no freckles

a) is short fingered _____

b) is long fingered _____

c) has freckles _____

d) has dark hair and no freckles _____

e) has short fingers, blonde hair, and no freckles _____

3) Using the information from problem 2, give the **phenotype** for:

a. Ff _____

b. RRff _____

c. LlRrFf _____

4) Answer the following questions by circling the correct answer.

a. BB represents the **genotype/phenotype** for brown eyes.

b. Rr is **homozygous/heterozygous** for dark hair.

c. A **dominant/recessive** gene is often hidden (masked) in individuals that also have a **dominant/recessive** gene for the same trait.

5) Perform the following crosses and record the fraction of each genotype and phenotype produced by the parents.

G = green apples g = red apples

Here's a case of incomplete dominance!

r = red flowers w = white flowers

rw = pink

a. Gg x gg

b. rr x rw

6) The peculiar people from the planet of Parth are completely purple due to the presence of a particular dominant gene. The recessive gene, when homozygous, makes them only partly purple. Assume a completely purple male proposes to a completely purple lady. They marry and produce a partly purple baby. *(8 points)*

a. Write out the symbols (letters you will use to tell completely purple and partly purple).

b. Show the genotypes of each parent and all possible offspring. (Use a Punnett Square!)

c. What is the most likely phenotype of their next child?

d. What is the most likely genotype?