

SI Session 13

1. A true breeding tall, purple-flowered pea plant is crossed with a true breeding dwarf, white flowered plant. What are the phenotypes of the parents?

b. What is the phenotype of the F_1 generation?

c. What is the genotype of the F_1 generation?

d. Complete a Punnett square crossing two of the F_1 generation offspring

2. A = big apples; R = red apples; a = small apples; r = yellow apples. You have one tree that produces big yellow apples and another tree that produces small red apples. When the two are crossed, you find that half of the new trees produce big red apples and half produce big yellow apples. What are the genotypes of the parents?

3. Physically, what are different alleles?

4. The alleles A, B, and C are completely dominant to a, b, and c. An organism with the genotype AABbcc will have the same phenotype as a plant with genotype?

5. Pea plants are tall if they have the genotype TT or Tt , and they are short if they have genotype tt . A tall plant is mated with a short plant. Which outcome below would indicate that the tall parent plant was heterozygous?

- a. 3:1
- b. 1:2
- c. 1:1

6. In Mendel's monohybrid cross of purple-flowered and white-flowered peas, all members of the F_1 generation had the ____ phenotype because their genotype was ____ (**homozygous/heterozygous**) at the flower-color locus

7. Pea flowers may be purple (P) or white (p). Pea seeds may be round (R) or wrinkled (r). What proportion of the offspring from the cross $PpRr \times PpRr$ will have white flowers and wrinkled seeds? (**Do this without looking @ the Punnett square in your book**)

8. If a heterozygous plant is allowed to self-pollinate, what proportion of the offspring will also be heterozygous?

9. In dogs, there is a hereditary deafness gene "d" (recessive). You have a male dog you would like to use for mating purposes. The dog can hear so you know it must have the genotype _____ or _____.

b. You mate the male dog (with unknown genotype) with a deaf female and produce 6 puppies. Only three of the puppies have functional hearing. What was the genotype of the father?