

Genetic Problems Exercise

Instructions: Write the genotypes of the parents (P_1) that are being crossed and then complete punnet squares to find the genotypes and phenotypes of the offspring (F_1).

1. In summer squash the yellow color is recessive to white.

a) homozygous white squash crossed with a yellow squash.

P_1 cross:

Genotypes of offspring:

Genotypic ratio of offspring:

Phenotypes of offspring:

Phenotypic ratio of offspring:

b) heterozygous crossed with a heterozygous

P_1 cross:

Genotypes of offspring:

Genotypic ratio of offspring:

Phenotypes of offspring:

Phenotypic ratio of offspring:

c) yellow crossed with homozygous white

P_1 cross:

Genotypes of offspring:

Genotypic ratio of offspring:

Phenotypes of offspring:

Phenotypic ratio of offspring:

d) Homozygous white with heterozygous

P_1 cross:

Genotypes of offspring:

Genotypic ratio of offspring:

Phenotypes of offspring:

Phenotypic ratio of offspring:

2. In garden peas a red-flowered trait is dominant over white flowers. When heterozygous tall is crossed with dwarf the phenotypic ratio is 1:1.

a) heterozygous red, heterozygous tall crossed with heterozygous red, heterozygous tall

P₁ cross:

Genotypes of offspring:

Genotypic ratio of offspring:

Phenotypes of offspring:

Phenotypic ratio of offspring:

b) heterozygous red, dwarf crossed with white, homozygous tall

P₁ cross:

Genotypes of offspring:

Genotypic ratio of offspring:

Phenotypes of offspring:

Phenotypic ratio of offspring:

c) homozygous red and tall crossed with white, dwarf

P₁ cross:

Genotypes of offspring:

Genotypic ratio of offspring:

Phenotypes of offspring:

Phenotypic ratio of offspring:

3. Red flowers crossed with white flowers results in pink offspring. This is an example of

a) pink crossed with white

P₁ cross:

Genotypes of offspring:

Genotypic ratio of offspring:

Phenotypes of offspring:

Phenotypic ratio of offspring:

b) Red crossed with pink

P₁ cross:

Genotypes of offspring:

Genotypic ratio of offspring:

Phenotypes of offspring:

Phenotypic ratio of offspring:

c) white crossed with red

P₁ cross:

Genotypes of offspring:

Genotypic ratio of offspring:

Phenotypes of offspring:

Phenotypic ratio of offspring:

4. If black chickens are crossed with splashed white chickens, the offspring are all blue (gray) Andalusians.

a) black crossed with blue

P₁ cross:

Genotypes of offspring:

Genotypic ratio of offspring:

Phenotypes of offspring:

Phenotypic ratio of offspring:

b) white crossed with black

P₁ cross:

Genotypes of offspring:

Genotypic ratio of offspring:

Phenotypes of offspring:

Phenotypic ratio of offspring:

c) blue crossed with black

P₁ cross:

Genotypes of offspring:

Genotypic ratio of offspring:

Phenotypes of offspring:

Phenotypic ratio of offspring:

d) white crossed with blue

P₁ cross:

Genotypes of offspring:

Genotypic ratio of offspring:

Phenotypes of offspring:

Phenotypic ratio of offspring:

5. When roan (red and white) cattle are crossed with roan cattle you will get red, roan, and white cattle. This is an example of _____.

a) roan crossed with white

P₁ cross:

Genotypes of offspring:

Genotypic ratio of offspring:

Phenotypes of offspring:

Phenotypic ratio of offspring:

b) red crossed with roan

P₁ cross:

Genotypes of offspring:

Genotypic ratio of offspring:

Phenotypes of offspring:

Phenotypic ratio of offspring:

c) white crossed with red

P₁ cross:

Genotypes of offspring:

Genotypic ratio of offspring:

Phenotypes of offspring:

Phenotypic ratio of offspring:

Phenotypes of offspring:

Phenotypic ratio of offspring:

5. a) Genotypes of offspring:

Genotypic ratio of offspring:

Phenotypes of offspring:

Phenotypic ratio of offspring:

b) Genotypes of offspring:

Genotypic ratio of offspring:

Phenotypes of offspring:

Phenotypic ratio of offspring:

c) Genotypes of offspring:

Genotypic ratio of offspring:

Phenotypes of offspring:

Phenotypic ratio of offspring:

d) Genotypes of offspring:

Genotypic ratio of offspring:

Phenotypes of offspring:

Phenotypic ratio of offspring: