

Name: Kozy

Monohybrid and Dihybrid Quiz (10 pts)

Genetics Problems

1. Define alleles
2. Define phenotypes associated with genotypes
3. Write out cross
4. Produce gametes
5. Perform cross (Punnett square)
6. Determine genotypic and phenotypic ratios of offspring
7. Use the above to answer the problem

Each Problem = 5 pts. (I just double the score for quiz points)

5 = All work shown, easy to follow and correct

4 = All work shown and correct

3 = All work shown and incorrect

2 = Only correct answer given

1 = Only incorrect answer given

0 = Problem not solved

1. In dogs, wire hair is dominant to smooth. In a cross of a true breeding wire-haired dog with a smooth-haired dog, what will be the phenotype of the F₁ generation? What would be the genotype? What would be the ratio of wire-haired to smooth-haired dogs in the F₂ generation?

1. W = wire w = smooth

2. WW, Ww = wire
ww = smooth

3. WW x ww

4. $\begin{array}{cc} \downarrow & \downarrow \\ \text{W} & \text{W} \\ \downarrow & \downarrow \\ \text{w} & \text{w} \end{array}$

5.

	W	W
w	Ww	Ww
w	Ww	Ww

4b. $\begin{array}{cc} \text{Ww} & \times & \text{Ww} \\ \downarrow & & \downarrow \\ \text{W} & & \text{w} \\ \downarrow & & \downarrow \\ \text{w} & & \text{W} \end{array}$

5b.

	W	w
W	WW	Ww
w	Ww	ww

6. Genotypic 1WW:2Ww:1ww
Phenotypic: 3 Wire: 1 Smooth

2. In summer squash, white fruit color is dominant over yellow fruit color and disk-shaped fruit is dominant over sphere-shaped fruit. If a squash plant; true-breeding for white, disk-shaped fruit is crossed with a plant true-breeding for yellow, sphere-shaped fruit, what will the phenotypic and genotypic ratios be for:

a. the F₁ generation? b. the F₂ generation?

1. W = white w = yellow
D = Disk d = sphere

2. WW, Ww = white
ww = yellow
DD, Dd = Disk
dd = sphere

3. WWDD × wwdd

4. $\begin{matrix} \text{W} & \text{D} \\ \text{w} & \text{d} \end{matrix}$ × $\begin{matrix} \text{w} & \text{d} \\ \text{w} & \text{d} \end{matrix}$

5. $\begin{matrix} & & \text{w} & \text{d} \\ \text{w} & \text{D} & \text{W} & \text{d} & \text{D} & \text{d} \end{matrix}$

6. P₁
Genotype: All WwDd
Phenotypic: All White + Disk

3b. WwDd × WwDd

4b. $\begin{matrix} \text{WD} & \text{Wd} & \text{wD} & \text{wd} \\ \text{wD} & \text{Wd} & \text{wD} & \text{wd} \\ \text{wD} & \text{Wd} & \text{wD} & \text{wd} \\ \text{wd} & \text{Wd} & \text{wD} & \text{wd} \end{matrix}$

5b.

	WD	Wd	wD	wd
WD	WWDD	WWDd	WwDD	WwDd
Wd	WwDd	wwDd	WwDd	Wwd
wD	WwDd	WwDd	wwDD	wwDd
wd	WwDd	Wwd	wwDd	wwdd

Genotypic: 1 WWDD : 2 WWd : 1 WWdd : 2 WwDD :
4 WwDd : 2 Wwd : 1 wwDD : 2 wwDd :
1 wwdd

Phenotypic: 9 White + Disk : 3 White + Sphere :
3 Yellow + Disk : 1 Yellow + Sphere