Life Science
Genetics

Name Key
Date _____ Period _____

Monohybrid Crosses

In foxes, red coat color is determined by the dominant gene R; silver-black coat color is determined by the recessive gene r. A homozygous (pure) red male is crossed with a silver-black female (The P generation).

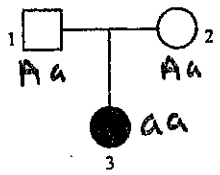
1. What is the ***genotype*** of the female? rr
2. What are the ***genotype percentages*** of their offspring? Rr - 100%.
3. What are the ***phenotype percentages*** of their offspring? red coat - 100%.
4. Use the Punnett square below to show the results of ***a cross between two of the offspring*** from the original cross.

(See the answer to question 2.) F_1 Generation Rr X Rr

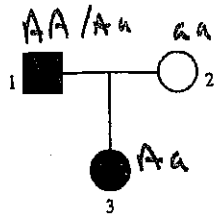
	R	r
R	RR	Rr
r	Rr	rr

5. What are the ***genotype percentages*** of the offspring from the above cross?
25% RR 50% Rr 25% rr
6. What are the ***phenotype percentages*** of the offspring from the above cross?
75% red 25% silver-black

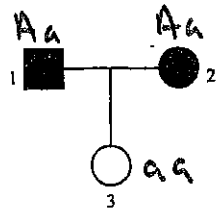
□ = Male ○ = Female

7. 

Daughter 3 has a certain characteristic (shaded). Could it be due to a dominant gene if neither parent 1 nor 2 has it?
____ Yes X No

8. 

Could 1 and 3 represent a characteristic which is due to a dominant gene if female 2 does not have this gene?
X Yes ____ No

9. 

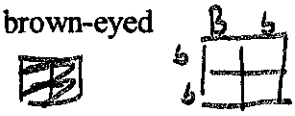
If this was a cross between foxes, could 1 and 2 have red coats and 3 have a silver-black coat?
X Yes ____ No

B = brown eyes b = blue eyes

10. A pure brown-eyed man marries a blue-eyed woman. What are the chances of getting a pure brown-eyed offspring? 0 %. How about the chances of getting a hybrid brown-eyed offspring? 100 %. How about getting a blue-eyed offspring? ~~75 %~~ 0 %.

11. A heterozygous brown-eyed man marries a blue-eyed woman. What are the chances there will be a homozygous brown-eyed offspring? 0 %. What are the chances of having any kind of brown-eyed offspring? 50 %.

A · a vs a a



12. A brown-eyed man, whose mother was blue-eyed, marries a blue-eyed woman. What are the phenotypes (and percentages) of the offspring?

25 % brown - 50 % blue - 50 %

In cattle the polled condition H (= no horns) is dominant to the horned condition h. A male calf is born with horns, yet both its parents have no horns.

13. What is the ***genotype*** of the calf? hh

14. What must be the ***genotypes*** of the parents? Father Hh Mother Hh

15. If this calf were later mated to a cow whose genotype was Hh, what is the probability that their offspring would have horns? 50 %.

H h
h
h

A rare blue-flowered plant was accidentally pollinated by pollen from a common white-flowered plant of the same species. All the offspring of this cross were white-flowered.

16. What color was ***recessive***? blue

17. What was the genotype of the F_1 offspring? Bb

18. Using the Punnett square below, show how to produce another blue-flowered plant from the white offspring of this cross.

(See the answer to question 17.) F_1 Generation Bb x Bb

	B	b
B	BB	Bb
b	Bb	bb ← blue

The gene for the absence of eyes in fruit flies is recessive; that for normal eyes is dominant. An eyeless male is crossed with a female who is homozygous for normal eyes. They produce 200 offspring which are bred with each other and produce 3000 offspring.

ee vs EE

E

19. How many of the 200 offspring (F_1) are probably blind? 0 %.

20. How many of the 3000 offspring (F_2) probably have normal vision? 75 %. 2250

21. How many of the 200 offspring (F_1) would probably be hybrid for normal vision? 100 %. - 200

22. How many of the 3000 offspring (F_2) would probably be heterozygous for normal vision? 50 %. - 1500