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# Monohybrid Crosses

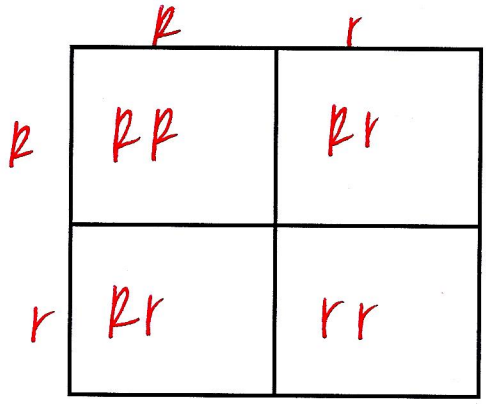
A. In fruit files, red-eyes is dominant over pink eyes.

***Red allele*** = capitol +1 ***Pink allele***= lower-case +1

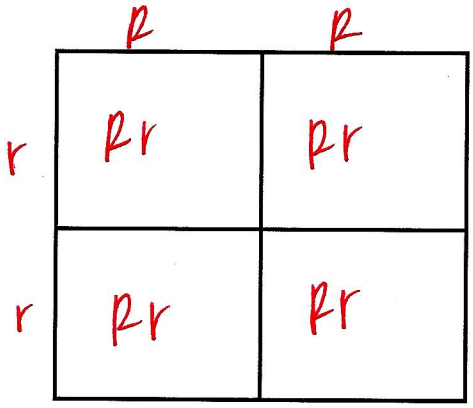
1. If you cross two heterozygous red-eyed adults and 60 offspring are the result, how many offspring will have red-eyes? 45 +1 Pink eyes? 15 +1

2. If you cross a homozygous red-eyed adult to a pink-eyed homozygous adult and 25 offspring result, how many would be red-eyed? 25 +1 how many pink? Ø +1

Prepare the Punnet squares that would demonstrate the crossing of the parents and the resulting offspring from which you based your answers.




Rr +1 x Rr




RR +1 x rr

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B. Supposing brown eyes in people **(B)** is dominant over blue **(b)**.

1. Could a marriage between two blue-eyed people result or produce a brown-eyed child?

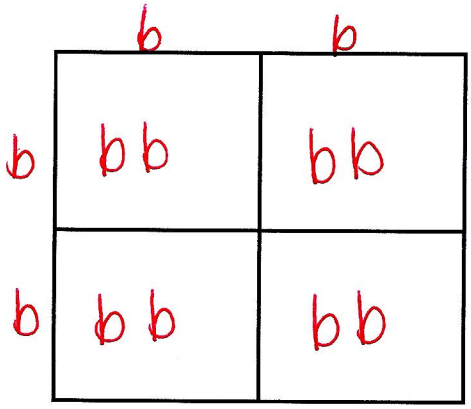
Yes or (No) +1 (circle one)?

2. Could a marriage between a homozygous brown-eyed person and a blue-eyed person result in a blue-eyed child?

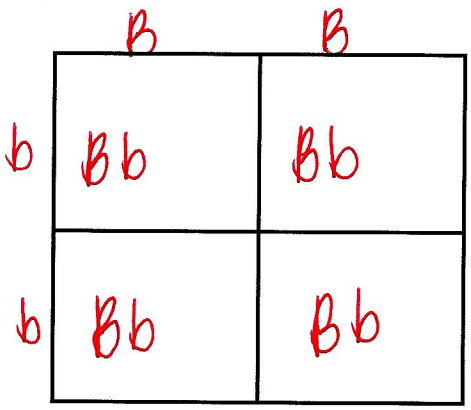
Yes or (No) +1 (circle one)?

3. Can two brown-eyed people have a blue eyed child? Yes or (No) +1 (circle one)?

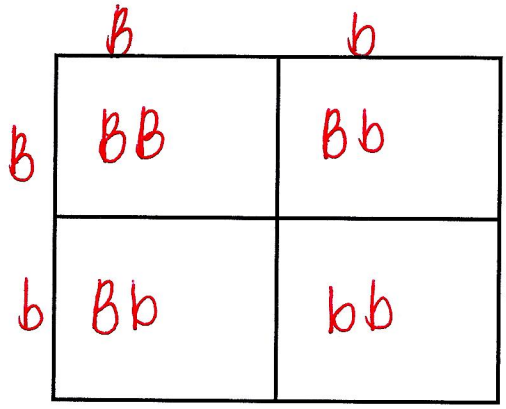
Prepare the Punnet squares that would demonstrate the crossing of the parents and the resulting offspring from which you based your answers.




bb +1 x bb




BB +1 x bb




Bb +1 x Bb

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**Bikini Bottom Genetics**
**Incomplete Dominance** 3B/3B

**SpongeBob loves growing flowers for his pal Sandy! Her favorite flowers, Poofkins, are found in red, blue, and purple. Use the information provided and your knowledge of incomplete dominance to complete each section below.**

1. Write the correct genotype for each color if R represents a red gene and B represents a blue gene. +1 +1 +1

Red - RR Blue - BB Purple - RB

2. What would happen if SpongeBob crossed a Poofkin with red flowers with a Poofkin with blue flowers. Complete the Punnett square to determine the chances of each flower color.

| | R | R |
|---|---|---|
| B | RB | RB |
| B | RB | RB |

+1 (a) Give the genotypes and phenotypes for the offspring.

RB- PURPLE

+1 (b) How many of the plants would have red flowers? 0.0%

+1 (c) How many of the plants would have purple flowers? 100.0%

+1 (d) How many of the plants would have blue flowers? 0.0%

+1 RR x BB

3. What would happen if SpongeBob crossed two Poofkins with purple flowers? Complete the Punnett square to show the probability for each flower color.

| | R | B |
|---|---|---|
| R | RR | RB |
| B | RB | BB |

+1 (a) Give the genotypes and phenotypes for the offspring.

RR- RED BB- BLUE RB- PURPLE

+1 (b) How many of the plants would have red flowers? 25.0%

+1 (c) How many of the plants would have purple flowers? 50.0%

+1 (d) How many of the plants would have blue flowers? 25.0%

+1 RB x RB

4. What would happen if SpongeBob crossed a Poofkin with purple flowers with a Poofkin with blue flowers? Complete the Punnett square to show the probability for plants with each flower color.

| | B | B |
|---|---|---|
| R | RB | RB |
| B | BB | BB |

+1 (a) Give the genotypes and phenotypes for the offspring. RB- PURPLE / BB- BLUE

(b) If SpongeBob planted 100 seeds from this cross, how many should he expect to have of each color?

Purple flowers - 50 Blue flowers - 50 Red flowers - 0

+1 +1 +1

+1 BB x RB

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**Co-dominance Worksheet**

In some chickens, the gene for feather color is controlled by codominance. The allele for black is $F^b$ and the allele for white is $F^w$. A chicken with black and white feathers is called erminette.

1. Cross a white chicken with a black chicken.

+1 a. If 12 baby chicks are produced how many will be black? 0

+1 b. What percentage of the chicks will be erminette? 100%

+1 c. What is the genotypic ratio for this cross? 1:0 $F^wF^B$

Parents: $F^wF^w$ X $F^BF^B$ +1

| | $F^w$ | $F^w$ |
|---|---|---|
| $F^B$ | $F^wF^B$ | $F^wF^B$ |
| $F^B$ | $F^wF^B$ | $F^wF^B$ |

2. If two black and white chickens are crossed, what is the probability that:

+1 a. They would have a black chick? 25 %

+1 b. They would have a white chick? 25 %

Parents: $F^BF^w$ X $F^BF^w$

| | $F^B$ | $F^w$ |
|---|---|---|
| $F^B$ | $F^BF^B$ | $F^BF^w$ |
| $F^w$ | $F^BF^w$ | $F^wF^w$ |

In five O'clock plants, flower color is controlled by codominance. The two alleles are blue ($P^b$) and sliver ($P^s$).

3. A blue-flower plant is crossed with a blue and silver-flower plant. Eighty-four offspring are the result.

+1 a. how many will be homozygous blue? 42

+1 b. What percentage of the plants will have sliver flowers? 0%

+1 c. What is the phenotypic ratio for this cross? 1:1

Parents: $P^BP^B$ X $P^BP^S$ +1

| | $P^B$ | $P^B$ |
|---|---|---|
| $P^B$ | $P^BP^B$ | $P^BP^B$ |
| $P^S$ | $P^BP^S$ | $P^BP^S$ |

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# DIHYBRID CROSSES

1. In some dogs, Barking (B) while chasing is due to a dominant gene while others do not bark (b) while chasing. Also, erect ears (E) are dominant to droopy ears (e). By crossing a heterozygous erect eared barker with a droopy-eared silent chaser, what kind of pups would you expect?

Prepare the Punnett square that would demonstrate the crossing of the parents and the resulting offspring from which you based your answers. Bb Ee (+1) X bb ee (+1)

| | BE | Be | bE | be |
|---|---|---|---|---|
| be | Bb Ee | Bbee | bbEe | bbee |
| be | Bb Ee | Bbee | bbEe | bbee |
| be | Bb Ee | Bbee | bbEe | bbee |
| be | Bb Ee | Bbee | bbEe | bbee |

Number of:

4 (+1) erect eared / barker ____ 4 (+1) erect ear / silent ____ 4 (+1) droopy ear / barker ____ 4 (+1) droopy ear / silent

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2) In humans, black hair (B) Is dominant over red hair (b) and five fingers is dominant (F) over six fingers (f). Two heterozygous people marry. What are the possibilities of the offspring having the following? BbFf X BbFf

| | BF | BF | bF | bF |
|---|---|---|---|---|
| BF | BBFF | BBFf | BbFF | BbFf |
| BF | BBFf | BBff | BbFf | Bbff |
| bF | BbFF | BbFf | bbFF | bbFf |
| bf | BbFf | Bbff | bbFf | bbff |

Number of:

9 (+1) Black hair / 5 fingers ____ 3 (+1) Black hair / 6 fingers ____ 3 (+1) Red hair / 5 fingers ____ 1 (+1) Red hair / 6 fingers