Mr. V. Chan

Name: _____

Genetics – Sex Linked Traits

1. In fruit flies, eye color is a sex linked trait. Red is dominant to white.
   a. What are the sexes and eye colors of flies with the following genotypes

   X^RX^r R - female X^RY Red - male

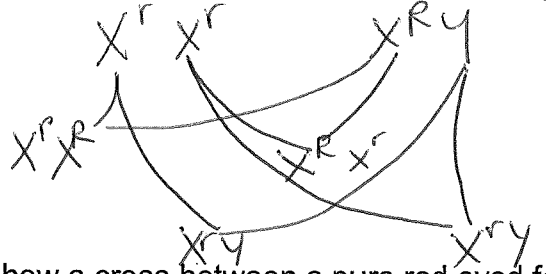
   X^RX^R R - female X^rY White - male

   b. What are the genotypes of these flies

   White eyed male X^rY Red eyed Female (heterozygous) X^RX^r

   White eyed female X^rX^r Red eyed male X^RY

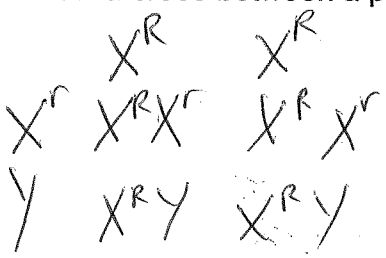
   c. Show the cross of a white eyed female fly (X^rX^r) with a red-eyed male fly (X^RY).

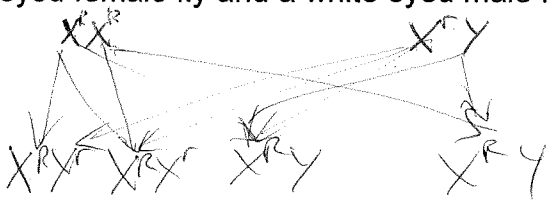


X^RX^r X^rY

X^RX^r X^rY

   d. Show a cross between a pure red eyed female fly and a white eyed male fly.





   i. What are the genotypes of the parents? X^RX^R & X^rY

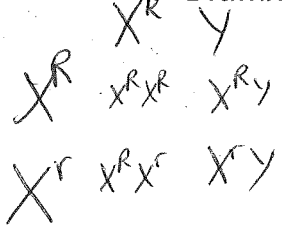
   ii. Drawing a punnet square, determine how many are

   - White eyed male: none
   - White eyed female: none
   - Red eyed male: 2
   - Red eyed female: 2

   e. Show the cross of a red eyed female (heterozygous) and a red eyed male.

   i. What are the genotypes of the parents? X^RX^r & X^RY

   ii. Drawing a punnet square, determine how many are



   - White eyed male: 1
   - White eyed female: 0
   - Red eyed male: 1
   - Red eyed female: 2

   f. What in the above cross, 100 males and 200 females were produced. How many total red eyed flies would there be? _____

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Genetics – Sex Linked Traits

2. In humans, haemophilia is a sex linked trait. Females can be normal, carriers or have the disease. Males will either have the disease or not (but they will never be carriers)

   X^HX^H – normal female
   X^HX^h – carrier female
   X^hX^h – haemophiliac female
   X^HY – normal male
   X^hY – haemophiliac male

   a. Show the cross of a man who has haemophilia with a woman who is a carrier

   X^hY X^hY X^HX^h

X^H	X^HX^h	X^HY
X^h	X^hX^h	X^hY

   What is the probability that their children will have the disease? 50%

   b. A woman who is a carrier marries a normal man

   X^HY X^HX^h X^HY

X^H	X^HX^H	X^HY
X^h	X^HX^h	X^hY

   What is the probability that their children will have haemophilia? 25%
   What sex will a child in the family with haemophilia be? male

   c. A woman who has haemophilia marries a normal man

   X^hX^h X^HY X^H Y

X^h	X^HX^h	X^hY
X^h	X^HX^h	X^hY

   What percent of male children will have haemophilia? 100%

3. Male pattern baldness is another sex linked trait. Wilbur's mother is bald while his father isn't. Cross Wilbur with a woman who is a carrier for baldness.

   B= baldness
   b= recessive

   X^BY wilbur X^BX^b X^B X^b

X^B	X^BX^B	X^BX^b
Y	X^BY	X^bY

   What are the chances that the son will be bald? 50%