

Using a Punnet Square

name _____

per _____

In the following exercises these rules apply:

albino (pink) "a" is recessive

blue "b" is recessive

Brown "B" is dominant

Green "G" is dominant

When two recessive genes or two dominant genes are together there is incomplete dominance and the result is a blend of the two colors. (blue + pink = purple) (Green + Brown = hazel)

Fill in the spaces below with all the possible different gene combinations. (a,b,B G)
(Each allele will appear in exactly 4 different people)

gene type $\frac{a}{a}$ $\frac{a}{B}$ _____ _____ _____ _____ _____ _____

↓ ↓

Now fill in the corresponding phenotypes.

appearance pink brown _____ _____ _____ _____ _____ _____

Using a Punnett square determine the genotypes and phenotypes of the **offspring** of the following combinations of parents.

Brown eye woman (**B, B**)

Blue eye man (**b, b**)

Mom's eggs here ↘

Dad's sperm here ↙

gene types _____ _____ _____ _____

appearance _____ _____ _____ _____

Ratio of Brown to Blue = ____:____

Odds of having brown eye offspring = _____% (% = number divided by total)

Odds of having blue eye offspring = _____%

Brown eye woman (**B, a**)

Albino eye man (**a, a**)

gene types _____ _____ _____ _____

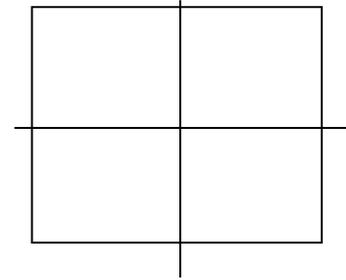
appearance _____ _____ _____ _____

Ratio of Brown to Albino = ____:____

Odds of having brown eye offspring = _____%

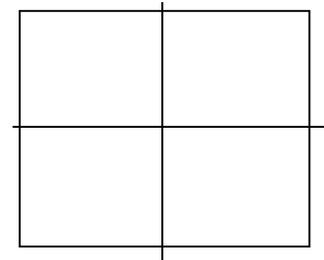
Odds of having Albino eye offspring = _____%

Hazel eye woman (B,G)
Green eye man (G, G)



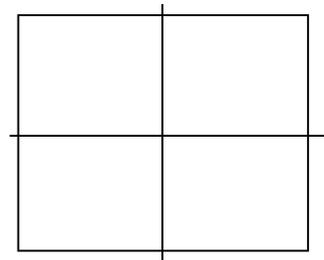
Ratio of Brown to Green to Hazel = ___:___:___
Odds of having brown eye offspring = _____%
Odds of having Green eye offspring = _____%
Odds of having Hazel eye offspring = _____%

Albino eye woman (a,a)
Blue eye man (b,b)



Ratio of albino to blue to purple (pink/blue) = ___:___:___
Odds of having blue eye offspring = _____%
Odds of having albino eye offspring = _____%
Odds of having purple eye offspring = _____%

Green eye woman (G,b)
Brown eye man (B,b)



Ratio of Brown to Green to Blue to Hazel = ___:___:___:___
Odds of having Brown eye offspring = _____%
Odds of having Green eye offspring = _____%
Odds of having Blue eye offspring = _____%
Odds of having Hazel eye offspring = _____%

1. A child has Brown eyes. The father had brown eyes and the mother had blue eyes.
What is the gene type of this child? _____
2. A child has Brown eyes and a sister with Blue eyes. Both their parents have Brown eyes.
What is the gene type of this Brown eyed child? _____ or _____
We could know for sure what type of genes this child has by looking at his off-_____
3. What do you think your gene type for eyes probably is? _____