

Making Babies Genetic Project

This project requires you to observe and record certain traits in another person, analyze the data, determine the genotype and phenotype and design what your progeny (F_1 generation) would look like based on the data collected.

Procedure:

1. Get into groups of 2.
2. Using the information in table #1, observe your partner and record your observations in table #2.
3. Using the information from table #2, create a punnet square for each trait in order to determine the probability of having a child with that trait.
 - a. If you display the dominant characteristic, assume you are heterozygous for the trait.
4. Record the probability of displaying each trait in percent and as a ratio (75% dominant 25% recessive, & 1:2:1)
5. Draw a picture of your two offspring. You will flip a coin to determine the sex of your children (heads = female, tails = male).
 - a. Your first drawing will be your child displaying all dominant phenotypes (if you and your partner are both homozygous recessive for the trait and you do not have any dominant alleles in your punnet square, the child will display the recessive characteristic 100% of the time)
 - b. Your second drawing will be your child displaying all recessive phenotypes.
6. Hand in the entire project including completed tables, all 14 punnet squares, and the two colored drawings.
7. You will have approximately 1 ½ classes to complete this.

Your name: _____

Partners name: _____

Marking Rubric:

Table 2 (1 mark per trait)	/14 marks	_____
Full genotype per partner (0.5 per partner)		
Punnet squares (2 marks each)	/28 marks	_____
Punnet squares filled in accurately (1 mark), probabilities and percentages (1 mark)		
Drawings (5 marks each)	/ 10 marks	_____
Drawings included (1), all traits represented accurately (2), coloured (1), visually pleasing (1)		
Total	/52 marks	_____

Table #1: Human Facial Traits

Allele	Observable Trait	Dominant	Recessive
A	Eye colour (A,a)	Brown/Hazel	Blue
B	Hair colour (B,b)	Dark Hair	Light hair (blond/red)
C	Type of Hair (C,c)	Curly	Straight
D	Hairline (pointed/smooth) (D,d)	Widows Peak	Straight
E	Lip shape (E,e)	Broad	Thin
F	Eye Size (F,f)	Large	Small
G	Eye Shape (G,g)	Almond shaped	Round shape
H	Nose shape (H,h)	Broad	Narrow
I	Earlobe (I,i)	Detached	Attached
J	Chin shape (J,j)	Cleft	Smooth
K	Dimples (K,k)	Present	Not present
L	Freckles (L,l)	Present	Not present
M	Eyelashes (M,m)	Long eyelashes	Short eyelashes
N	Eyebrows (N,n)	Bushy eyebrows	Fine eyebrows

Table #2: Observable Traits and associated genotype/phenotype

Observable Trait	Partner 1's Phenotype	Partner 1's Genotype	Partner 2's Phenotype	Partner 2's Genotype
Eye colour (A,a)				
Hair colour (B,b)				
Type of Hair (C,c)				
Hairline (D,d)				
Lip shape (E,e)				
Eye Size (F,f)				
Eye Shape (G,g)				
Nose shape (H,h)				
Earlobe (I,i)				
Chin shape (J,j)				
Dimples (K,k)				
Freckles (L,l)				
Eyelashes (M,m)				
Eyebrows (N,n)				

Punnet Squares

On a separate sheet of loose-leaf, draw a punnet square for each of the 14 traits. Write down the probability of getting each genotype (Homozygous dominant/recessive, or Heterozygous)

Eg. Hair Colour

		B	b		
Partner 1: Bb	B	BB	Bb	BB = 25%	1:2:1
Partner 2: Bb	b	Bb	bb	Bb = 50%	75% Brown hair
				Bb = 25%	25% Blond hair

Drawings

Using your punnet squares and the probability listings you have created, make 2 drawings, one using the dominant genotypes and phenotypes (when possible) and the other using recessive characteristics.

Traits	Baby 1- Sex: _____		Baby 2 – Sex: _____	
	Genotype	Phenotype	Genotype	Phenotype
Eye colour (A,a)				
Hair colour (B,b)				
Type of Hair (C,c)				
Hairline (D,d)				
Lip shape (E,e)				
Eye Size (F,f)				
Eye Shape (G,g)				
Nose shape (H,h)				
Earlobe (I,i)				
Chin shape (J,j)				
Dimples (K,k)				
Freckles (L,l)				
Eyelashes (M,m)				
Eyebrows (N,n)				

Baby #1:

Name: _____

Baby #2:

Name: _____

