Class Copy

Baby Lab

Introduction

The traits on the following pages are believed to be inherited in the explained manner. Most of the traits, however, in this activity were created to illustrate how human heredity works in a simplified model and to reinforce basic genetic principles. In actuality, inherited characteristics of the face are much more complicated than this activity illustrates. Most of these facial characteristics of the face are determined by many genes working together in a way geneticists do not yet understand. We hope you will be successful in this very important role as parents.

What would your baby look like if both you and your classmate (who will simulate your spouse) have one dominant gene and one recessive gene for each of the facial features illustrated in the following pages? In other words, each of you will be heterozygous for each trait. To determine the facial appearance of your child, you and your spouse will each flip a coin to determine what gene you will contribute to your child.

Heads = Dominant (uppercase) **Tails = Recessive (lowercase)**

1. Record your names, as parents on the attached data sheet.

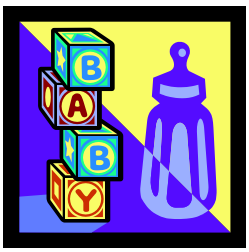
2. Determine the sex of the child. Which parent should flip a coin to determine the sex of the child? Heads will be a boy (Y-bearing sperm) and tails will be a girl (X-bearing sperm)

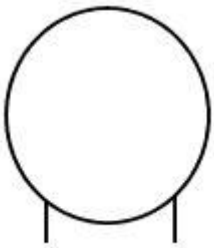
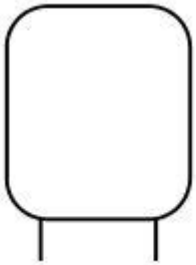
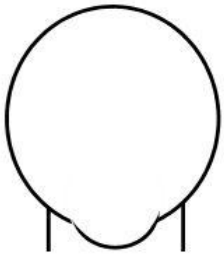
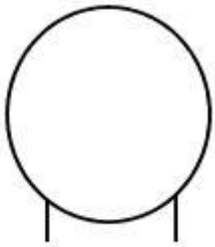
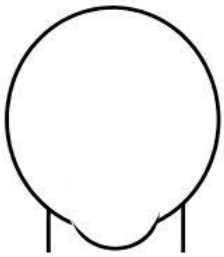
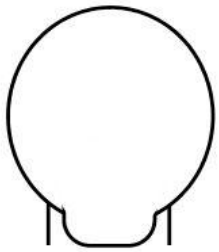
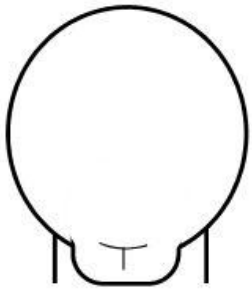
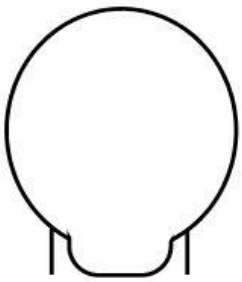
3. Give your child a name and record the name on your data sheet.

4. Flip the coins to determine which gene of each pair you contribute to the traits of your child. Each child will have two genes for each trait, one from each parent. You will supply one gene and your spouse will supply one gene.

5. Record the genetic contributions of each parent on the data chart.

6. When you have determined the genotype of your baby, complete the data analysis.



Face Shape	Round (R) 	Square (r) 
Chin – Next 3 flips		
Prominence	Very Prominent (V) 	Less Prominent (v) 
Shape – only flip for this trait if the chin is very prominent. The genotype (vv) prevents the expression of this trait	Round (R) 	Square (r) 
Cleft	Present (P) 	Absent (p) 

Skin Color – to determine skin color, assume there are three gene pairs involved. Flip your coins first to determine the genotype of the A genes. Then flip the coins again to determine the B genes. Flip for the last time to determine the C genes. Each capitol letter represents an active allele for pigmentation

6 capitols = very, very dark brown	5 capitols = very dark brown
4 capitols = dark brown	3 capitols = medium brown
2 capitols = light brown	1 capitol = light tan
0 capitols = white	

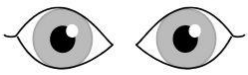
Hair Type – Next 2 flips		
Hair Texture		
Curly (homozygous dominant C) 	Wavy (heterozygous) 	Straight (homozygous recessive c) 
Widow's Peak	Present (W) 	Absent (w) 
Eyebrows – Next 3 flips		
Color		
Very dark(homozygous dominant H) 	Medium dark (heterozygous) 	Light (homozygous recessive h) 
Thickness	Bushy (B) 	Fine (b) 
Placement	Not connected (N) 	Connected (n) 

Eyes – Next 6 flips

Eye Color – Darker eyes are produced in the presence of more active alleles for pigment. In this situation, the large letters (A or B) represent alleles which are active in depositing dark pigment. Small letters represent alleles which deposit little pigment.
To determine the color of the eyes, assume there are two gene pairs involved, one which codes for depositing pigment in the front of the iris and one which codes for depositing pigment in the back of the iris. Determine the genotype of the A genes and then the B genes. In actuality, the determination of eye color is much more complicated.

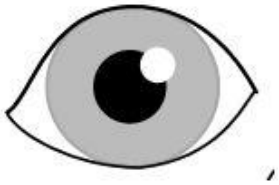
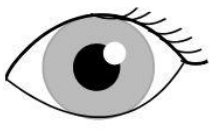
	AABB = Dark Brown	AABb = Brown
	AaBB = Brown	AaBb = Brown
	AAbb = Dark Blue	aaBB = Dark Blue
	Aabb = Light Blue	aaBb = Light Blue
	aabb = Pale Blue	

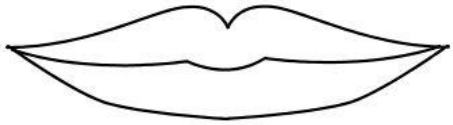
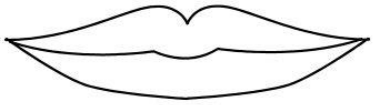
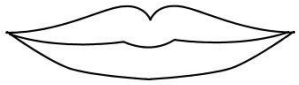
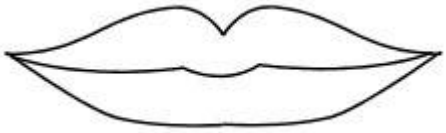
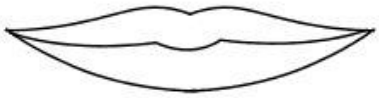
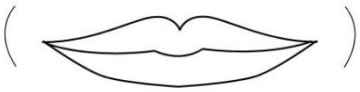
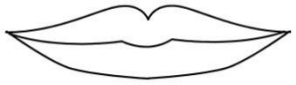
Distance Apart

Close together (homozygous dominant E)	Average distance (heterozygous)	Far apart (homozygous recessive e)
		

Size

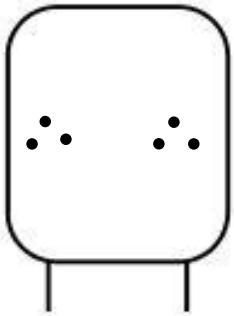
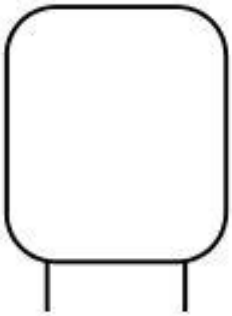
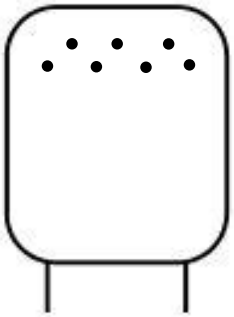
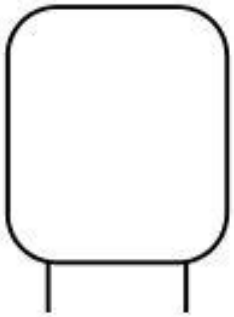
Large (homozygous dominant E)	Medium (heterozygous)	Small (homozygous recessive e)
		

Shape	Almond (A) 	Round (a) 
Slantedness	Horizontal (H) 	Upward slant (h) 
Lashes	Long (L) 	Short (l 

Mouth and Lips – Next 3 flips		
Mouth size		
Long (homozygous dominant M) 	Average (heterozygous) 	Short (homozygous recessive m) 
Lip Thickness	Thick (L) 	Thin (l) 
Dimples	Present (D) 	Absent (d) 

Nose – Next 3 flips		
Size		
Big (homozygous dominant N) 	Medium (heterozygous) 	Small (homozygous recessive n) 
Shape	Rounded (R) 	Pointed (r) 
Nostril Shape	Rounded (R) 	Pointed (r) 

Ears – Next 4 flips		
Attachment	Free earlobe (F) 	Attached earlobe (f) 
Darwin's Earpoints	Present (D) 	Absent (d) 
Ear Pits	Present (P) 	Absent (p) 
Hairy Ears – sex limited to males	Absent (H) 	Present (h) 

Freckles – Next 2 flips		
On Cheeks	Present (F) 	Absent (f) 
On Forehead	Present (F) 	Absent (f) 

Name _____

Baby Lab – Data Table

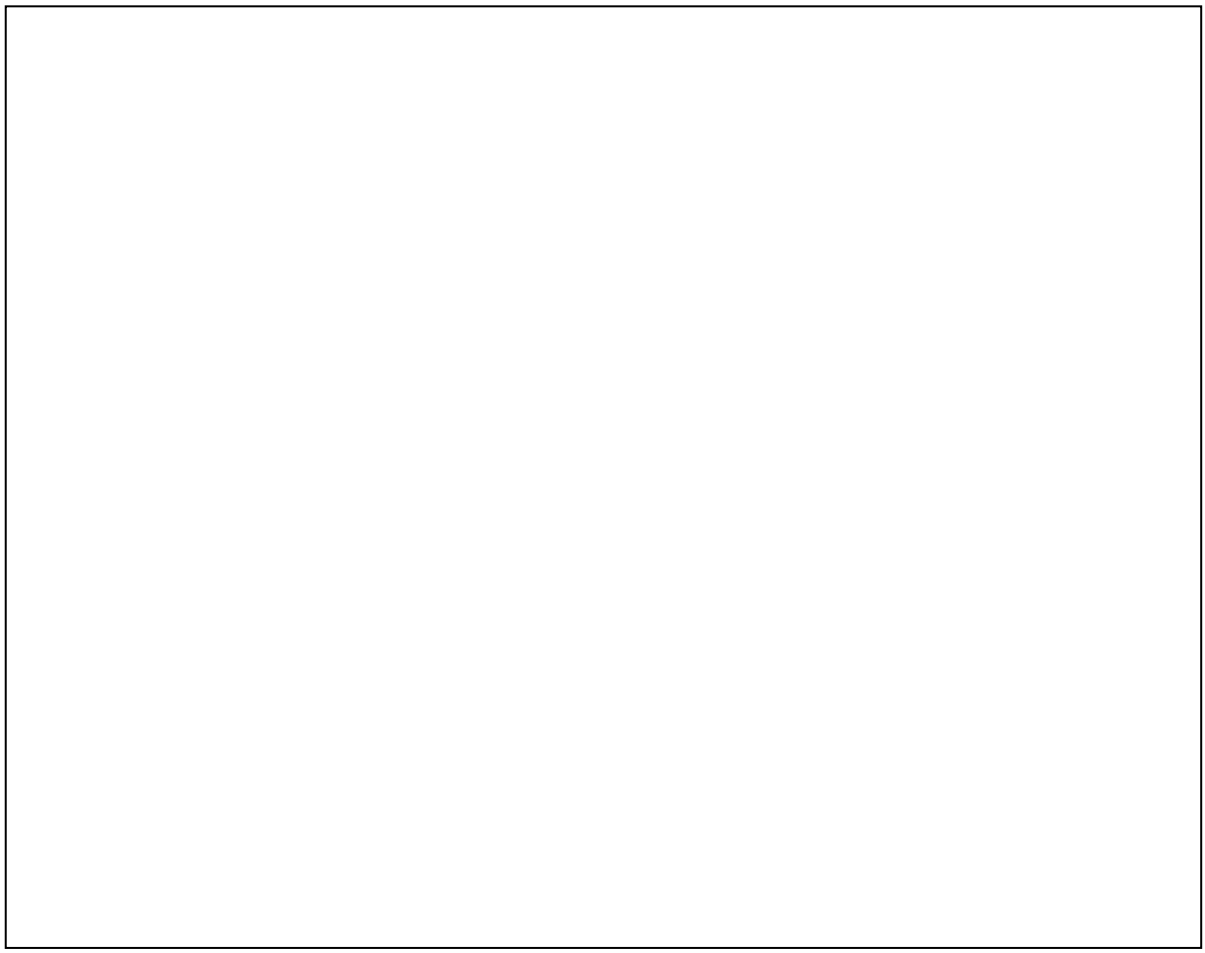
Mom's Name _____ Dad's Name _____

Child's Name _____ Sex _____

Trait	Mother's gene	Father's gene	Genotype	Phenotype
Face Shape				
Chin Prominence				
Chin Shape				
Cleft Chin				
Skin Color				
Hair Texture				
Widow's Peak				
Eyebrow Color				
Eyebrow Thickness				
Eyebrow Placement				
Eye Color				
Eye Distance Apart				
Eye Size				
Eye Shape				
Eye Slantedness				
Eyelashes				
Mouth size				
Lip Thickness				
Dimples				
Nose Size				
Nose Shape				
Nostril Shape				
Earlobe Attachment				
Darwin's Earpoints				
Ear Pits				
Hairy Ears				
Cheek Freckles				
Forehead Freckles				

Baby Lab – Data Analysis

1. Draw and color a picture of your child.



2. A fifth grade friend has seen a picture of your "child" and asks you to explain how kids get their traits from their parents. Using this activity as an illustration, write your explanation for this friend.

3. Using specific examples from the activity, explain the following terms:

a. allele _____

b. homozygous _____

c. genotype _____

d. dominant _____

e. phenotype _____

f. recessive _____

g. heterozygous _____

4. Explain how the coin flip relates to the probability of inheriting genetic conditions.

_____

_____

_____

_____

5. Explain the genotypes and phenotypes of skin color. Summarize the relationship between the number of active genes and color of the skin.

_____

_____

_____

_____

6. Explain how this simulation does and does not represent real life

_____

_____

_____

_____

_____

7. Did you identify any prejudices you might have about what traits you find "desirable"? Where do you think these prejudices come from?

_____

_____

_____

_____