Create a Baby!

Objective: To demonstrate the principles of inheritance.

Procedure:

1) Work with a partner. One of you will be the "mom" of the baby and the other will be the "dad".

2) Determine the sex (gender) of the baby. Remember that gender is determined by the 23rd chromosome pair. Mom will contribute an X chromosome, but dad may contribute an X OR a Y! Since gender is determined by the dad alone, have "dad" flip a coin. If "dad" flips head, he will contribute an X; if he flips tails, he will contribute a Y. Write the result of the coin flip in the dad column of the data table, then complete that row by recording genotype (mom's allele + dad's allele) and phenotype (the resulting physical trait).

3) For all other traits, "mom" and "dad" each contribute alleles. Therefore, "mom" and "dad" must BOTH flip a coin. Flipping heads will always result in allele #1 (dominant, or the 1st allele in incomplete or co-dominance), while flipping tails will always result in allele #2 (recessive, or the 2nd allele in incomplete or co-dominance).

4) Record the results of the coin flips in the data table, then combine "mom" and "dad" (sperm and egg). Use the reference sheet to determine the alleles that should be used and the resulting genotypes and phenotypes. Remember, you cannot pick the traits you want; life doesn't work that way!

5) After completing the table, draw, color, and name your creation. Remember that you are drawing a baby's face - not a child's or an adult's (no tattoos, no mustaches, no pierced ears, noses, etc., and not too much hair!)

Conclusion:

1. Why do children typically resemble both of their parents?

2. Why did you use a flip of the coin to represent the selection of alleles?

3. On your chart, identify the traits that are dominant/recessive, incompletely dominant, co-dominant, and polygenic.

Data:

Mom's Name: _____   Dad's Name _____   Baby's Name: _____

Trait	Allele from Mom	Allele from Dad	Genotype	Phenotype	Type of inheritance (*polygenic) (Dominant/Recessive) (CoDominant, Incomplete Dominance)
Gender	X				
Face Shape					
Chin Shape					
Chin Dimple					
Freckles					
Cheek Dimples					
Lip Thickness					
Eye Brows					
Eye Shape					
Eyelashes					
Ear Shape					
Ear Lobes					
Widow's Peak					
Hair Curliness					Incomplete Dominance
Eyebrow Color					
Eye Width					
Eye Size					
Mouth Size					
Nose Size					
Birth Mark					Codominance
Skin Tone					Incomplete Dominan

Polygenic Trait	Alleles from Mom	Alleles from Dad	Genotype	Phenotype
Hair Color	#1___ #2___	#1___ #2___	___/___	_____
Eye Color	#1___ #2___	#1___ #2___	Genotype ___/___	Phenotype ___

Eye Color #1 #2 #1 #2

Genotype/Phenotype Reference Sheet

Trait	Genotype/Phenotype (Homozygous for Allele 1)	Genotype/Phenotype (Heterozygous)	Genotype/Phenotype (Homozygous for Allele #2)
Face Shape	RR Round	Rr Round	rr Square
Chin Shape	NN Noticeable	Nn Noticeable	nn Less Noticeable
Chin Dimple	AA Absent	Aa Absent	aa Present
Freckles	FF Present	Ef Present	ff Absent
Cheek Dimples	DD Present	Dd Present	dd Absent
Lip Thickness	TT Thick	Tt Thick	tt Thin
Eye Brows	BB Bushy	Bb Bushy	bb Fine
Eye Shape	WW Wide	Ww Wide	ww Round
Eyelashes	LL Long	Ll Long	ll Short
Ear Shape	RR Long	Rr Long	rr Round
Ear Lobes	FF Free	Ff Free	ff Attached

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Trait	Homozygous Allele 1	Heterozygous	Homozygous Allele #2
Widow's Peak	WW Present	Ww Present	ww Absent
Hair Curliness	CC Curly	C'C Wavy	C'C' Strait
Eyebrow Color	DD Darker than hair	D'D Same as hair	D'D' Lighter than hair
Eye Width	WW Close Together	W'W Average	W'W' Far apart
Eye Size	SS Large	S'S Medium	S'S' Small
Mouth Size	MM Wide	M'M Medium	M'M' Narrow
Nose Size	PP Small	P'P Medium	P'P' Large
Skin Tone	SS Light	S'S Medium	S'S' Dark
Birth Mark (mole)	LL Left cheek	LR Both cheeks	RR Right cheek
Hair Color	AABB=Black AABb=Black AAbb=Red	AaBB=Dark Brown AaBb=Light Brown Aabb=Dark Blond	aaBB=Blond aaBb=Blond aabb=white (albino)
Eye Color	AABB=Deep Brown AaBb=Deep Brown AAbb=Brown	AaBB=Greenish Brown AaBb=Light Brown Aabb=Gray-Blue	aaBB=Green aaBb=Light Blue aabb=Pink

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