

Partner #1: _____ Partner #2: _____

Alien Genetics Project

DUE:

Major Understandings What you need to show me that you know...
<ol style="list-style-type: none"> 1. In sexual reproduction, $\frac{1}{2}$ of an offspring's genes come from each parent. Sexually produced offspring are not identical to parents. 2. Some traits are controlled by dominant and recessive alleles. 3. Some traits are controlled by incomplete dominance. 4. The chances of traits being expressed in offspring can be determined using Punnett Squares.

What you will do to demonstrate your understandings...
You will create an alien family with traits, genotypes and phenotypes.

Directions What steps you will take to complete this project...	
Step 0	Choose to work with a partner or independently.
Step 1	Decide on 6 alien traits e.g. nose shape, number of eyes, body shape or color, etc. Be creative!!
Step 2	Decide how each trait is inherited, either by dominant/recessive alleles or incomplete dominance. At least 1 trait must be controlled by incomplete dominance.
Step 3	Make a table to show the genotypes and phenotypes that are possible for each trait. Use a different letter for each trait. Avoid letters that look the same capitalized and in lowercase e.g. Avoid "z, s, o". (See Table 1)
Step 4	Decide on the genotypes and phenotypes of each parent for each trait. Fill in table 2.
Step 5	Make 6 Punnett Squares to predict possible genotypes for each trait given the parents' genotypes.
Step 6	From the Punnett Squares, choose the genotype and phenotype of each baby for each trait. Fill in Table 3. STOP and have Ms. Holmstedt check over.
Step 7	Draw a family portrait of your alien family (2 babies, both parents)

How you will be graded... (70 points)	
Table 1 (20 pts)	<input type="checkbox"/> Includes 6 different traits. <input type="checkbox"/> At least one trait is controlled by incomplete dominance. <input type="checkbox"/> Each trait is given a different letter. <input type="checkbox"/> Phenotypes and genotypes for dominant and recessive traits are correctly filled in.
Punnett Squares (20 pts)	<input type="checkbox"/> All 6 Punnett Squares are correctly filled in i.e. Parent's gametes are across top and sides and boxes filled with correct genes.
Table 2 & 3 (20 pts)	<input type="checkbox"/> All boxes are filled in correctly. <input type="checkbox"/> Offspring's genotypes and phenotypes are possible given parents' genotypes and Punnett Squares.
Family Portrait (10 pts)	<input type="checkbox"/> Family portrait is neat and labeled (e.g. Mom, Dad, Baby #1, Baby #2.)

Use a PENCIL to fill in all tables!

Table 1: Alien race traits

Trait	Dominant	Recessive
Example: <i>Eye Color</i>	Phenotype: Green sparkles Genotype: GG, Gg	Phenotype: Silver Genotype: gg
1.	Phenotype: Genotypes:	Phenotype: Genotype:
2.	Phenotype: Genotypes:	Phenotype: Genotype:
3.	Phenotype: Genotypes:	Phenotype: Genotype:
4.	Phenotype: Genotypes:	Phenotype: Genotype:
5.	Phenotype: Genotypes:	Phenotype: Genotype:

Incomplete dominance:

Trait			
6.	Phenotype:	Phenotype:	Phenotype:
	Genotype:	Genotype:	Genotype:

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Table 2: The Parents

Decide what the parents' genotype and phenotype will be for each trait.

Trait	Mom		Dad	
	Genotype	Phenotype	Genotype	Phenotype
1.				
2.				
3.				
4.				
5.				
6.				

Table 3: The Offspring

Trait	Baby #1		Baby #2	
	Genotype	Phenotype	Genotype	Phenotype
1.				
2.				
3.				
4.				
5.				
6.				

Punnett Squares: After you have decided on the parents, complete the Punnett squares to see what kinds of kids are possible. Then circle Baby #1 and Baby #2's genotypes for each trait and put it in Table 3.

1. Trait: _____

2. Trait: _____

3. Trait: _____

4. Trait: _____

5. Trait: _____

6. Trait: _____

STOP! Before drawing your aliens, you must get Ms. Holmstedt to check your packet!

