Name: _____ Period: _____

Superhero Genetics Project (Due: April 11, 2016)

It is your job to be a comic matchmaker! Once your superheroes marry, it is your job to predict the traits of their first born child.

Checklist-Please check things off as you do them to keep yourself on track. This checklist has important information:

Choosing the Parents and Determining Their Traits

Go to marvel.com and click on characters. Browse different characters until you find a suitable mother and father superhero. You then must record 12 traits for both mom and dad. Record the traits on scratch paper at first and then you may put your final copy into the chart as shown below. A trait is something the parents can pass on to the baby. For example, one can pass on super powers, hair color or eye color to a baby but not a job or where one grew up.

How do you find traits?

- You may use the following as some of your traits:
  - Height
  - Weight
  - Eye Color
  - Hair Color
  - Hair Type (you may be able to figure out from a picture whether it is straight or curly, etc)
- Click on Characters, choose a character, read more on the Marvel Universe Wiki.
  - Look at the powergrid and use everything listed there as a trait.
  - Go with the official ratings and not the fan ratings.
  - If something is rated a 1 or a 2 = low. Example: low intelligence trait
  - If something is rated 3, 4, 5 = medium. Example: medium strength trait
  - If something is rated a 6 or a 7 = high. Example: high durability trait

    - Click on Powers to get more information and write down all the powers your superhero has. Each power is also a trait.
    - You may also find some traits under the abilities section too.
    - You can also find traits by reading about the character and looking at the character's picture.

***Remember that a trait is something that is passed on to children and is found in the DNA. Be sure to record plenty of physical traits, so you know how to draw your superhero child.

Be very specific with your traits. Make sure you know what the words and powers mean because you will have to write a story about the baby later. Ask if you don't know what a word means. Once you feel you have 12 good traits that seem like something that can be passed on genetically to a baby, you may fill them out in the worksheet provided in this packet.
Write Neatly!

IMPORTANT: Be sure you match up the traits between mom and dad.

Example:

Mom:	Dad:
1. Body Type: Skinny (bb)	1. Body Type: Muscular (BB)
2. Power: Cannot fly (Ff)	2. Power: Can fly (ff)

Determining the Gender of the Baby

_____ Toss a coin to decide whether your chosen mates will have a boy or a girl child. Heads will be male and tails will be female. You need to make it a chance just like real life so you only get one flip!

Rules for This Project's Punnett Squares

_____ Complete Punnett squares for each trait in order to determine which traits the child will inherit from each parent. You must flip a coin to determine which trait is dominant over the other. Heads for dominant and tails for recessive. For example, eye color: blue and brown. I'd flip a coin to determine whether blue eyes were dominant or recessive.

Hints:

Put either mom or dad's trait in your head and then toss your coin to see whether it is dominant or not. You may want to put a "D" above the dominant trait and an "R" above the recessive trait.

If both parents have the same trait (example both have blue eyes), toss a coin to see whether it is dominant or not and then both mom and dad's traits will either be dominant or they both will be recessive.

Once you figure out which trait is dominant, you can choose whether it is homozygous dominant (example-BB), homozygous recessive (bb) or heterozygous (example Bb).

When completing the Punnett squares, you will determine the probability (chance) of the child expressing each trait. Flip a coin two different times for each trait within each punnet square. For example, your first coin flip will determine the column choice in the punnet square and your second coin flip will determine your row choice. (ie. Heads = 1st Column, Tails = 2nd Column, Heads = 1st Row, Tails = 2nd Row).

In order to be sure that the Punnett squares are completed correctly, each student must have their teacher check the first 3 Punnett squares and initial that they are ok before moving forward.

How to Show What the Baby Will Look Like

_____ Record all of the child's traits on a piece of paper just like the example below.

_____ Name the "baby" superhero with an interesting, appropriate name and record it on the trait worksheet in which you will be creating.

_____ Create a colored picture of your superhero parents and their baby all grown up! The picture of the superhero should match his/her traits.

Essay Requirements

_____ Write a story of the life of the superhero baby.

Include:

- ➢ How the parents of the superhero met. (make it up using the parent's background from the Marvel site)
- ➢ Where they live with their new baby. (describe it-it can be a pretend or real place)
- ➢ When was the baby born and where?
- ➢ What was the baby hero's childhood and life like growing up. Was it tough to be a superhero sometimes or was it great?…tell me about it!
- ➢ Physical description of the baby superhero.(use the traits to help-add this into the story as you go-you don't need a whole section for this)
- ➢ What did he/she do with the inherited super powers/what are the powers?
- ➢ Write an exciting adventure that your superhero is in as an adult that involves using his/her powers and traits.
- ➢ Be sure to work as many of the baby's traits as possible throughout the story.
- ➢ The Essay must be at least one typed page. Single spaced. Size 12 font or 2 neatly handwritten pages at minimum.
- ➢ Be sure the essay is well written with few spelling errors, few grammar errors, well formed paragraphs and sentences, great word choices and it should be an interesting/exciting story.

What to Hand In and In What Order:

1. Poster- Colored, detailed picture of your superhero parents and baby superhero all grown up, showing all of his/her traits.

2. A printed or hand drawn trait worksheet that has been completely filled in! (Punnett squares done and checked by me and all traits for parents and baby should be filled out.) This should be attached to the back of your poster.

3. Punnett Squares- Attached to the back of your poster.

4. Last thing should be your essay/story. This should be attached to the front of your poster but not covering the pictures of your superheroes.

(Use the attached rubric at the bottom to be sure you have everything that you need.)

Trait Worksheet

Chosen Mother's Name:	Chosen Father's Name:
Traits & Genotype:	Traits & Genotype: Which is Dominant?
	(Flip a coin)
1. Blue (D) (BB)	1. Brown (R) (bb)
2.	2.
3.	3.
4.	4.
5.	5.
6.	6.
7.	7.
8.	8.
9.	9.
10.	10.
11.	11.
12.	12.
Child's Name:	
Gender: (flip coin - Heads = male Tails = female):	
Traits & Genotype (This must come from your Punnett squares)	
1. Blue (Bb)	
2.	
3.	
4.	
5.	
6.	
7.	
8.	
9.	
10.	
11	
12	

Name: _____ Block: _____

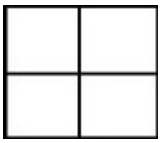
Punnett Square Worksheet

Your dominant trait may be heterozygous (ex: Bb) or homozygous (ex: BB). There are ways to figure this out in real life but in this situation, the coin flip will determine it!

Example:

Mom's Alleles go here:

Dad's Alleles go here:



Mom's Trait: Dad's Trait:

Which is Dominant:
Choose a letter to demonstrate the dominant trait:
Genotype % Phenotype %

Trait #1

Mom's Alleles go here:

Dad's Alleles go here:

Mom's Trait: Dad's Trait:

Which is Dominant:
Choose a letter to demonstrate the dominant trait:
Genotype % Phenotype %

Trait #2

Mom's Alleles go here:

Dad's Alleles go here:

Mom's Trait: Dad's Trait:

Which is Dominant:
Choose a letter to demonstrate the dominant trait:
Genotype % Phenotype %

Trait #3

Mom's Alleles go here:

Mom's Trait: Dad's Trait:

Which is Dominant:
Choose a letter to demonstrate the dominant trait:

Genotype % Phenotype %

Dad's Alleles
go here:

Trait #4

Mom's Alleles go here:

Mom's Trait: Dad's Trait:

Which is Dominant:
Choose a letter to demonstrate the dominant trait:

Genotype % Phenotype %

Dad's Alleles
go here:

Trait #5

Mom's Alleles go here:

Mom's Trait: Dad's Trait:

Which is Dominant:
Choose a letter to demonstrate the dominant trait:

Genotype % Phenotype %

Dad's Alleles
go here:

Trait #6

Mom's Alleles go here:

Mom's Trait: Dad's Trait:

Which is Dominant:
Choose a letter to demonstrate the dominant trait:

Genotype % Phenotype %

Dad's Alleles
go here:

Trait #7

Mom's Alleles go here:

Dad's Alleles
go here:

Mom's Trait: Dad's Trait:

Which is Dominant:
Choose a letter to demonstrate the dominant trait:

Genotype % Phenotype %

Trait #8

Mom's Alleles go here:

Dad's Alleles
go here:

Mom's Trait: Dad's Trait:

Which is Dominant:
Choose a letter to demonstrate the dominant trait:

Genotype % Phenotype %

Trait #9

Mom's Alleles go here:

Dad's Alleles
go here:

Mom's Trait: Dad's Trait:

Which is Dominant:
Choose a letter to demonstrate the dominant trait:

Genotype % Phenotype %

Trait #10

Mom's Alleles go here:

Dad's Alleles
go here:

Mom's Trait: Dad's Trait:

Which is Dominant:
Choose a letter to demonstrate the dominant trait:

Genotype % Phenotype %

Trait #11

Mom's Alleles go here:

Dad's Alleles
go here:

Mom's Trait: Dad's Trait:

Which is Dominant:
Choose a letter to demonstrate the dominant trait:

Genotype % Phenotype %

Trait #12

Mom's Alleles go here:

Dad's Alleles
go here:

Mom's Trait: Dad's Trait:

Which is Dominant:
Choose a letter to demonstrate the dominant trait:

Genotype % Phenotype %

Grading Rubric (100 points)

Use this as a checklist before handing in your project to be sure your project is complete and done well.

1. Poster Cover: (40 points total)
    a. All 12 of the Child's traits are shown on cover(20 points) _____

    b. Cover is neat and colorful(10 points) _____
    c. Parents & Adult form of Child are Drawn (10 points) _____

2. Trait Lists & Punnett Squares: (35 points total) _____
    a. Baby traits are listed (5 points)
        i. Identified the Genotypes _____
    b. Parent's traits are listed (5 points)
        i. Identified the Genotypes _____

    c. Punnet Squares are all correct (25 points)
        i. Child's correct Punnett square is shaded or circled _____

3. Essay/Story (25 points total) _____
    a. See story instructions above

Total: _____