Genetics with a SMILE :)   Name_____

I can: To distinguish between dominant and recessive traits and make predictions about possible outcomes of various genetic combinations of inherited characteristics.

PROCEDURE:
Part A: Smiley Face Traits
1. Obtain two coins from your teacher. One person needs to me in charge of the "F" (female) and the other coin represents the "M" (male) to represent each of the parents. The parents are heterozygous for all the smiley face traits.
2. Flip coins for parent for each trait. If the coin lands **heads up,** it represents a **dominant allele**. A coin that lands <u>tails up</u> indicates a <u>recessive allele.</u>
3. Record the result for each person by circling the correct letter.
4. Use the results and the Smiley Face Traits page to determine the genotype and phenotype for each trait.

Trait	Female		Male		Genotype	Phenotype
Face shape	C	c	C	c		
Eye shape	E	e	E	e		
Hair style	S	s	S	s		
Smile	T	t	T	t		
Ear style	V	v	V	v		
Nose style	D	d	D	d		
Face color	Y	y	Y	y		
Eye color	B	b	B	b		
Hair length	L	l	L	l		
Freckles	F	f	F	f		
Nose color	R	Y	R	Y		
Ear color	P	T	P	T		

Part B: Is it a boy or girl?
To determine the sex of your smiley face, flip the coin for the male parent. Heads would represent X, while tails would be Y.

	Female	Male		Genotype	Phenotype
Sex	X	X	Y		

Part C: Create Your Own Smiley Face!

Face Shape
Circle (C) Oval (c)
Eye Shape
Star (E) Square (e)
Hair Style
Straight (S) Curly (s)
Smile
Thick (T) Thin (t)
Ear Style
Curved (V) Pointed (v)
Nose Style
Down (D) Up (d)

Face Color
Yellow (Y) green (y)
Eye Color
Blue (B) Red (b)
Hair Length
Long (L) short (l)
Freckles
Present (F) Absent (f)
Nose Color
Red (RR) Orange (RY)
Ear Color
Hot Pink (PP) Purple (PT)

equals Y.
XX - Female - Add pink bow in hair
XY - Male - Add blue bow in hair

To determine the sex, the flip the coin for the male parent. Heads equals X and tails

My Smiley's Name: _____

Part D: WRAPPING IT UP!

(1)   How many dominant traits did your smiley face have? _____

(2)   How many recessive traits did your smiley face have? _____

(3)   What is the probability that a smiley face will have a green face, given that the parents were both hybrids, Yy x Yy? _____ out of _____ or _____ %

(4)   How would the smiley faces change if one of the parents were homozygous dominant for all the traits while the other was heterozygous?

(5)   Grandma and Grandpa Smiley are heterozygous for the star eye shape. If one of their heterozygous children married a girl with blast-type eyes, what percentage of their grandchildren should have starry eyes? What percent would havesquare-type eyes? Create a Punnett square to help you find your answers.