

Name: _____

Date: _____ Hour: _____

Dragon Genetics

For this project students will be studying genetics using dragons. Each student will produce a dragon using the genotypes provided by the teacher. Then students will find partners and produce baby dragons to study how genes are passed on from generation to generation.

*This project is adopted from the Dragon Genetics activity developed by Science Kit & Boreal Laboratories (47794).

Dragon Genetics Worksheet #1: "I'm All Keyed Up"

Name: _____

 Date: _____
 Class/Period: _____

INSTRUCTIONS

Refer to the key below, and answer the following questions.

| Dragon Key | |
|--------------------------------------------------------------------------------------------------|------------------------------------------------------|
| Upper case letters represent dominant alleles; lower case letters represent recessive alleles | |
| N = LONG NECK n = short neck | E = Red Eye e = white eye |
| H = HORN PRESENT h = horn absent | F = FIRE BREATHING f = not fire breathing |
| G = GREEN BODY g = gray body | L = LONG TAIL l = short tail |
| S = SPIKES ON END OF TAIL s = no spikes on end of tail | R = RED WINGS r = yellow wings |
| T = THREE TOES t = four toes | W = YELLOW BELLY w = white belly |
| B = BLACK TAIL SPIKES b = red tail spikes | K = FRECKLES k = no freckles |
| X = X chromosome / no ear frills (XX = female) | Y = Y chromosome / ear frills present (XY = male) |

1. What letters are used to represent wing color? _____
2. What letters are used to represent neck length? _____
3. The letter "Y" is used as a symbol to represent _____.
4. The letter "e" is used to represent _____.

An upper case, or capital, letter is used to represent a dominant trait. A lower case, or small, letter is used to represent a recessive trait. Dominant traits completely mask and/or suppress recessive traits.

Refer to the key, and answer the following questions.

5. List six dominant traits shown in the key.

| | |
|-------|-------|
| _____ | _____ |
| _____ | _____ |
| _____ | _____ |

6. List six recessive traits shown in the key.

| | |
|-------|-------|
| _____ | _____ |
| _____ | _____ |
| _____ | _____ |



Worksheet #2: "Making Your Dragon"

INSTRUCTIONS: Using the table on page 1 please complete the following data tables of how your dragon will look. Please tape or glue the information of inherited genes from your dragon's parents in the space provided below. Then using the Dragon Blackline Master on page 3, make your dragon on the blank piece of paper on page 4.

Paste Genetic Code here:

Data Table

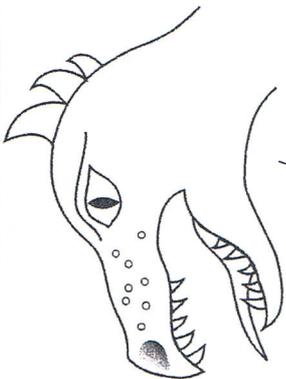
| Chromosome pair number | Trait | Genotype | Homozygous/Heterozygous | Phenotype |
|------------------------|-------------|----------|-------------------------|-----------|
| 1 | Neck length | | | |
| | Eye color | | | |
| | Horn? | | | |
| | Spikes? | | | |

| Chromosome pair number | Trait | Genotype | Homozygous/Heterozygous | Phenotype |
|------------------------|----------------|----------|-------------------------|-----------|
| 2 | Tail length | | | |
| | Body color | | | |
| | Color of wings | | | |
| | Number of toes | | | |

| Chromosome pair number | Trait | Genotype | Homozygous/Heterozygous | Phenotype |
|------------------------|-----------------|----------|-------------------------|-----------|
| 3 | Belly color | | | |
| | Color of spikes | | | |
| | Freckles? | | | |

| Chromosome pair number | Trait | Genotype | Homozygous/Heterozygous | Phenotype |
|------------------------|-----------------|----------|-------------------------|-----------|
| 4 | Fire breathing? | | | |
| | Ear frills? | | | |

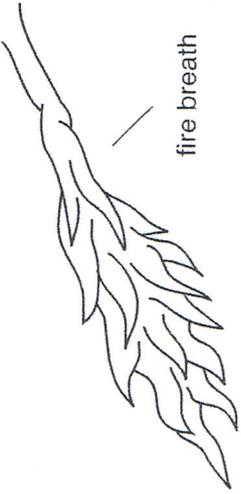
DRAGON BLACKLINE MASTER



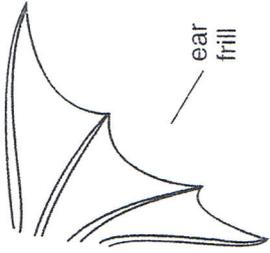
head with freckles



head without freckles



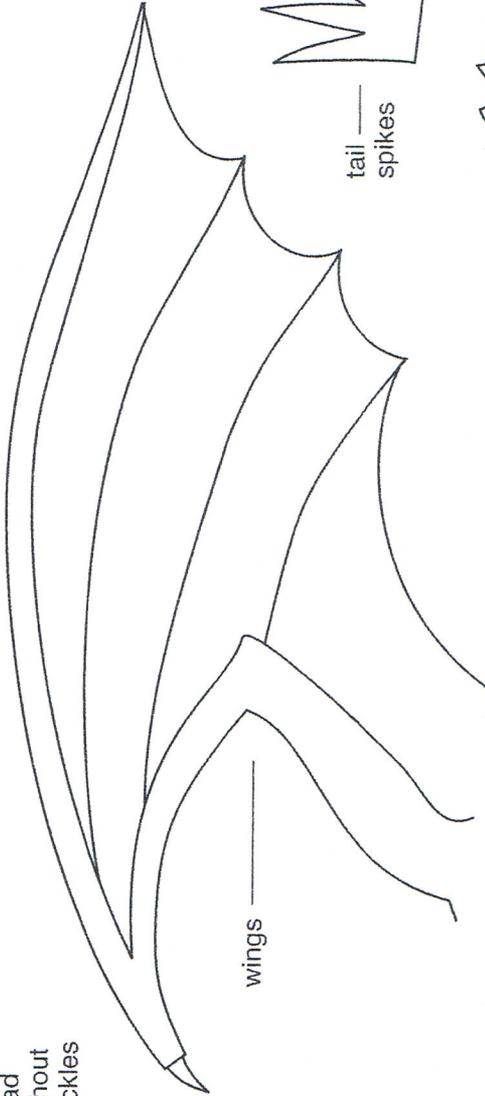
fire breath



ear frill



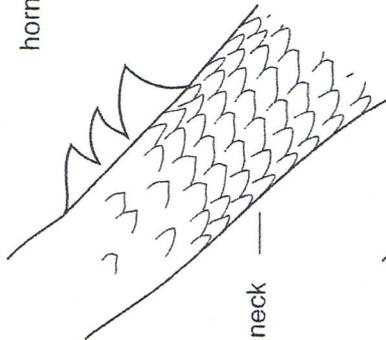
horn



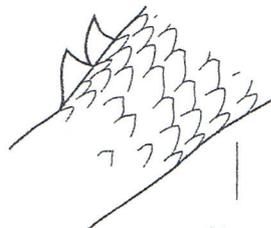
wings



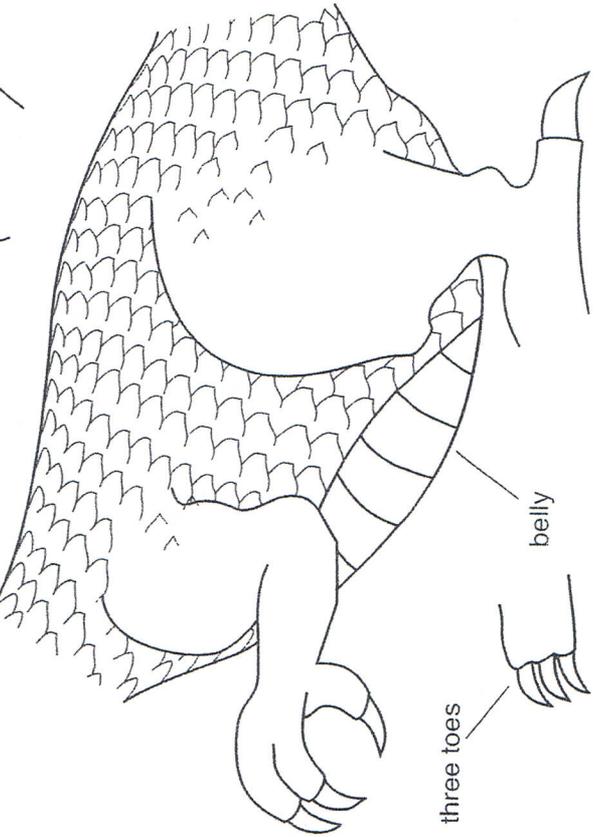
tail spikes



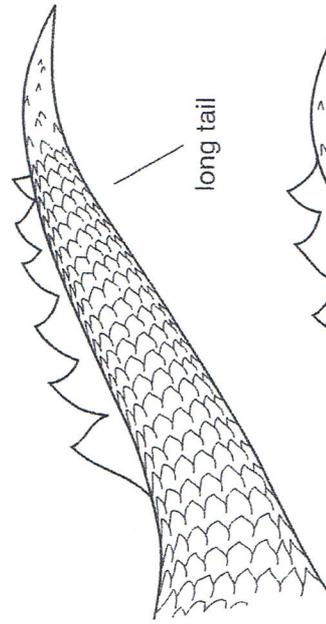
long neck



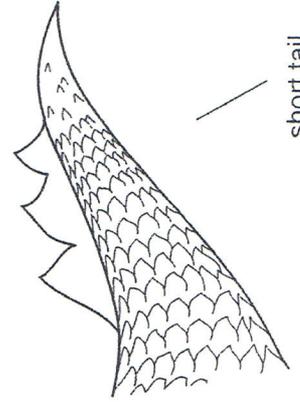
short neck



belly



long tail



short tail



three toes



four toes

Dragon Genetics: Your Pet Dragon Model

Dragon Genetics: Making a Dragon Baby

INSTRUCTIONS: For this part of the activity please find a partner in class that has the opposite sex pet dragon than you do (if you have male find a female, if you have female find a male). Then using your pet dragon's genotypes from page 2, determine which genes your pet will pass on to its offspring. To do this you will flip a penny. If you flip a "Heads" then you pass on the first gene listed under the genotype. If you flip a "Tails" then you pass on the second gene listed under the genotype. Write the results on the chromosomes below. Then you and your partner will use these chromosomes to produce a baby dragon using pages 6 and 7.

| | | | |
|---------------|-----------|-------|---------|
| Neck Length | Eye Color | Horn? | Spikes? |
| Chromosome #1 | | | |

| | | | |
|---------------|------------|----------------|------------|
| Tail Length | Body Color | Color of Wings | Toe Number |
| Chromosome #2 | | | |

| | | |
|---------------|-------------|-----------|
| Belly Color | Spike Color | Freckles? |
| Chromosome #3 | | |

| | |
|-----------------|-----------------------------|
| Fire Breathing? | Sex Chromosome(Ear Frills?) |
| Chromosome #4 | |

Dragon Genetics Worksheet #5:

Name: _____

 Date: _____
 Class/Period: _____

INSTRUCTIONS

Using the key on page S6, determine your "baby dragon's" genotype and phenotype for all of the traits listed on the chromosomes. Also determine whether your "baby dragon" is heterozygous or homozygous for each trait. Record all of this information in the proper spaces of the data table below.

Partner's Name: _____

Data Table

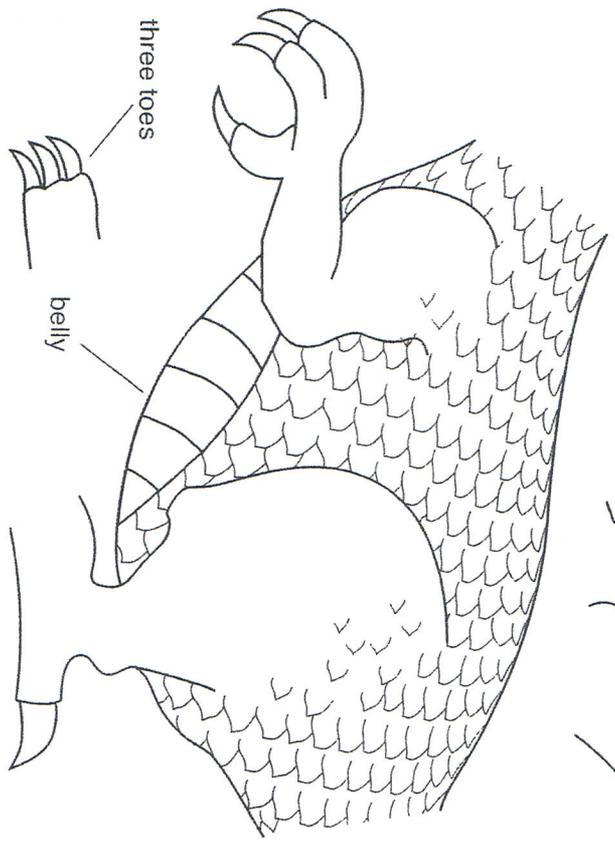
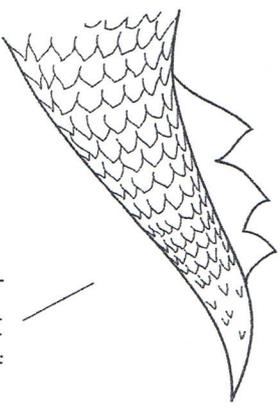
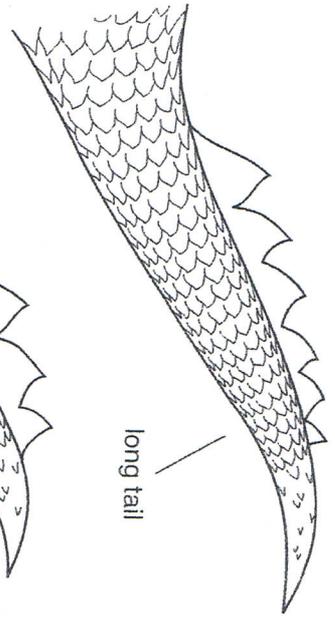
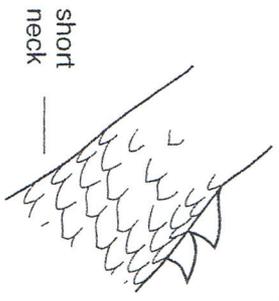
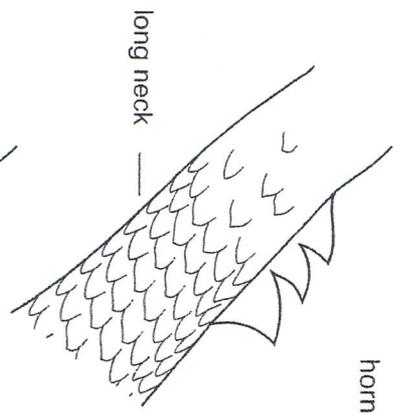
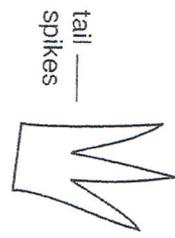
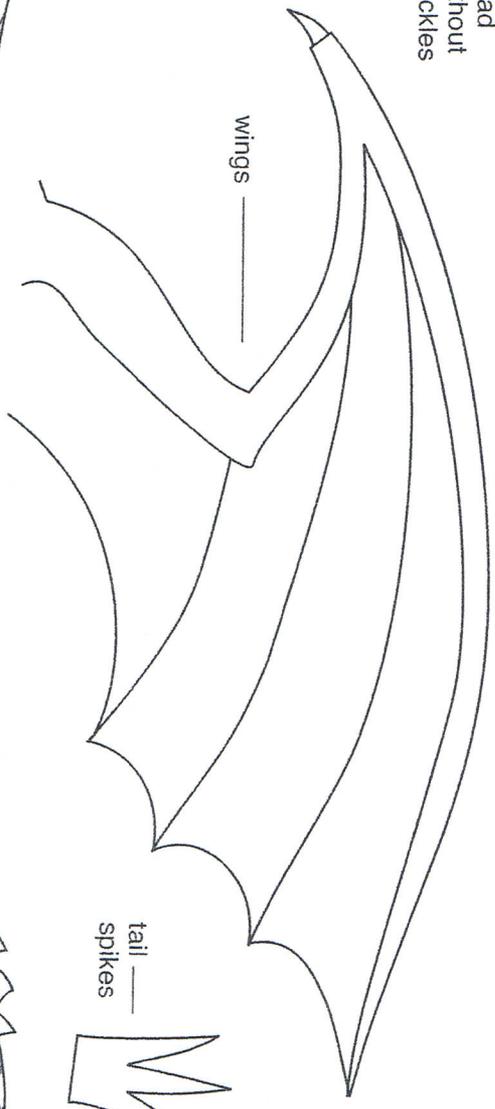
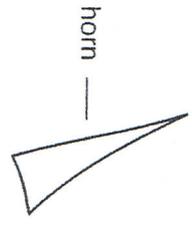
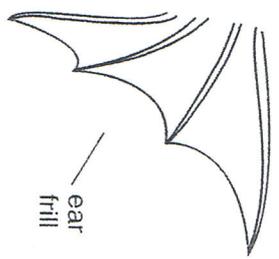
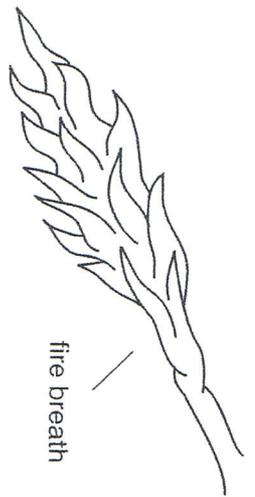
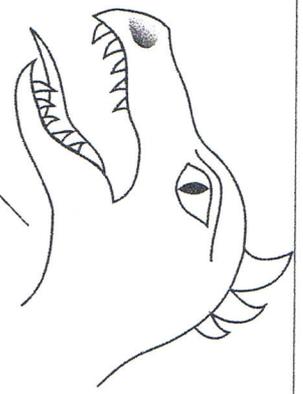
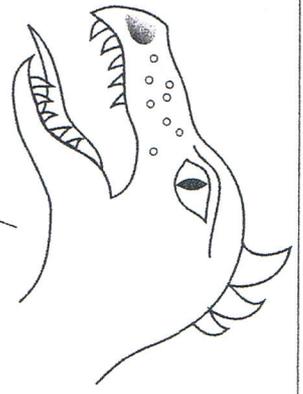
| Chromosome pair number | Trait | Genotype | Homozygous/ Heterozygous | Phenotype |
|------------------------|-------------|----------|-----------------------------|-----------|
| 1 | Neck length | | | |
| | Eye color | | | |
| | Horn? | | | |
| | Spikes? | | | |

| Chromosome pair number | Trait | Genotype | Homozygous/ Heterozygous | Phenotype |
|------------------------|----------------|----------|-----------------------------|-----------|
| 2 | Tail length | | | |
| | Body color | | | |
| | Color of wings | | | |
| | Number of toes | | | |

| Chromosome pair number | Trait | Genotype | Homozygous/ Heterozygous | Phenotype |
|------------------------|-----------------|----------|-----------------------------|-----------|
| 3 | Belly color | | | |
| | Color of spikes | | | |
| | Freckles? | | | |

| Chromosome pair number | Trait | Genotype | Homozygous/ Heterozygous | Phenotype |
|------------------------|-----------------|----------|-----------------------------|-----------|
| 4 | Fire breathing? | | | |
| | Ear frills? | | | |





Dragon Genetics: Your Baby Dragon Model