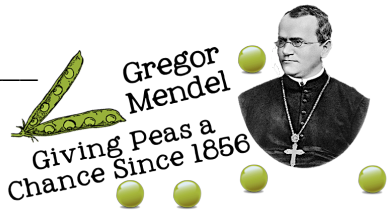
Name: _____ Date: _____



MONOHYBRID CROSS PRACTICE: Give Peas a Chance

Directions: For EACH problem, **use a Punnett square to show your work,** and provide the following information:

a) Show the parent's genotypes as a cross in the form of ____ x _____
b) Provide a Punnett Square to predict the outcome of the cross
c) List the possible genotypes produced from the cross AND the percentage of each.
d) List the possible phenotypes produced from the cross AND the percentage of each.

(You may select any letter you wish to represent the alleles).

1. In pea plants, purple flowers are dominant over white flowers, which are recessive. Cross two homozygous dominant (PP) parents.

2. In pea plants, short plants are recessive to tall plants. Cross two homozygous recessive individuals (tt).

3. In pea plants, yellow seeds are dominant and green seeds are recessive. Cross two heterozygous individuals (Yy).

4. In pea plants, inflated pea pods are dominant over flat pea pods, which are recessive. Cross a heterozygous parent with a homozygous recessive parent.

5. In pea plants, round peas are dominant and wrinkled peas are recessive. Cross a heterozygous parent with a homozygous round pea plant.

6. In pea plants, green pods are dominant over yellow pods. Cross a plant with yellow pods with a plant that is heterozygous for green pods.

7. In pea plants, flowers that bud on the top of the plant (terminal position) is dominant, and flowers that bud on the sides of the plant (axial position) is recessive. Cross a heterozygous terminal flowering plant with a homozygous terminal flowering plant.

8. In pea plants, the seed coat can be green or white. Green is dominant over white. Construct your own Punnett square that involves one heterozygous parent in which 50% of the offspring can be predicted to have green seed coats.

9. A pea plant that is pure for purple flowers mates with a pea plant that has white flowers. One of their offspring self-fertilizes and produces 100 offspring. How many would you predict turn out to have purple flowers and how many would you predict turn out to have white flowers?

10. Of those offspring, 70 are white and 30 are purple. How is this different than your prediction? Is this possible? Why or why not?

Teacher Key Date: _____

MONOHYBRID CROSS PRACTICE: Give Peas a Chance

Directions: For Problems 1-7 provide the following information:

a) Show the parent's genotypes as a cross in the form of ____ x _____
b) Provide a Punnett Square to predict the outcome of the cross
c) List the possible genotypes produced from the cross AND the percentage of each.
d) List the possible phenotypes produced from the cross AND the percentage of each.
(You may select any letter you wish to represent the alleles).

1. In pea plants, purple flowers are dominant over white flowers, which are recessive. Cross two homozygous dominant parents.

Parental cross= PP X PP
Genotypes= 100% Homozygous dominant
Phenotypes= 100% purple

	P	P
P	PP	PP
P	PP	PP

2. In pea plants, short plants are recessive to tall plants. Cross two homozygous recessive individuals.

Parental cross= tt X tt
Genotypes= 100% Homozygous recessive
Phenotypes= 100% short

	t	t
t	tt	tt
t	tt	tt

3. In pea plants, yellow seeds are dominant and green seeds are recessive. Cross two heterozygous individuals.

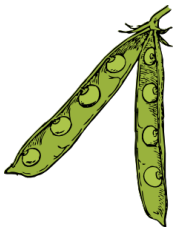
Parental cross= Yy X Yy
Genotypes= 25% homozygous dominant;
50% heterozygous; 25% homozygous recessive (1:2:1)
Phenotypes= 75% yellow seeds, 25% green seeds

	Y	y
Y	YY	Yy
y	Yy	yy

4. In pea plants, inflated pea pods are dominant over flat pea pods, which are recessive. Cross a heterozygous parent with a homozygous recessive parent.

Parental cross= Ii X ii
Genotypes=50% heterozygous; 50% homozygous recessive
Phenotypes=50% inflated pods; 50% flat pods

	I	i
i	Ii	ii
i	Ii	ii



5. In pea plants, round peas are dominant and wrinkled peas are recessive. Cross a heterozygous parent with a homozygous round pea plant.

Parental cross= Rr X RR
Genotypes= 50% Heterozygous;
50% homozygous dominant
Phenotypes= 100% round peas

	R	r
R	RR	Rr
R	RR	Rr

6. In pea plants, green pods are dominant over yellow pods. Cross a plant with yellow pods with a plant that is heterozygous for green pods.

Parental cross= gg X Gg
Genotypes= 50% Heterozygous;
50% homozygous recessive
Phenotypes= 50% yellow pods; 50% green pods

	G	g
g	Gg	gg
g	Gg	gg

7. In pea plants, flowers that bud on the top of the plant (terminal position) is dominant, and flowers that bud on the sides of the plant (axial position) is recessive. Cross a heterozygous terminal flowering plant with a homozygous terminal flowering plant.

Parental cross= Tt X TT
Genotypes= 50% Heterozygous;
50% homozygous dominant
Phenotypes= 100% terminal flowers

	T	t
T	TT	Tt
T	TT	Tt

8. In pea plants, the seed coat can be green or white. Green is dominant over white. Construct your own Punnett square in which 50% of the offspring can be predicted to have green seed coats.

	G	g
g	Gg	gg
g	Gg	gg

9. A pea plant that is pure for purple flowers mates with a pea plant that has white flowers. One of their offspring self-fertilizes and produces 100 offspring. How many would you predict turn out to have purple flowers and how many would you predict turn out to have white flowers?

F2 generation= 1:2:1 genotypic ratio and 3:1 phenotypic ratio
Students should predict that 25 pea plants have white flowers.

10. Of those offspring, 41 are white and 59 are purple. How is this different than your prediction? Is this possible? Why or why not?
There are more white flowers than the initial prediction based on the probability of 25%. However, it IS possible for this to happen because each time there is a 25% chance of two recessive gametes forming to build a white flower. Each time this happens, the chances do not increase or decrease. Hypothetically, there could be 100% white flowering pea plants, it unlikely, but possible.

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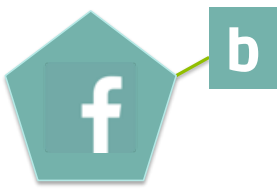

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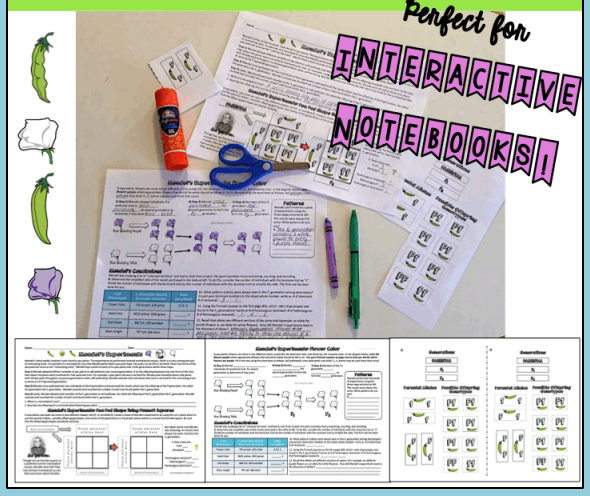
Perfect for INTERACTIVE NOTEBOOKS!



Name: _____ Date: _____

DRAGON FEATHERS
Monohybrid Crosses

Some species of dragons, such *Regalus copperus*, have feathers instead of scales on their body. This is controlled by a genetic trait. Feathers (F) are dominant, whereas lack of feathers (f) is recessive.

In the square provided, perform a monohybrid cross among a male who is heterozygous for the trait and a female who is also heterozygous for the trait.

Parental Cross= _____ x _____

Monohybrid Cross Punnett Square- Prediction Tool

How many feathered dragons? _____

How many non-feathered dragons? _____

4

PERCENTAGES

_____

_____

The female dragon has laid 12 eggs. Using the dihybrid cross Punnett square, ***predict*** how many babies will have the following traits:

How many feathered dragons? _____

How many non-feathered dragons? _____

During the next portion of the lab, we are going to simulate how traits are passed down to offspring using popsicle sticks as chromosomes. Gather 4 popsicle sticks: if different colors are available choose 2 in one color and 2 in a different color. One color will be designated for the male, and the other color for the female.

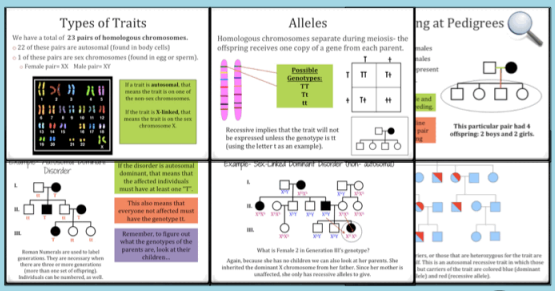
Materials:

4 Popsicle Sticks
2 Paper Bags
Basic Calculator

Write the alleles for the feather gene on the popsicle sticks. Do this for both the male and female chromosomes.
Label one paper bag "male" and the other "female". Put the corresponding popsicle sticks into each bag. It does not matter which dragon you start with.
Shake the bag and choose a popsicle stick (no peeking!). Do this 12 times. Be sure to shake the bag and not to peek between each turn. Record your results in the table on the following page.
After you've finished recording, repeat the process for the other dragon. Record in the table on the following page.

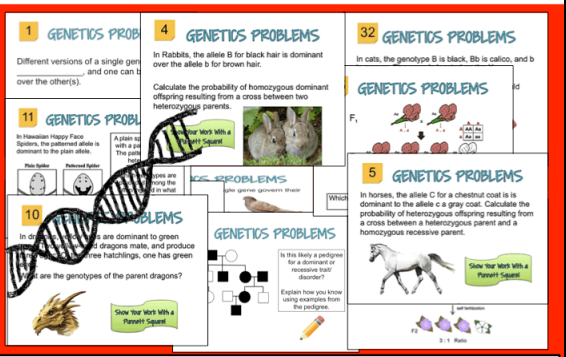
INTRODUCTION TO PEDIGREES

PowerPoint Presentation



24 SLIDES
STUDENT NOTES INCLUDED
EDITABLE

GENETICS UNIT TASK CARDS



Grades 7-10 35 Task Cards