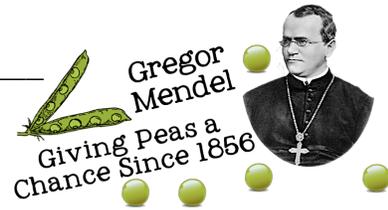


Name: _____ Date: _____



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:

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

- 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

- 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

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

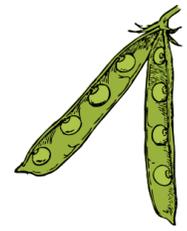
Parental cross= Yy X Yy
 Genotypes= 25% homozygous dominant;
 50% heterozygous; 25% homozygous recessive (1:2:1)
 Phenotypes= 75% yellow seeds, 25% green seeds

	Y	y
Y	YY	Yy
y	Yy	yy

- 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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