Mendelian Genetics

Chapter 11 Section 3, Pgs. 270-273

Objectives: Students will
A) Summarize Mendel's Law of Independent Assortment
B) Identify how dihybrid crosses support independent assortment
C) Complete punnett squares for two trait crosses
D) Summarize Mendel's three laws

B) Identify how dihybrid crosses support independent assortment

Traits: Seed shape & Seed color

Alleles: R round
r wrinkled
Y yellow
y green

Mendel's Questions:
Does round always come with yellow and does wrinkled always come with green? Are traits connected?

RrYy x RrYy

All possible gamete combinations

A) Summarize Mendel's Law of Independent Assortment

Alleles for _____ traits are distributed to _____(& offspring) _____of one another. Ex. _____ plants are not always found with _____

This law can be illustrated using_____

_____

B) Identify how dihybrid crosses support independent assortment

RRYY			RrYy
	RRyy	RrYy	
	RrYy	rrYY	
RrYy			rryy

Phenotypic ratio:

Round/Yellow: Dom/Dom
Round/green: Dom/Rec
wrinkled/Yellow: Rec/Dom
wrinkled/green: Rec/Rec

B) Identify how dihybrid crosses support independent assortment

Dihybrid Cross

_____ x _____

Each parent can produce _____

_____

Use FOIL from math to ID gametes.

_____ _____ _____ _____

Cross is a 4 X 4 with _____

Obj. C) Complete punnett squares for two trait crosses

Gamete identification practice.

Given the following genotypes of a parent, identify the four gametes they will produce. Use FOIL

A. TtGG
B. ttYY
C. TTRr

Complete the following cross:
T = tall, t = short
P = purple flowers, p = white flowers
Cross a Homozygous tall purple-flowered pea plant with a completely heterozygous pea plant

Obj. C) Complete punnett squares for two trait crosses

Phenotypic ratio:

Round/Yellow: Dom/Dom
Round/green: Dom/Rec
wrinkled/Yellow: Rec/Dom
wrinkled/green: Rec/Rec

Obj. D) Summarize Mendel's three laws

LAW	PARENT CROSS	OFFSPRING

Understanding Check:

Two Trait Crosses:

T = Tall, t = Short

R = Round, r = wrinkled

Identify how many offspring are predicted to possess each of the 4 possible phenotypes.

You must show your work.

1) Cross a TTrr X ttRR

2) Cross parent 1 who is heterozygous for both traits with parent 2 who is short and wrinkled.