



Chapter 9 - Genetics

Matching

- a. pure breed
- b. dominant
- c. gamete
- d. allele

- e. Mendel
- f. recessive
- g. hybrid
- h. F1

1. Austrian monk who breed pea plants
2. reproductive cell
3. cross between two different pure lines
4. display same trait as parents
5. offspring generation
6. allele that covers up or masks another allele's phenotype
7. allele that can be hidden or covered up
8. a particular form of a gene

E
C
G
A
H
B
F
D

- a. principle of independent assortment
- b. homozygous
- c. dihybrid cross
- d. phenotype

- e. heterozygous
- f. testcross
- g. genotype
- h. codominance

9. genetic makeup that determines visible trait
10. genotype with same two alleles
11. genotype with different alleles
12. heterozygous individual displays a blend of two allele phenotypes
13. helps determine genotype when dominant phenotype present
14. has 16 possible combinations
15. expressed trait
16. inheritance of one trait does not affect other traits inherited

G
B
E
H
F
C
D
A

Short Answer

17. What is the haploid number of chromosomes in humans? **23**
18. What type of cell is produced when a sperm and egg unite? **zygote or diploid**
19. What type of cell does Meiosis yield - haploid cells or diploid cells? **haploid**
20. (2 pts) A test cross is performed on a tall pea plant (tall being dominant). The next generation of plants as a result of the test cross prove to be all tall plants. What was the genotype of the first tall pea plant? **TT is likely**
21. (1 pt) A particular flower shows codominance for its color gene. If the two possible alleles are blue or yellow, what would be the **phenotype** of a heterozygous flower? **Green**
22. For a particular trait, how many alleles come from each parent? **1**

2010

11
A: 42
M: 44
H: 51

12
A: 44
M: 46
H: 49

2014

- (3) 23. B= Brown hair b= blond hair Mom= Bb Dad= BB What are the hair color possibilities when they have children?

	B	B
B	BB	BB
b	Bb	Bb

List possible genotypes:

BB, Bb

List possible phenotypes:

Brown

Genotype Ratio: 1:1

Phenotype Ratio: All brown

- (3) 24. Normal sightedness is dominant while near-sightedness is recessive. If a near-sighted man were to marry a heterozygous woman, predict the genetics of their children.

	n	n
N	Nn	Nn
n	nn	nn

List possible genotypes:

Nn, nn

List possible phenotypes:

Normal, near-sighted

Genotype Ratio: 1:1

Phenotype Ratio: 1:1

- (3) 25. Freckles are a dominant trait while having no freckles is recessive. If heterozygous man were to marry a heterozygous woman, what are the chances for their children of having freckles like them?

	F	f
F	FF	Ff
f	Ff	ff

List possible genotypes:

FF, Ff, ff

List possible phenotypes:

Freckles, Freckless

Genotype Ratio: 1:2:1

Phenotype Ratio: 3:1

26. Immunity to poison ivy is dominant (I) and being double-jointed is also dominant (D). A double-jointed (heterozygous) man who is immune to poison ivy (heterozygous) married a normal jointed woman who is susceptible to poison ivy. If you were counseling them on the probability of traits for their children, what would you tell them?

Father genotype: DdIi

DI Di dI di

List possible genotypes:

DdIi (4)

Ddii (4)

ddIi (4)

ddii (4)

List possible phenotypes (two traits for each phenotype):

Immune / Double J

Immune / Normal J

P Ivy / Double J

P Ivy / Normal J

Genotype Ratio: 4:4:4:4

Phenotype Ratio: 4:4:4:4

Mother genotype: ddii

di

di

di

di

DdIi	Ddii	ddIi	ddii
DdIi	Ddii	ddIi	ddii
DdIi	Ddii	ddIi	ddii
DdIi	Ddii	ddIi	ddii

27. Make your own punnett square for this one... In fruit flies, normal wings is dominant to no wings and normal eyes are dominant to eyes that are bar shaped. If a heterozygous normal-eyed / homozygous no-winged fruit fly were mated with a homozygous bar-eyed / homozygous normal winged. a) What are the **possible phenotypes** that would be seen in the next generation? b) What is the **probability** that one of the offspring is normal-eyed and normal winged (give me either a fraction or a percent).

Eenn
eeNN

	<u>En</u>	<u>en</u>	<u>En</u>	<u>en</u>
<u>eN</u>	<u>EeNn</u>	<u>eeNn</u>	<u>EeNn</u>	<u>eeNn</u>
<u>eN</u>	<u>EeNn</u>	<u>eeNn</u>	<u>EeNn</u>	<u>eeNn</u>
<u>eN</u>	<u>EeNn</u>	<u>eeNn</u>	<u>EeNn</u>	<u>eeNn</u>
<u>eN</u>	<u>EeNn</u>	<u>eeNn</u>	<u>EeNn</u>	<u>eeNn</u>

A) Possible phenotypes

Normal Eye & Normal Wings

$(EeNn) = 8$

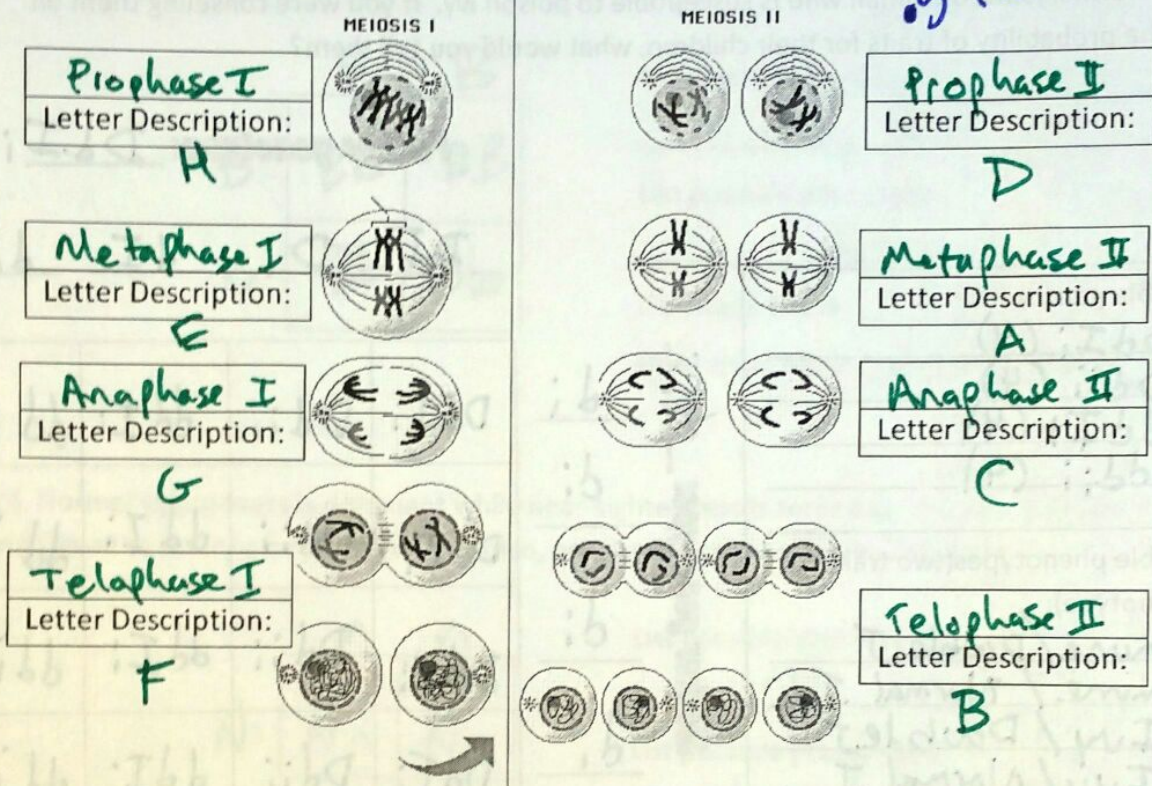
bar-eyed & Normal wings

$(eeNn) = 8$

B) 50% ($\frac{1}{2}$)

Label the stages of Meiosis (28-37)

4 pt = all tables
 (all letters) = each letter 4 pt



Telophase II	Prophase I	Telophase I	Metaphase II
Prophase II	Metaphase I	Anaphase II	Anaphase I

A. chromosomes(not tetrads) line up	B. Daughter haploid cells separate	C. Chromatids separate to poles giving haploid #
D. Non-duplicated chromosomes condense	E. Tetrads line up in middle	F. Daughter diploid cells separate
G. Homologous chromosomes pull apart	H. Homologous Chromosomes Condense	

Bonus Q: List the 4 parts of the Cell Cycle

G₁ phase, S phase, G₂ phase, M phase