

Test 5 – Genetics

For questions 1 – 17, choose the one option that best answers each question or completes each statement.

1. In squash plants, yellow fruit (Y) is dominant to white fruit (y). If two plants heterozygous for yellow fruit are crossed, what are the possible genotypes of the offspring?

- a. YY, Yy, yy only
- b. YY, yy only
- c. Yy only
- d. Yy, yy only

2. In cows, long hair is dominant to short hair. In a cow that is heterozygous for long hair, what percentage of the cells undergoing meiosis will carry the dominant allele?

- a. 25%
- b. 50%
- c. 75%
- d. 100%

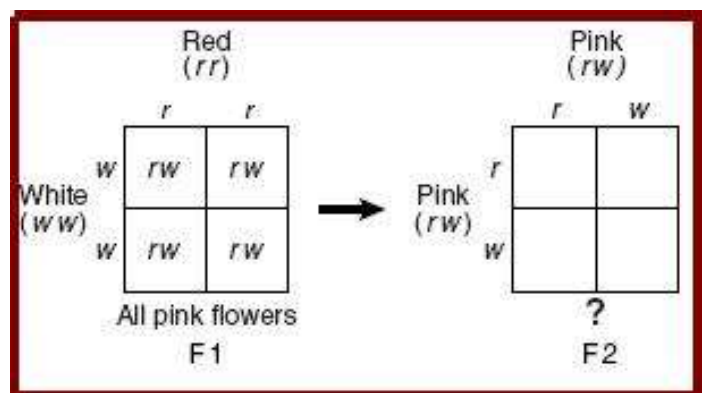
3. In pea plants, tall plants are dominant to short plants. If two heterozygous tall plants are crossed, what percent of the offspring will probably be short?

- a. 75%
- b. 50%
- c. 25%
- d. 0%

♀/♂	T	t
T	TT	Tt
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4. In snapdragons, the combined expression of both alleles for flower color produces a new phenotype that is pink. This illustrates incomplete dominance. The Punnett square above shows that both the white and red snapdragons are homozygous. Which of the following would be the correct product from a cross between two heterozygous pink snapdragons?

- a. 2 red, 2 white
- b. 2 red, 1 pink, 1 white
- c. 1 red, 2 pink, 1 white
- d. 1 red, 1 pink, 2 white



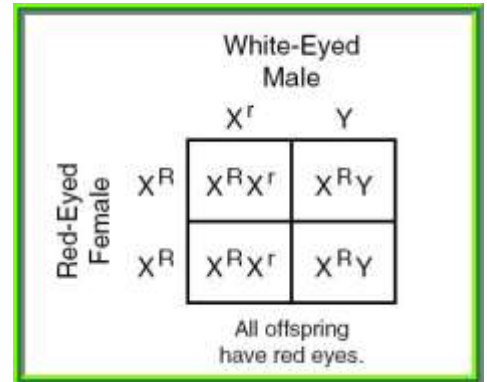
5. In corn plants, green (G) is dominant to albino (g). Which list represents all the genotypes that produce green corn plants?

- a. GG
- b. GG, Gg
- c. Gg, gg
- d. GG, gg

	G	g
G	GG	Gg
g	Gg	gg

6. A man with type-A blood has a baby with type-O blood. What could be the genotypes of the father and mother?
- $I^A I^A$ and $I^B I^O$
 - $I^A I^A$ and $I^O I^O$
 - $I^A I^O$ and $I^B I^O$
 - $I^A I^O$ and $I^B I^B$

7. The Punnett square shows the cross between red-eyed females and white-eyed males. Fruit flies usually have red eyes. If a female and male offspring from the cross shown are allowed to mate, what would the offspring probably look like? (Hint: You need to do a new Punnett Square)



- 2 white-eyed females; 1 white-eyed male and 1 red-eyed male
- 2 red-eyed females; 1 red-eyed male, 1 white-eyed male
- 2 red-eyed females; 2 white-eyed males
- 1 red-eyed female and 1 white-eyed

Directions: Fill in the spaces using the words provided. No word will be used more than once. Not all words will be used.

alleles	genes	recombined
asexual	mitosis	segregated
gametes	meiosis	sexual

Mendel's laws of heredity describe mathematically patterns of inheritance from parents to offspring during _____ reproduction.

- Genetic traits are produced by _____. Alternate versions of a gene are called _____. In a parent, every trait is produced by at least two alleles.
- During _____, pairs of alleles (on homologous chromosomes) are _____ into haploid cells, which only have one allele per trait in each cell.
- These cells are used as _____ (sex cells) to produce offspring.

dominant	Heterozygous	Phenotype
Genome	Homologous	recessive
Genotype	Homozygous	silent

_____ describes the genetic make-up of an organism.

_____ describes the organism's appearance based on its genes.

_____ individuals have two identical alleles for a particular trait.

_____ individuals have contrasting (differing) alleles.

When one allele masks the effect of another, that allele is called _____ and the other (the one that is hidden) is called _____.

codominance	linked traits	polygenic inheritance
incomplete dominance	multiple alleles	sex-linked inheritance

When an intermediate phenotype occurs and no allele dominates, _____ results (for example, when red and white flowers produce pink flowers)

Many other patterns of inheritance exist including:

- _____ (when more than two different alleles exist for a gene; for example, human blood type),
- _____ (when a trait is produced from multiple genes; for example, human height or skin color), and
- _____ (when genes for a trait are located on the X or Y chromosomes, for example, color blindness or hemophilia).

Based on the following scenario, answer the questions using percentages. Space has been provided below to complete a Punnett Square if needed.

Pea plants can have purple (P) or white (p) flowers. If one white pea plant (pp) is crossed with a purple pea plant (Pp), what percentage of offspring will:

- be homozygous dominant (PP): _____
- have white flowers: _____