**Chapter 11 Introduction to Genetics** 

## **Multiple Choice**

Write the letter that best answers the question or completes the statement on the line provided.

1.	Gregor Mendel used pea plants to study				
	a. flowering.	c. the inheritance of traits.			
	b. gamete formation.	d. cross-pollination.			
2.	What are Mendel's factors called today?				
	a. alleles	c. genes			
	b. traits	d. characters			
3.	The principle of dominar	nce states that			
	a. all alleles are dominant.				
	b. all alleles are recessive.				
	c. some alleles are dominant and others are recessive.				
	d. alleles are neither dominant nor recessive.				
4.	When Mendel allowed th	he tall $F_1$ pea plants ( <i>Tt</i> ) to self-pollinate,			
	a. the offspring were of medium height.				
	b. all of the offspring were tall.				
	c. all of the offspring were short.				
	d. some of the offspring were short.				
5.	Two plants with the genotypes <i>TT</i> and <i>Tt</i>				
	a. would have the same phenotype.				
	b. would have different phenotypes.				
	c. have all dominant alle	es.			
	d. have all recessive allele	es.			
6.	Organisms that have two are said to be	identical alleles for a particular trait			
	a. hybrid.	c. heterozygous.			
	b. homozygous.	d. dominant.			
7.	What principle states that during gamete formation genes for different traits separate without influencing each other's inheritance?				
	a. principle of dominance				
	b. principle of independe	nt assortment			
	c. principle of probabilities				
	. principle of segregation				

Date \_\_\_\_\_

Name_					Class		Date _
			Rr	Yy		_	
		RY	Ry	rY	ry		
RrYy	RY	RRYY	RRYy	RrYY	RrYy	Seed Shape <i>R</i> – round <i>r</i> – wrinkled Seed Color	
	Ry	RRYy	RRyy	RrYy	Rryy		
	rY	RrYY	RrYy	rrYY	rrYy	Y – yellow y – green	
	ry	RrYy	Rryy	rrYy	rryy		

## Figure 11-1

- **8.** The Punnett square in Figure 11-1 shows that the gene for pea shape and the gene for pea color
  - a. assort independently.
  - b. are linked.
  - c. have the same alleles.
  - d. are always homozygous.
- **9.** Situations in which one allele for a gene is not completely dominant over another allele for that gene are called
  - a. multiple alleles.
  - b. incomplete dominance.
  - c. codominant alleles.
  - d. multiple genes.
- **\_\_\_\_10.** Mendel's principles of genetics apply to
  - a. plants only. c. pea plants only.
  - b. animals only. d. all organisms.
- \_\_\_\_11. The number of chromosomes in a gamete is represented by the symbol
  - a. 2N. c. N. b. X. d. Y.
- \_\_\_\_12. Gametes are produced by the process of
  - a. mitosis. c. crossing-over.
  - b. meiosis. d. replication.
- \_\_\_\_\_13. Unlike mitosis, meiosis results in the formation of
  - a. diploid cells. c. 2N daughter cells.
  - b. haploid cells. d. body cells.

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14. Traits that are produced by the interaction of several genes are said to be										
a. polygenic.	iic. c. haploid.									
b. codominant.	b. codominant. d. diploid.									
15. Gene maps are based on										
a. the frequencies of crossing-over between genes.										
b. independent assortment.										
c. genetic diversity.										
d. the number of genes i	d. the number of genes in a cell.									
<b>Completion</b> <i>Complete each statement on the line</i>	e provided.									
<b>16.</b> The different forms of a gene are called										
17 is the l	is the likelihood that a particular				t					
event will occur.			τ	TT	Τt					
<b>18.</b> In the Punnett square shown genotypes of the offspring an	in Figure 11-2, the re	тт								
<b>19.</b> The principle of independent for diffunction of the formula to the f	t assortment states that ferent traits can segregate rmation of gametes		Τ	тт	Τt					
20. Meiosis produces four genet cells.	ically different		T = tall t = short							
-		Figu	re 11-2							

## **Short Answer**

*In complete sentences, write the answers to the questions on the lines provided.* 

**21.** Define *genetics*.

22. How many sets of chromosomes are in a diploid cell?

**23.** Define *homologous chromosomes*.

24. What happens to the number of chromosomes per cell during meiosis?

**25.** Why did Mendel not observe gene linkage during his experiments with pea plants?

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## **Using Science Skills**

*Use the diagram below to answer the following questions on the lines provided.* 



- **26.** Inferring What do the letters *R* and *I* represent in Figure 11-3?
- **27. Interpreting Graphics** In Figure 11-3, what is the genotype of the pink-flowered snapdragons?
- **28. Inferring** Explain whether the alleles in Figure 11-3 show dominance, incomplete dominance, or codominance.
- **29. Inferring** According to Figure 11-3, if red-flowered snapdragons and ivory-flowered snapdragons are crossed, what percent of their offspring are expected to be pink-flowered?
- **30. Inferring** According to Figure 11-3, if two pink-flowered snapdragons are crossed, what percent of their offspring are expected to be pink-flowered?