

CHAPTER 16

THE ENDOCRINE SYSTEM AND REPRODUCTION

SECTION 16-1 The Endocrine System
16-1 (pages 522-526)

This section explains how the endocrine system works to control activities in the body.

► The Role of the Endocrine System (page 522)

1. What does the endocrine system control? _____

2. The endocrine system is made up of _____, organs that produce chemicals.
3. Is the following sentence true or false? Endocrine glands release their chemical products through delivery tubes. _____

► Hormones (pages 523-524)

4. The chemical product of an endocrine gland is a(n) _____, or chemical messenger.
5. How do hormones affect the body? _____

6. Circle the letter of each sentence that is true about hormones.
 - a. Hormones can regulate only the tissues and organs near the glands that produce them.
 - b. Nerve impulses from the brain can cause the release of hormones.
 - c. Hormones cause a slower, but longer-lasting response.
 - d. Any hormone can affect any organ in the body.

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CHAPTER 16, The Endocrine System and Reproduction *(continued)*

7. A hormone interacts only with certain _____, cells that recognize the hormone’s chemical structure.

Match the endocrine gland with the function of the hormone it produces.

See *Exploring the Endocrine System* on pages 524–525.

Glands	Functions of the Hormones
_____ 8. thyroid gland	a. Control the changes that take place in the body of a teenage boy
_____ 9. adrenal glands	b. Trigger the body to respond to emergencies
_____ 10. ovaries	c. Produces insulin and glucagon
_____ 11. testes	d. Controls the release of energy from food molecules during respiration
_____ 12. pancreas	e. Control the changes in a teenage girl’s body

► **The Hypothalamus** (page 524)

13. Circle the letter of each sentence that is true about the hypothalamus.
- a. The hypothalamus links the nervous system and the excretory system.
 - b. The hypothalamus is located on the kidneys.
 - c. The hypothalamus sends nerve messages and produces hormones.
 - d. The hypothalamus plays a major role in maintaining homeostasis.

► **The Pituitary Gland** (page 525)

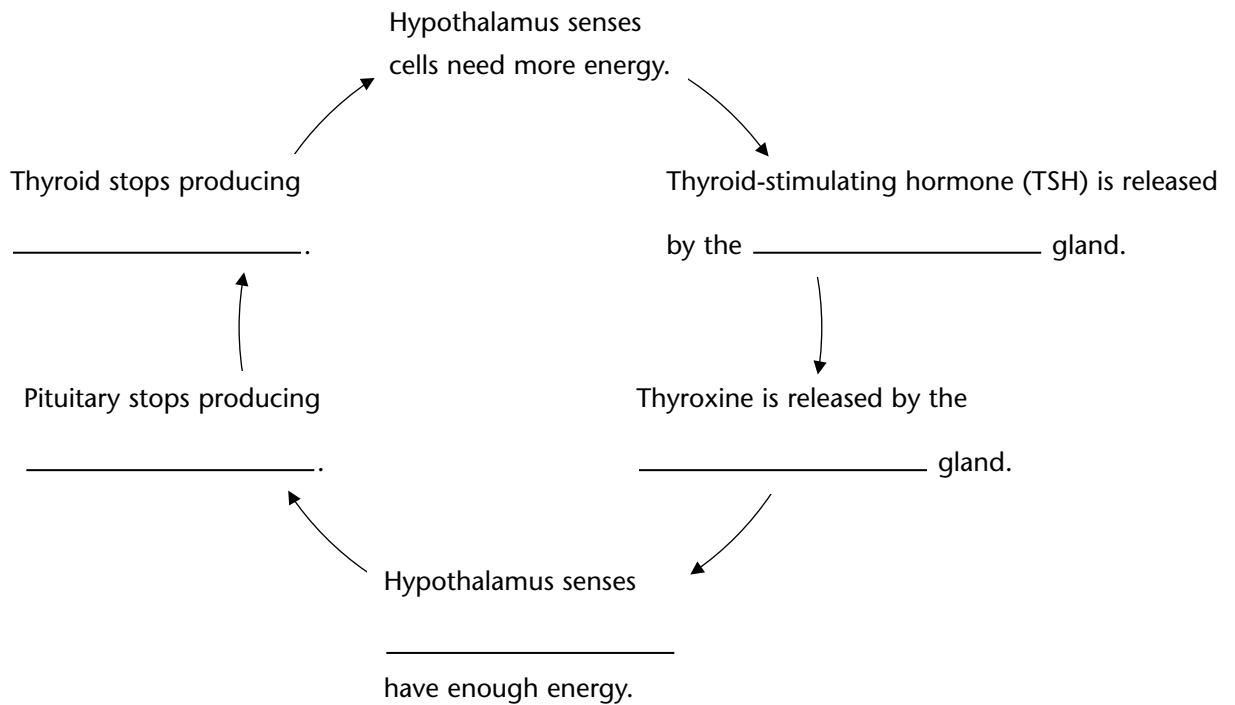
14. What is the pituitary gland? _____

15. Is the following sentence true or false? The pituitary gland releases hormones in response to nerve impulses or hormone signals from the hypothalamus. _____

► **Negative Feedback** (page 526)

16. How does negative feedback work to control the amount of a hormone in the blood? _____

17. Complete the cycle diagram to show how thyroxine, a hormone produced by the thyroid gland, is regulated by negative feedback.



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Reading Skill Practice

Knowing the meanings of the key terms in a section will help you to better understand what you are reading. Make a list of key terms in this section. Write the meanings of these terms using your own words. In this way, the key terms become a natural part of your vocabulary. Do your work on a separate sheet of paper.

CHAPTER 16, The Endocrine System and Reproduction (continued)

SECTION 16-2 The Male and Female Reproductive Systems

(pages 527-532)

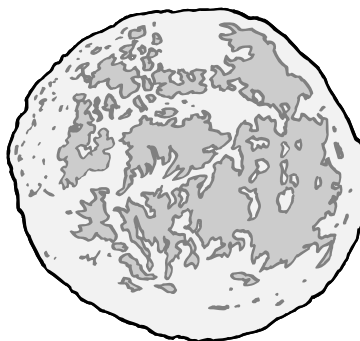
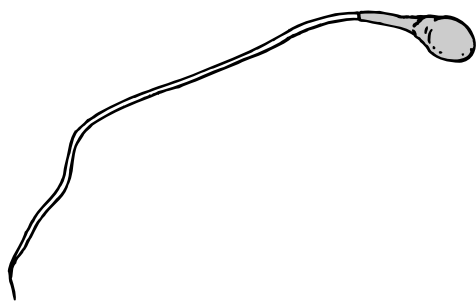
This section describes the structures and functions of the organs in the male and female reproductive systems. It also explains the events in the menstrual cycle.

► Sex Cells (pages 527-528)

Match each key term with its definition.

Terms	Definitions
_____ 1. egg	a. The male sex cell
_____ 2. sperm	b. A fertilized egg
_____ 3. fertilization	c. The joining of a sperm and an egg
_____ 4. reproduction	d. Carries the information that controls inherited characteristics
_____ 5. zygote	e. The female sex cell
_____ 6. chromosome	f. The process by which living things produce new individuals of the same type

7. Identify which is the egg and which is the sperm.



a. _____

b. _____

8. Is the following sentence true or false? A sex cell has the same number of chromosomes as a body cell. _____

► **The Male Reproductive System** (pages 528–529)

9. What is the male reproductive system specialized to produce?
a. _____ b. _____
10. Circle the letter of the organs in the male where sperm are produced.
a. testosterone b. testes c. scrotum d. penis
11. What does testosterone control? _____

12. The testes are located in an external pouch of skin called the
_____.
13. Is the following sentence true or false? Sperm can develop normally only in slightly cooler temperatures than normal body temperature.

14. What does semen provide to sperm?
a. _____
b. _____
15. Semen leaves the body through an organ called the _____.

► **The Female Reproductive System** (pages 530–531)

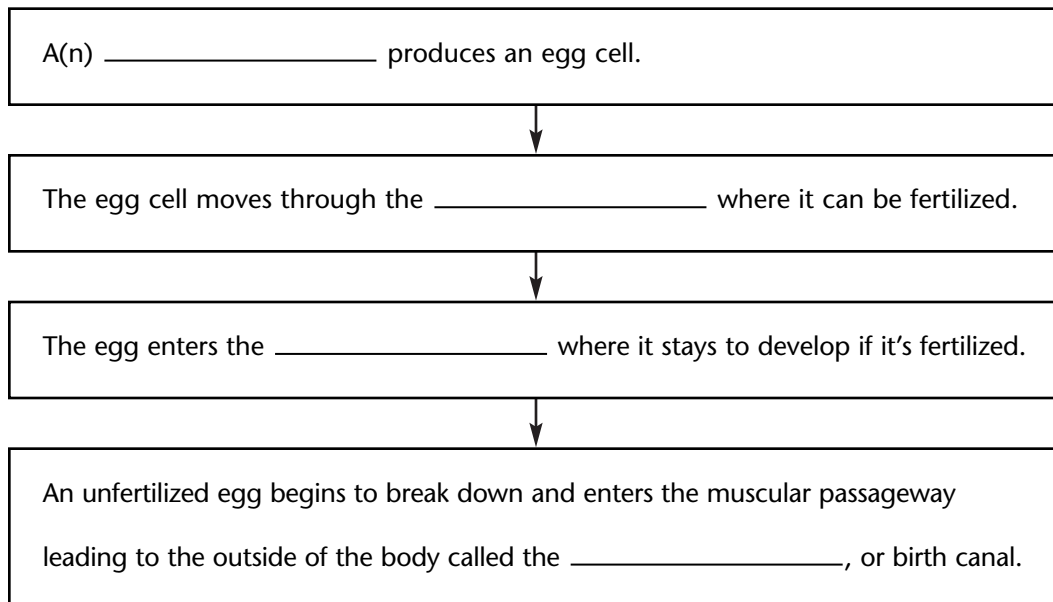
16. What is the role of the female reproductive system? _____

17. What do ovaries produce?
a. _____
b. _____
18. What does estrogen control? _____

CHAPTER 16, The Endocrine System and Reproduction *(continued)*

19. Complete the flowchart to show the path of an egg cell.

Path of an Egg



► The Menstrual Cycle *(pages 531–532)*

20. Circle the letter of how often an egg is released from the ovaries.

- a. daily b. weekly c. monthly d. yearly

21. The monthly cycle of changes that occurs in the female reproductive system is called the _____.

22. What occurs during the menstrual cycle? _____

23. The menstrual cycle prepares the body for _____, the condition that begins after fertilization has taken place.

24. Circle the letter of each sentence that is true about menstruation.

- a. Menstruation lasts about 28 days.
b. Hormones of the endocrine system control the menstrual cycle.
c. All girls begin menstruation at the same age.
d. Women stop releasing eggs from their ovaries at about the age of 50.

SECTION **The Human Life Cycle**
16-3 (pages 533-541)

This section explains how babies develop before birth, what happens during birth, and what happens as babies develop into children. It also describes the changes that occur during adolescence.

► **Introduction** (page 533)

1. After fertilization, the zygote develops first into an embryo and then into a(n) _____.

► **The Zygote** (page 533)

2. Is the following sentence true or false? The zygote begins to divide to make two, and then four cells before it enters the uterus.

3. The growing mass of cells forms a hollow ball and attaches to the lining of the uterus, at which time the developing human is called a(n)

_____.

► **The Development of the Embryo** (page 534)

4. The membrane that surrounds the embryo and develops into a fluid-filled sac is called the _____.

5. What is the placenta? _____

6. What is the function of the umbilical cord? _____

CHAPTER 16, The Endocrine System and Reproduction *(continued)*

7. Is the following sentence true or false? Substances, such as chemicals from tobacco smoke and alcohol, can pass from the mother to the embryo. _____

► **The Development of the Fetus** (page 535)

8. Complete the table to show the development of the fetus.

The Development of the Fetus	
Time in Development	What Is Happening
Nine weeks	
From fourth to sixth month	
Final three months	

► **Birth** (pages 535–536)

9. List the three stages of the birth of a baby.

a. _____ b. _____ c. _____

10. Circle the letter of each sentence that is true about birth.

- a. Strong muscular contractions, called labor, enlarge the cervix so that the baby fits through it.
- b. During delivery, the baby is pushed feet first out of the uterus, through the vagina, and out of the mother’s body.
- c. After delivery, the umbilical cord is clamped and cut.
- d. After labor, contractions push out the placenta and other membranes into the vagina.

11. How does the baby's body adjust to the stress of the birth process?

► **Multiple Births (page 537)**

12. What is a multiple birth? _____

Match the type of twins with its characteristics. Each type of twins may be used more than once.

Characteristics	Types of Twins
_____ 13. Develop from a single fertilized egg	a. identical twins
_____ 14. Develop when two eggs are released from the ovary and fertilized by two different sperm	b. fraternal twins
_____ 15. Are no more alike than any brothers or sisters	
_____ 16. Have identical inherited traits and are the same sex	

► **Infancy (pages 537–538)**

17. Is the following sentence true or false? As a baby grows, its head grows more slowly, and its body, legs, and arms grow quickly to catch up.

18. Circle the letter of the physical skill that babies develop first.

- a. crawl b. grasp objects c. walk d. hold up their heads

19. Is the following sentence true or false? Babies can communicate only by crying. _____

CHAPTER 16, The Endocrine System and Reproduction *(continued)*

► **Childhood** (page 538)

20. Circle the letter of each sentence that is true about childhood.
- a. Childhood begins at about the age of 13 years.
 - b. Children become taller and heavier and become more coordinated.
 - c. As they develop, children become less curious.
 - d. Children learn to think about and care for others as they grow.
21. What does an increased appetite toward the end of childhood signal?

► **Adolescence** (pages 539–540)

22. What is adolescence? _____
-
-
23. The physical changes that occur during adolescence are controlled by _____ produced by the endocrine system.
24. What is puberty? _____
-
25. Circle the letter of each physical change of puberty that occurs in girls.
- | | |
|------------------------|---------------------|
| a. voice deepens | b. ovulation starts |
| c. body odor increases | d. hips widen |
26. Circle the letter of each physical change of puberty that occurs in boys.
- | | |
|-----------------------|------------------------|
| a. hips widen | b. sperm are produced |
| c. hair grows on face | d. body odor increases |
27. During adolescence, _____ tend to have their growth spurt at a younger age than _____ do.

28. Is the following sentence true or false? All adolescents grow and develop at the same rate. _____
29. Is the following sentence true or false? Adolescence includes only the physical changes of puberty. _____
30. Circle the letter of each sentence that is true about changes in the way teenagers feel.
- a. Teenagers always have the same feelings about the changes they are experiencing.
 - b. Teenagers can think about the consequences of their actions.
 - c. During adolescence, memory and problem-solving skills improve.
 - d. Teens are not able to develop mental abilities through their interests outside of school.
31. What is peer pressure? _____

32. Peer pressure that is _____ can lead teens to do things that go against their values.

► **Life as an Adult (page 541)**

33. Is the following sentence true or false? Adulthood definitely begins at the age of 18 years. _____
34. Circle the letter of the age when the process of aging begins.
- a. 20 years b. 30 years c. 40 years d. 50 years
35. What changes occur to the body during aging? _____

36. Is the following sentence true or false? The effects of aging can be slowed if people follow sensible diets and exercise regularly.

CHAPTER 16, The Endocrine System and Reproduction (continued)

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SECTION **Reproduction and Genetics**
16-4 (pages 543-547)

This section describes how genes are passed from one generation to the next through sexual reproduction and asexual reproduction. It also describes what causes different traits.

► **Introduction** (page 543)

1. The process in which characteristics pass from parents to offspring is called _____.
2. The scientific study of heredity is called _____.

► **DNA and Genes** (page 544)

3. The shape of a person's nose and the length of a kitten's hair are examples of _____.
4. What is a gene? _____

► **Sexual Reproduction** (pages 544-545)

5. Is the following sentence true or false? Sexual reproduction is the kind of reproduction that involves two parents who combine their genetic material to produce a new organism. _____

► **Asexual Reproduction** (page 545)

6. A bacterium dividing in two and a hydra budding are examples of _____.

7. Complete the table to show the differences between sexual reproduction and asexual reproduction.

Two Kinds of Reproduction		
Type of Reproduction	Number of Parents	Similarity of Offspring
Sexual		
Asexual		

► **Alleles (page 546)**

8. What are alleles? _____

► **Dominant and Recessive (pages 546–547)**

9. Is the following sentence true or false? If an individual has one dominant allele and one recessive allele, the trait that is caused by the recessive allele will show up. _____
10. In pea plants, what are the two alleles for color?
 a. _____ b. _____
11. The purple allele is dominant. What alleles must a pea plant have in order to have white flowers? _____
12. What alleles must a pea plant have in order to have purple flowers?

13. Is the following sentence true or false? The inherited characteristics of any organism are controlled by the alleles that make up its genes.

CHAPTER 16, The Endocrine System and Reproduction *(continued)*

WordWise

Use the clues to identify key terms from Chapter 16. Write the terms on the lines. Then find the words hidden in the puzzle and circle them. Words are across or up-and-down.

Clues

- The chemical product of an endocrine gland
- The stage of development in which the developing human attaches to the lining of the uterus
- The stage of development from the ninth week of development until birth
- The period of sexual development in which the body becomes able to reproduce
- A fertilized egg
- The mixture of sperm cells and fluids
- The female organ that produces egg cells and hormones like estrogen
- The hormone in females that triggers the development of some adult female characteristics
- A physical characteristic of an organism
- Different forms of a gene

Key Terms

p g e s t r o g e n m z

u o t s e m e n p j t y

b v h d e u a i s z r g

e a f e t u s p h u a o

r r i o e m b r y o i t

t y a l l e l e s o t e

y c p h o r m o n e w t