SECTION 1. REPRODUCTIVE ANATOMY

1. collection of specialized organs, glands, and hormones that help to produce a new human being
2. When follicle-stimulating hormone and lutenizing hormone are released, they begin the process of sexual maturation.
3. produce eggs, provide place for fertilized egg to develop
4. controls female characteristics, makes eggs develop, prepares the uterus for pregnancy and helps maintain a pregnancy
5. ovaries—produce eggs and release one during ovulation; fallopian tube—provide place for egg to travel to be fertilized; uterus—place where fertilized egg is protected and developed
6. produce sperm; deliver them to the female reproductive system
7. controls development of male sexual characteristics; needed for sperm to develop
8. testes—produce sperm cells; epididymus—store and mature sperm; vas deferens—mix sperm with fluids to form semen and move semen into urethra
9. Sample answer: Students can use the initial letters of epididymus and vas deferens to remember they are part of the male reproductive system, such as EVeryDay, sperm is matured in the epididymus and moved through the vas deferens. EVeryDay. E = epididymus, V and D = vas deferens. For fallopian tube, students might simply remember the three F’s. Females have fallopian tubes where eggs can be fertilized.

SECTION 2. REPRODUCTIVE PROCESSES

1. Female: meiosis I and II; Male: meiosis I and II
2. Female: before birth; Male: at puberty
3. Female: FSH, LH, estrogen; Male: FSH, LH, testosterone
4. monthly changes in the female reproductive system that includes producing and releasing an egg and preparing the uterus to receive an egg
5. Flow phase, the endometrium detaches and is expelled from the uterus; follicular and luteal phases, it thickens again.
6. When one sperm penetrates the membrane, the egg changes so that no other sperm can enter.
7. the 23 chromosomes of the sperm unite with the 23 chromosomes of the egg
8. Identical twins are genetically the same, developing from the same zygote; fraternal twins develop from two different zygotes.
9. Any of the following three answers: too narrow a vas deferens, low sperm count; damaged reproductive organs due to injury or disease; defective eggs
10. It must be passed from person to person through sexual contact.
11. Bacterial Infection: Examples—chlamydia, syphilis, gonorrhea; Effects—attacks reproductive organs causing infertility; Treatment—antibiotics cure infections Viral Infections: Examples—hepatitis B, genital herpes, HPV, HIV; Effects—attacks body cells; Treatment—medications control symptoms; no cures available
12. Menopause is when a female stops menstruating.
13. Transmitted means “to pass,” and an STD is a disease that is passed through sexual contact.
14. Fertile means “can reproduce.” If a person is infertile, he or she cannot reproduce.
SECTION 3. FETAL DEVELOPMENT

1. A blastocyst is a hollow ball of cells that implants into the uterus; an embryo has three layers that have begun to form into different organs and tissues.

2. **amniotic sac**—fluid-filled sac that protects the embryo from shocks and sudden temperature changes; **chorion**—contains chorionic villi that absorb nutrients and oxygen to nourish the embryo; **placenta**—tissue that allows for exchange of nutrients, oxygen, and wastes between mother and embryo; **umbilical cord**—cord, composed of two arteries and one vein, that carries nutrients and oxygen to the embryo and carries away its wastes

3. The mother’s immune system might attack the embryo’s blood as a foreign protein, which could end the pregnancy.

4. **spinal cord and vertebrae, brain, internal organs, heart**

5. Second trimester because the fetus is larger, more developed—especially the arms and legs—and more active

6. Many organs, especially the lungs, are too undeveloped to function well and allow the fetus to survive outside the mother’s body

7. The fetus gets all of its nourishment from the mother—if there are nutritional deficiencies, the development of the fetus can be affected.

8. Avoid drugs and alcohol, get regular exercise, have regular medical care to make sure everything is going well

9. They can cause morning sickness, temporary diabetes, and depression after the baby’s birth.

10. **Sample answers:** Students can sketch a diagram similar to Figure 3.2 or sketch an astronaut’s suit with its umbilical cord connected to a spacecraft, a deep-sea diver’s suit with the air hose connected to the ship, another mammal’s embryo with similar structures, or a bird’s or reptile’s egg

SECTION 4. BIRTH AND DEVELOPMENT

1. Labor—Oxytocin induces contractions in uterus as true labor begins

2. **Dilation of the Cervix**—amniotic sac usually breaks; walls of cervix are pushed apart

3. Emergence of Baby—baby turns head first toward vaginal canal; baby is pushed out of the mother’s body

4. Expulsion of Placenta—placenta detaches and is expelled; contractions help control bleeding

5. A Caesarian section is performed in which an incision is made in the mother’s abdomen to remove the baby.

6. It is clamped and cut, leaving a scar called the naval.

7. It increases the rate of fat metabolism and protein synthesis, which cause all body cells to divide and the body to grow.

8. **infancy, childhood, puberty, adolescence, adulthood, aging**

9. An infant’s homeostatic mechanisms are not completely developed at birth.

10. **infancy and puberty**

11. During these times, children’s muscles, nerve and sensory connections, and coordination improve, allowing them to learn large-motor skills such as walking.

12. Sexual maturity achieved, rapid physical growth continues, greater strength and coordination, rearrangement of neural connections, greater ability to reason

13. Healthy diet, regular exercise, continued learning

14. Both terms refer to groups that share the same ages and levels of development

15. In adolescence, you are more “grown up” because your growth is more complete than in puberty.
Section 1: Reproductive Anatomy

Study Guide B

KEY CONCEPT
Female and male reproductive organs fully develop during puberty.

VOCABULARY

<table>
<thead>
<tr>
<th>reproductive system</th>
<th>uterus</th>
<th>testosterone</th>
<th>semen</th>
</tr>
</thead>
<tbody>
<tr>
<td>puberty</td>
<td>estrogen</td>
<td>scrotum</td>
<td></td>
</tr>
<tr>
<td>ovum</td>
<td>fallopian tube</td>
<td>epididymis</td>
<td></td>
</tr>
<tr>
<td>ovary</td>
<td>testis</td>
<td>vas deferens</td>
<td></td>
</tr>
</tbody>
</table>

MAIN IDEA: The female reproductive system produces ova.
1. What is the reproductive system?

2. What hormones begin the process of puberty?

3. What are the main functions of the female reproductive system?

4. Name the three roles of the hormone estrogen in the female reproductive system.

5. Describe the function of each part of the female reproductive system listed below.

<table>
<thead>
<tr>
<th>Part of Reproductive System</th>
<th>Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>ovaries</td>
<td></td>
</tr>
<tr>
<td>fallopian tube</td>
<td></td>
</tr>
<tr>
<td>uterus</td>
<td></td>
</tr>
</tbody>
</table>
MAIN IDEA: The male reproductive system produces sperm.

6. What are the main functions of the male reproductive system?

_______________________________________________________________

_______________________________________________________________

7. Name the two roles of the hormone testosterone in the male reproductive system.

_______________________________________________________________

_______________________________________________________________

8. Describe the function of each part of the male reproductive system listed below.

<table>
<thead>
<tr>
<th>Part of Reproductive System</th>
<th>Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>testes</td>
<td></td>
</tr>
<tr>
<td>epididymus</td>
<td></td>
</tr>
<tr>
<td>vas deferens</td>
<td></td>
</tr>
</tbody>
</table>

Vocabulary Check

epididymis      vas deferens      fallopian tube

9. Each of the terms listed above refers to tubes found in the human reproductive system. Come up with a clue that will help you to remember each word’s definition and how the definition is different from the other two.

_______________________________________________________________

_______________________________________________________________

_______________________________________________________________

_______________________________________________________________
Section 2: Reproductive Processes

Study Guide B

KEY CONCEPT
Human reproductive processes depend on cycles of hormones.

VOCABULARY
<table>
<thead>
<tr>
<th>follicle</th>
<th>endometrium</th>
<th>zygote</th>
</tr>
</thead>
<tbody>
<tr>
<td>ovulation</td>
<td>corpus luteum</td>
<td>infertility</td>
</tr>
<tr>
<td>menstrual cycle</td>
<td>menopause</td>
<td>sexually transmitt disease</td>
</tr>
</tbody>
</table>

MAIN IDEA: Eggs mature and are released according to hormonal cycles. Sperm production in the testes is controlled by hormones.

Answer the questions in the chart regarding both female and male reproductive cycles.

<table>
<thead>
<tr>
<th>Question</th>
<th>Female</th>
<th>Male</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. What type of cell division produces mature eggs and sperm?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. At what stage of life does egg or sperm production begin?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. What hormones stimulate the cycle of egg or sperm production?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. What is the menstrual cycle?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. How does the endometrium change during the three phases of the menstrual cycle?</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

MAIN IDEA: Fertilization occurs when a sperm cell joins an egg cell.

6. Out of millions of sperm, usually only one can fertilize an egg. Explain why.
Study Guide B continued

7. What happens genetically to produce a zygote?

_______________________________________________________________

_______________________________________________________________

8. What is the difference between identical and fraternal twins?

_______________________________________________________________

9. List three reasons a person might become infertile.

_______________________________________________________________


MAIN IDEA: Sexually transmitted diseases affect fertility and overall health.

10. What characteristic must a disease have for it to be a sexually transmitted disease?

_______________________________________________________________

11. Use the table below to describe the different types of STDs, their effects on health, and their treatment.

<table>
<thead>
<tr>
<th>Type of STD</th>
<th>Examples</th>
<th>Effects</th>
<th>Treatment</th>
</tr>
</thead>
<tbody>
<tr>
<td>bacterial infections</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>viral infections</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Vocabulary Check

12. The prefix *meno-* means “relating to menstruation,” and *pause* means “to stop.” How does this help you to remember the definition for the word *menopause*?

_______________________________________________________________

13. How does knowing the definition of the word *transmitted* help you to remember what a *sexually transmitted* disease is?

_______________________________________________________________

14. The prefix *in-* means “not.” How can this be a clue to the meaning of the word *infertility*?

_______________________________________________________________
Section 3: Fetal Development

Study Guide B

KEY CONCEPT
Development progresses in stages from zygote to fetus.

VOCABULARY

<table>
<thead>
<tr>
<th>Term</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>blastocyst</td>
<td>placenta</td>
</tr>
<tr>
<td>embryo</td>
<td>umbilical cord</td>
</tr>
<tr>
<td>amniotic sac</td>
<td>trimester</td>
</tr>
</tbody>
</table>

MAIN IDEA: The fertilized egg implants into the uterus and is nourished by the placenta.

1. What is the difference between a blastocyst and an embryo?

2. Fill in the following chart to summarize what you know about the structures that nourish and protect the growing embryo.

<table>
<thead>
<tr>
<th>Structure</th>
<th>Description and Functions</th>
</tr>
</thead>
<tbody>
<tr>
<td>amniotic sac</td>
<td></td>
</tr>
<tr>
<td>chorion</td>
<td></td>
</tr>
<tr>
<td>placenta</td>
<td></td>
</tr>
<tr>
<td>umbilical cord</td>
<td></td>
</tr>
</tbody>
</table>

3. Why must the blood flows of the mother and the embryo be kept separate?
MAIN IDEA: A zygote develops into a fully formed fetus in about 38 weeks.

4. In the first trimester of human life, what are some of the major organs that are forming and beginning to function?

5. Would a mother be more likely to feel the fetus moving in the first trimester or in the second trimester? Explain your answer.

6. Why would a fetus who is born at the beginning of the third trimester have a difficult time surviving?

MAIN IDEA: The mother affects the fetus and the pregnancy affects the mother.

7. Why is the quality of the mother’s diet so important to the developing fetus?

8. Besides proper diet, what else can the mother do to help ensure a healthy pregnancy for herself and her baby?

9. How can fluctuating hormone levels affect the mother’s health during and just after a pregnancy?

Vocabulary Check

10. In the space below, draw a sketch that illustrates the terms amniotic sac, placenta, and umbilical cord. You can use Figure 3.2 as a reference or think up your own example, such as an astronaut’s suit.
KEY CONCEPT
Physical development continues through adolescence and declines with age.

VOCABULARY

<table>
<thead>
<tr>
<th>infancy</th>
<th>adolescence</th>
</tr>
</thead>
<tbody>
<tr>
<td>childhood</td>
<td>adulthood</td>
</tr>
</tbody>
</table>

MAIN IDEA: Birth occurs in three stages.
Fill in the cause-and-effect chart about the birth process, showing that one cause can have multiple effects.

<table>
<thead>
<tr>
<th>EFFECTS</th>
</tr>
</thead>
<tbody>
<tr>
<td>2. Dilation of the cervix</td>
</tr>
<tr>
<td>• Amniotic sac usually breaks.</td>
</tr>
<tr>
<td>3. Emergence of the baby</td>
</tr>
<tr>
<td>4. Expulsion of the placenta</td>
</tr>
</tbody>
</table>

5. If the cervix does not dilate enough, how is the baby removed from the mother?

6. What happens to the umbilical cord after the baby is born?
MAIN IDEA: Human growth and aging also occur in stages.

7. What is the effect of the human growth hormone (hGH) on the body?

______________________________________________________________________________

8. What are the main stages of development in human life after birth?

______________________________________________________________________________

9. Why might an infant’s heart rate, breathing rate, and body temperature vary more than they do in older children?

______________________________________________________________________________

10. During which two stages of development does the greatest growth rate occur?

______________________________________________________________________________

11. What might be one reason that most children learn to walk around the end of infancy or the beginning of childhood?

______________________________________________________________________________

12. List some of the major changes that occur in adolescence.

______________________________________________________________________________
______________________________________________________________________________
______________________________________________________________________________

13. What are some of the activities that can help to slow down or counteract the effects of aging?

______________________________________________________________________________

Vocabulary Check

14. The suffix -hood refers to “a group sharing a specific state or quality.” How does this meaning relate to the terms childhood and adulthood?

______________________________________________________________________________

15. The word adolescence is based on the Latin verb adolescere, which means “to grow up.” How does this help you understand the definition of adolescence?

______________________________________________________________________________