

# ICEV Anatomy & Physiology Editorial Edits

Change Type	Current Location	Original Text	Updated Text
Editorial Change	Reproductive System: Embryological Development- First Trimester Video Segment	<ol style="list-style-type: none"> <li>1. Pregnancy is the term used to describe the period in which life develops inside the womb or uterus of an individual.</li> <li>2. The weeks are counted from the first day of an individual's last menstrual cycle to delivery, which is referred to as gestational age.</li> <li>3. As this development is taking place inside the body, the pregnant individual may notice physical and emotional signs.</li> <li>4. This hormone is released into the urine of the pregnant individual after implantation has taken place about 14 days after fertilization.</li> <li>5. At this time, the blood volume of the pregnant individual increases by 40% to 50%.</li> </ol>	<ol style="list-style-type: none"> <li>1. Pregnancy is the term used to describe the period in which life develops inside the womb or uterus of a woman.</li> <li>2. The weeks are counted from the first day of a woman's last menstrual cycle to delivery, which is referred to as gestational age.</li> <li>3. As this development is taking place inside the body, the mother may notice physical and emotional signs.</li> <li>4. This hormone is released into the urine of the woman after implantation has taken place about 14 days after fertilization.</li> <li>5. At this time, the blood volume of the mother increases by 40% to 50%.</li> </ol>
Editorial Change	Reproductive System: Embryological Development- Second Trimester Video Segment	<ol style="list-style-type: none"> <li>1. By this time, the individual may be experiencing body aches numb or tingling hands and swelling in the ankles, fingers, and face.</li> <li>2. For many individuals, nausea has decreased due to the leveling out of hormones, which may lead to more energy.</li> </ol>	<ol style="list-style-type: none"> <li>1. By this time, the mother may be experiencing body aches numb or tingling hands and swelling in the ankles, fingers, and face.</li> <li>2. For many women, nausea has decreased due to the leveling out of hormones, which may lead to more energy.</li> </ol>
Editorial Change	Reproductive System: Embryological Development- Third Trimester Video Segment	<ol style="list-style-type: none"> <li>1. By now, the pregnant individual may be experiencing common pregnancy symptoms due to the size of the growing fetus.</li> <li>2. These muscle contractions may lead an individual to think labor is starting.</li> <li>3. The next phase of life for the pregnant individual is parenthood.</li> </ol>	<ol style="list-style-type: none"> <li>1. By now, the pregnant woman may be experiencing common pregnancy symptoms due to the size of the growing fetus.</li> <li>2. These muscle contractions may lead a woman to think labor is starting.</li> <li>3. The next phase of life for the mother is parenthood.</li> </ol>
Editorial Change	Reproductive System: Embryological Development Final Assessment Answer Key & Student Version Question #3	Gestational / Conception age is the weeks counted from the first day of the individual's last menstrual cycle to delivery. Gestational / Conception age is counted from the time of conception.	Gestational / Conception age is the weeks counted from the first day of the mother's last menstrual cycle to delivery. Gestational / Conception age is counted from the time of conception.
Editorial Change	Reproductive System: Embryological Development Key Concepts First Trimester Segment- Tenth Week	The blood volume of the individual increases by 40 to 50 percent	The blood volume of the mother increases by 40 to 50 percent
Editorial Change	Reproductive System: Embryological Development Key Concepts First Trimester Segment- Physical Signs of Pregnancy	this hormone is released into the urine of the individual after implantation has taken place	this hormone is released into the urine of the female after implantation has taken place
Editorial Change	Reproductive System: Embryological Development Key Concepts Second Trimester Segment- Week 14	Individual's ovaries are moving to the pelvis area	Female ovaries are moving to the pelvis area
Editorial Change	Reproductive System: Embryological Development Key Concepts Third Trimester Segment- Braxton- Hicks Contractions	may lead an individual to think labor is starting	may lead a mother to think labor is starting

# iCEV Anatomy & Physiology Editorial Edits

Editorial Change	Human Reproductive System- Hormones Video	When an individual who is able to become pregnant has matured enough to support menstruation, luteinizing hormone, also called LH, is released from the brain.	When a female who is able to become pregnant has matured enough to support menstruation, luteinizing hormone, also called LH, is released from the brain.
Editorial Change	Human Reproductive System- Hormones Video	The body creates a thick lining inside the uterus and the individual begins menstruation with the shedding of the uterus lining.	The body creates a thick lining inside the uterus and menstruation begins with the shedding of the uterus lining.
Editorial Change	Human Reproductive System- Hormones Video	Prior to menstruation, progesterone works with estrogen to prepare the uterus lining for a fertilized egg should an individual become pregnant.	Prior to menstruation, progesterone works with estrogen to prepare the uterus lining for a fertilized egg should pregnancy occur.
Editorial Change	Human Reproductive System- Hormones Video	In addition to the menstruation starting, individuals also experience physical changes in their body, such as widening of the hips, breast development, and mood changes. Typically, individuals with high levels of estrogen experience puberty between the ages 7 to 16. Individuals experiencing surges in testosterone during puberty undergo changes to the testes between the ages of 9 to 15.	In addition to the menstruation starting, females also experience physical changes in their body, such as widening of the hips, breast development, and mood changes. Typically, females with high levels of estrogen experience puberty between the ages 7 to 16. Males experiencing surges in testosterone during puberty undergo changes to the testes between the ages of 9 to 15.
Editorial Change	Human Reproductive System- Hormones Video	When estrogen is the dominant reproductive hormone, individuals can have a baby.	When estrogen is the dominant reproductive hormone, females can have a baby.
Editorial Change	Human Reproductive System- Hormones Video	Hormonal-induced changes occur daily for the individual and the fetus.	Hormonal-induced changes occur daily for the female and the fetus.
Editorial Change	Human Reproductive System- Hormones Video	Varying levels of hormones allow the individual carrying the baby to make changes to support the body during childbirth.  Once the window of opportunity to have a baby has passed, individuals with high estrogen levels begin menopause around ages 45 to 55.	Varying levels of hormones allow the female carrying the baby to make changes to support the body during childbirth.  Once the window of opportunity to have a baby has passed, females with high estrogen levels begin menopause around ages 45 to 55.
Editorial Change	Human Reproductive System- Hormones Video	After this stage, an individual will no longer be able to have a baby and will no longer experience menstruation.	After this stage, a female will no longer be able to have a baby and will no longer experience menstruation.
Editorial Change	Human Reproductive System- Hormones Assessment Answer Key & Student Version  Question #6	During menstruation _____. A. An egg is fertilized B. The lining of the uterus sheds C. An individual becomes pregnant D. An individual has the highest level of estrogen	During menstruation _____. A. An egg is fertilized B. The lining of the uterus sheds C. A female becomes pregnant D. A female has the highest level of estrogen
Editorial Change	Human Reproductive System- Hormones Assessment Answer Key & Student Version  Question #7	Place the following hormone stages an individual goes through after birth in the correct order.	Place the following hormone stages a female goes through after birth in the correct order.

# ICEV Anatomy & Physiology Editorial Edits

Editorial Change	Human Reproductive System- Hormones Assessment Answer Key & Student Version  Question #10	Individuals with high levels of testosterone experience puberty between the ages of 45 and 55.  Individuals with high levels of estrogen experience puberty between the ages of seven to 16.  Individuals with high levels of estrogen experience menopause between the ages of 30 and 40.	Males with high levels of testosterone experience puberty between the ages of 45 and 55.  Females with high levels of estrogen experience puberty between the ages of seven to 16.  Females with high levels of estrogen experience menopause between the ages of 30 and 40.
Editorial Change	Human Reproductive System- Hormones Assessment Answer Key & Student Version  Question #11	The phase when an egg is fertilized is called gestation. A surge in progesterone assists in preparing the body for a baby, such as facilitating the growth of milk-producing glands. Hormonal induced changes occur daily for the individual and the fetus.	The phase when an egg is fertilized is called gestation. A surge in progesterone assists in preparing the body for a baby, such as facilitating the growth of milk-producing glands. Hormonal induced changes occur daily for the female and the fetus.
Editorial Change	Human Reproductive System- Hormones Assessment Answer Key & Student Version  Question #15	The stage when an individual's estrogen levels decrease and can no longer have a baby is called _____.	The stage when a female's estrogen levels decrease and can no longer have a baby is called _____.
Editorial Change	Human Reproductive System- Hormones Key Concepts- Puberty (Part 2)	In individuals with high levels of estrogen experience menstruation	In females with high levels of estrogen experience menstruation
Editorial Change	Human Reproductive System- Hormones Key Concepts- Puberty (Part 3)	Other changes in individuals with high levels of estrogen during puberty include	Other changes in females with high levels of estrogen during puberty include
Editorial Change	Human Reproductive System- Hormones Key Concepts- Puberty (Part 3)	In individuals with high levels of estrogen typically occurs between the ages of seven and 16	In females with high levels of estrogen typically occurs between the ages of seven and 16
Editorial Change	Human Reproductive System- Hormones Key Concepts- Puberty (Part 4)	In individuals with high levels of testosterone experience changes in testes	In males with high levels of testosterone experience changes in testes
Editorial Change	Human Reproductive System- Hormones Key Concepts- Puberty (Part 4)	Other changes in individuals with high levels of testosterone during puberty include:	Other changes in males with high levels of testosterone during puberty include:
Editorial Change	Human Reproductive System- Hormones Key Concepts- Puberty (Part 4)	In individuals with high levels of testosterone typically occurs between the ages of nine and 15	In males with high levels of testosterone typically occurs between the ages of nine and 15
Editorial Change	Human Reproductive System- Hormones Key Concepts- Gestation	Refers to the period when an individual carries a baby	Refers to the period when a female carries a baby
Editorial Change	Human Reproductive System- Hormones Key Concepts- Menopause	Occurs in individuals with high levels of estrogen	Occurs in females with high levels of estrogen

# Reproductive System: Embryological Development Final Assessment

## Directions:

Answer the following questions.

1. Select all of the following are common symptoms of pregnancy and may occur during the third trimester.
  - Constant nausea
  - Heartburn
  - Hemorrhoids
  - Shortness of breath
  - Swelling of ankles
2. Which of the following best describes ovulation?
  - A. Genetic information from both parents becoming a fully developed human
  - B. Fertilization of the egg in the fallopian tubes
  - C. The zygote splits and replicates itself to become two identical cells
  - D. Ejection of a mature egg or ovum from the ovary into the fallopian tube
3. Select the correct answer from the choices provided in the underlined sections. Gestational / Conception age is the weeks counted from the first day of the mother's last menstrual cycle to delivery. Gestational / Conception age is counted from the time of conception.
4. During week 26 gestational age, which of the following occurs?
  - A. The lungs begin to produce surfactant
  - B. Moro reflex begins to present
  - C. The eyebrows are visible
  - D. Motor neurons begin to develop
5. During the fourteenth week of gestation, the ears move from the neck to the side of the head.
  - A. True
  - B. False
6. Place the following embryo formation steps in the correct order.
  - \_\_\_ Conception or fertilization happens
  - \_\_\_ The zygote splits and replicates itself to become two identical cells
  - \_\_\_ The blastocyst becomes the embryo
  - \_\_\_ Ovulation occurs
  - \_\_\_ The morula becomes a blastocyst through replication and development
  - \_\_\_ The replication occurs 16 times to create a morula

\_\_\_ The blastocyst implants in the uterine wall

7. Fill in the blanks using the word bank provided below.

The fingernails have reached the fingertips by \_\_\_\_\_ gestation age. \_\_\_\_\_, a coating which protects the skin, begins to thicken. By \_\_\_\_\_ gestation age, the limbs are thickening, and the fetus is gaining weight rapidly at approximately \_\_\_\_\_ pound per week.

one-half week 34	week 35 vernix caseosa
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8. During week 16 gestational age, what is the average heart rate of the fetus?

- A. 140 to 166 bpm
- B. 117 to 157 bpm
- C. 95 to 120 bpm
- D. 100 to 130 bpm

9. The placenta is an organ produced by the body during pregnancy which only nourishes the developing human life.

- A. True
- B. False

10. Marly is receiving an ultrasound from a technician. At her last ultrasound, the outline of the skeleton was not visible. Today the skeleton of her baby can be seen on the ultrasound. During which week of gestation does the skeleton outline show up on an ultrasound?

- A. Week 20
- B. Week 13
- C. Week 18
- D. Week 22

11. Select the correct answer from the choices provided in the underlined sections.

During the fifth / sixth week after conception is when the facial features and ears begin to appear. The seventh / eighth week of gestation is when the embryo's heart beats in a regular rhythm.

12. Which of the following attaches to the placenta and the fetus, functioning as a lifeline carrying nutrients and oxygen to the fetus and carries waste products away?

- A. Umbilical cord
- B. Pancreases
- C. Lanugo
- D. Carotid Artery

13. Select all of the following which occur during week 32 of gestation.
- Body begins absorbing vital minerals
  - Bones are fully developed
  - Lanugo begins falling off
  - Toenails are visible
14. Carissa is visiting the doctor for a fetal exam. She is in week 17 of gestation and the doctor is explaining the white fatty material which encloses the nerve fibers on the spinal cord. Which of the following is the doctor describing?
- A. Brown fat
  - B. Myelin
  - C. Moro
  - D. Motor neurons
15. During week eight from conception, a distinct neck can be seen connecting the head to the body.
- A. True
  - B. False
16. In which of the following weeks from conception does the stomach move into its final position and the diaphragm begins separating the heart and lungs from the stomach.
- A. Week 13
  - B. Week 15
  - C. Week 10
  - D. Week 8
17. During which week gestation age is the fetus considered full term?
- A. Week 38
  - B. Week 39
  - C. Week 40
  - D. Week 37
18. During week 37 of gestation, which of the following occurs?
- A. The organs are ready to function on their own
  - B. The fingernails have reached the fingertips
  - C. The toenails have reached the tips of the toes
  - D. The central nervous system has matured
19. The embryonic period concludes at the end of six weeks from conception and the fetal period begins.
- A. True
  - B. False

20. Fill in the blanks using the word bank provided below.

The \_\_\_\_\_ stage is when all the major \_\_\_\_\_ and structures develop. At this stage, the cells continue to multiply and \_\_\_\_\_. However, now they begin to \_\_\_\_\_. Differentiation means cells take on specific \_\_\_\_\_ and functions.

characteristics differentiate	embryonic replicate	systems
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# Reproductive System: Embryological Development Final Assessment Answer Key

## Directions:

Answer the following questions.

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  - Constant nausea
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  - Shortness of breath**
  - Swelling of ankles**
2. Which of the following best describes ovulation?
  - A. Genetic information from both parents becoming a fully developed human
  - B. Fertilization of the egg in the fallopian tubes
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3. Select the correct answer from the choices provided in the underlined sections.  
**Gestational** / Conception age is the weeks counted from the first day of the mother's last menstrual cycle to delivery. Gestational / **Conception** age is counted from the time of conception.
4. During week 26 gestational age, which of the following occurs?
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  - C. The eyebrows are visible
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  - B. False
6. Place the following embryo formation steps in the correct order.
  - 2 Conception or fertilization happens
  - 3 The zygote splits and replicates itself to become two identical cells
  - 7 The blastocyst becomes the embryo
  - 1 Ovulation occurs
  - 5 The morula becomes a blastocyst through replication and development
  - 4 The replication occurs 16 times to create a morula



**6** The blastocyst implants in the uterine wall

7. Fill in the blanks using the word bank provided below.

The fingernails have reached the fingertips by week 34 gestation age. Vernix caseosa, a coating which protects the skin, begins to thicken. By week 35 gestation age, the limbs are thickening, and the fetus is gaining weight rapidly at approximately one-half pound per week.

one-half week 34	week 35 vernix caseosa
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During the fifth / sixth week after conception is when the facial features and ears begin to appear. The seventh / eighth week of gestation is when the embryo's heart beats in a regular rhythm.

12. Which of the following attaches to the placenta and the fetus, functioning as a lifeline carrying nutrients and oxygen to the fetus and carries waste products away?

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16. In which of the following weeks from conception does the stomach move into its final position and the diaphragm begins separating the heart and lungs from the stomach.
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  - D. Week 37
18. During week 37 of gestation, which of the following occurs?
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  - C. The toenails have reached the tips of the toes
  - D. The central nervous system has matured
19. The embryonic period concludes at the end of six weeks from conception and the fetal period begins.
- A. True
  - B. False**
20. Fill in the blanks using the word bank provided below.

The **embryonic** stage is when all the major **systems** and structures develop. At this stage, the cells continue to multiply and **replicate**. However, now they begin to **differentiate**. Differentiation means cells take on specific **characteristics** and functions.

characteristics differentiate	embryonic replicate	systems
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# Reproductive System: Embryological Development Key Concepts

## First Trimester

### Essential Questions

1. What are the stages of development in the first trimester?
2. What are the physical signs of pregnancy in the first trimester?

### Pregnancy (Part 1)

- Pregnancy is the period of time in which a new life develops inside the \_\_\_\_\_ (or womb)
  - the uterus is a hollow, pear-shaped \_\_\_\_\_ located in the pelvis
- \_\_\_\_\_ refers to the time it takes for the new life to grow and develop from conception to full-term
  - the designation of full-term begins at \_\_\_\_\_ weeks and continues through \_\_\_\_\_ weeks six days
  - \_\_\_\_\_ is counted from the first day of the mother's last menstrual cycle
  - another way to count the milestones of prenatal development is from the time of \_\_\_\_\_

### Pregnancy (Part 2)

- Prior to pregnancy, \_\_\_\_\_ must take place
  - ovulation is the ejection of a mature egg (or ovum) from the \_\_\_\_\_ into the fallopian tube
- Conception, or \_\_\_\_\_, takes place when a sperm penetrates the egg
  - this combined cell is called a \_\_\_\_\_
  - the zygote contains the \_\_\_\_\_ information from both parents to become a fully developed human being

### Cleavage & Implantation

- The zygote travels down the \_\_\_\_\_ tube toward the uterus
- During this journey, the zygote \_\_\_\_\_ and splits to become two identical cells within the same structure
  - this process is called \_\_\_\_\_
- Cleavage continues over and over again, creating \_\_\_\_\_ cells within the same structure
  - after 16 replications, the cluster of cells is called a \_\_\_\_\_ because it resembles a mulberry

### Cleavage & Implantation (Part 2)

- As the cell replication continues, the morula becomes a \_\_\_\_\_
  - the blastocyst is made up of an inner group of cells and an outer structure of cells
  - the inner group of cells will become the \_\_\_\_\_
    - embryo is the term describing the developing fetus inside the womb from \_\_\_\_\_ to eight weeks
  - the outer structure will later grow into the \_\_\_\_\_
- Once the blastocyst reaches the uterus, it implants into the thickened lining of the \_\_\_\_\_ wall
  - the uterine wall is called the \_\_\_\_\_

## The Zygote

- The embryo is the body of the baby during the \_\_\_\_\_ developmental period from four weeks to eight weeks
- The placenta is an \_\_\_\_\_ produced by the body during pregnancy which nourishes and protects the developing baby
- The inner \_\_\_\_\_ of cells continues to grow and change
  - layers form, take shape and being forming the \_\_\_\_\_ of the different body structures and systems, such as:
    - the central \_\_\_\_\_ system
    - the gastrointestinal tract
    - internal organs
  - this development of the zygote takes place in the first \_\_\_\_\_ weeks after conception
  - by four weeks the zygote is approximately the size of a \_\_\_\_\_ seed

## Physical Signs of Pregnancy

- Common \_\_\_\_\_ of pregnancy include:
  - tender swollen breasts, fatigue, nausea and/or vomiting, a missed \_\_\_\_\_ cycle, headaches, mood swings, and frequent urination
- A pregnancy test is designed to identify the human chorionic gonadotropin or (hCG) \_\_\_\_\_
  - this hormone is released into the urine of the female after \_\_\_\_\_ has taken place
    - about 14 days after fertilization
- A \_\_\_\_\_ test will not be able to confirm pregnancy until the monthly menstrual cycle has been missed

## Embryonic Stage

- The \_\_\_\_\_ stage begins at week five after conception, or seven weeks gestation
- This stage is a critical time for \_\_\_\_\_

- this is when all the major systems and \_\_\_\_\_ develop
- external features being to form as well
- Cells continue to \_\_\_\_\_ and multiply
- Cells begin to \_\_\_\_\_
  - differentiation means cells take on specific \_\_\_\_\_ and functions, for example:
    - blood cells
    - \_\_\_\_\_ cells
    - brain cells
    - bone \_\_\_\_\_

### Sixth Week

- The head and \_\_\_\_\_ of the embryo become easily recognizable
- Limb \_\_\_\_\_ form
- Facial features and \_\_\_\_\_ begin to appear
- The heart \_\_\_\_\_ in a regular rhythm
- Blood \_\_\_\_\_ through the main vessels
  - the earliest form of the \_\_\_\_\_ organs appear, for example:
    - the liver, \_\_\_\_\_, lungs and thyroid gland
- The body is approximately one half of an \_\_\_\_\_ long
  - about the length of a small \_\_\_\_\_

### Seventh Week

- Rapid development of the face and \_\_\_\_\_ takes place
- \_\_\_\_\_ become visible
- Eye \_\_\_\_\_ being to form
- Arm buds take on the shape of \_\_\_\_\_
- Tissue grows which will later become the spine and other \_\_\_\_\_

### Eighth Week

- At week eight, the embryo is called a \_\_\_\_\_
  - fetus is the term used to describe the developing life from eight weeks until \_\_\_\_\_
- The \_\_\_\_\_ cord is clearly visible
  - the umbilical \_\_\_\_\_ is attached to the placenta and to the fetus
  - it functions as a \_\_\_\_\_ carrying nutrients and oxygen to the fetus and carrying waste products away
- The \_\_\_\_\_ and leg buds have grown longer
- Webbed fingers and toes are visible
- \_\_\_\_\_ begin to form
- Ears, upper lip and tip of the \_\_\_\_\_ become recognizable
- Teeth develop under the \_\_\_\_\_

- Gonads are forming
- The \_\_\_\_\_ of the fetus is approximately one and a fourth to one and a half inches long
  - about the length of a small \_\_\_\_\_ clip

### Ninth Week

- Hair \_\_\_\_\_ form
- Arms continue to \_\_\_\_\_
- \_\_\_\_\_ develop
- Fingers and \_\_\_\_\_ are visible
- A distinct \_\_\_\_\_ can be seen
- All \_\_\_\_\_ organs are formed and continue to grow
- Eye muscles and upper \_\_\_\_\_ form
- The first fetal movements can be detected using an \_\_\_\_\_

### Tenth Week

- Eyelids are further developed and begin to \_\_\_\_\_
- Outer ears begin to take \_\_\_\_\_
- Facial features become more distinct
- Rapid brain \_\_\_\_\_ is occurring
- Males begin producing \_\_\_\_\_
- The embryonic \_\_\_\_\_ has disappeared
- The \_\_\_\_\_ and roof of the mouth have formed
- The blood \_\_\_\_\_ of the mother increases by 40 to 50 percent
- The \_\_\_\_\_ of the fetus is about two and a half inches long
  - about the size of a \_\_\_\_\_

## Second Trimester

### Essential Questions

1. What are the stages of development in the second trimester?
2. What are the physical signs and symptoms of pregnancy during the second trimester?

### Second Trimester

- Of pregnancy begins at week \_\_\_\_\_ gestational age or week 12 from \_\_\_\_\_

### Signs and Symptoms of Pregnancy (Part 1)

- Second trimester signs and \_\_\_\_\_ of pregnancy include:
  - body \_\_\_\_\_
  - numb or \_\_\_\_\_ hands
  - swelling in the \_\_\_\_\_, fingers and face

- stretch \_\_\_\_\_
- darkening of the areola
- \_\_\_\_\_ of darker skin on the face or the mask of pregnancy
- vertical \_\_\_\_\_ on abdomen

### Signs and Symptoms of Pregnancy (Part 2)

- The following \_\_\_\_\_ take place:
  - leveling out of \_\_\_\_\_
  - decrease in nausea
  - increase in \_\_\_\_\_
- “\_\_\_\_\_” takes place

### Week 14

- Lanugo \_\_\_\_\_
  - lanugo is a soft, fine \_\_\_\_\_ covering the body of the fetus during prenatal development
- \_\_\_\_\_ have moved to the sides of the head
- Digestive \_\_\_\_\_ are complete
- Thyroid begins producing hormones
- Males begin developing the \_\_\_\_\_ gland
- Female \_\_\_\_\_ are moving to the pelvis area
- Hands become \_\_\_\_\_
- All \_\_\_\_\_ comes from the placenta

### Weeks 15 and 16

- Fetal \_\_\_\_\_ increases
- Blood vessels are seen through skin
- Legs are longer than arms
- Hair \_\_\_\_\_ produce pigment
- Bones and \_\_\_\_\_ begin to develop
- Fetus may suck \_\_\_\_\_ and show facial \_\_\_\_\_
- Heart rate is approximately 117 to 157 \_\_\_\_\_ per minute
- \_\_\_\_\_ of fetus is about four and three fourths inches from head to \_\_\_\_\_

### Weeks 17 and 18

- \_\_\_\_\_ growth begins to slow
- Production of “\_\_\_\_\_” begins
  - brown fat prepares the body for heat production and metabolism later in life
- Myelin begins to function
- \_\_\_\_\_ covers body



- Circulatory and urinary systems are \_\_\_\_\_
- \_\_\_\_\_ can be clearly outlined through ultrasound
- Bones harden
- Taste \_\_\_\_\_ develop
- Head to rump \_\_\_\_\_ is approximately five- and one-half inches

### Weeks 19 to 21

- Motor \_\_\_\_\_ are rapidly developing
- Vernix \_\_\_\_\_ begins to coat skin
  - Vernix caseosa is a white \_\_\_\_\_ which forms on the skin of the developing fetus to provide protection from the amniotic fluid
- Fetus is more active and able to \_\_\_\_\_
- Head to rump \_\_\_\_\_ is approximately six inches

### Weeks 22 to 24

- \_\_\_\_\_ are visible
- Weight is approximately one \_\_\_\_\_
- Skin is pink to red, wrinkled and translucent
- Rapid eye movement takes place
- Finger and \_\_\_\_\_ are forming
- Regular \_\_\_\_\_ and wake times are occurring
- Hair is \_\_\_\_\_ on head

### Weeks 25 to 27

- Moro \_\_\_\_\_ begins to present
- Fetus may move in \_\_\_\_\_ to familiar sounds
- Lungs begin to produce \_\_\_\_\_
  - surfactant is a substance which allows the air sacs in the lungs to inflate and deflate without collapsing and \_\_\_\_\_
- Length from \_\_\_\_\_ to bottom is approximately nine inches
- Lungs and \_\_\_\_\_ systems continues to mature

## Third Trimester

### Essential Questions

1. What are the stages of development in the third trimester?
2. What are the stages and symptoms of pregnancy during the third trimester?

### The Third Trimester

- Begins at week 28, \_\_\_\_\_ age or week 26 from \_\_\_\_\_

### Signs and Symptoms of Pregnancy

- Third trimester signs and \_\_\_\_\_ of pregnancy include:
  - shortness of \_\_\_\_\_

- \_\_\_\_\_
- \_\_\_\_\_urination
- swelling of the \_\_\_\_\_, fingers and face
- hemorrhoids
- sleeping \_\_\_\_\_
- tender breasts
  - \_\_\_\_\_:
    - often begins to \_\_\_\_\_ from the breasts during the third trimester
    - is the first milk
    - is full of \_\_\_\_\_ and other important substances which help build a healthy \_\_\_\_\_ system, stomach, intestines and digestive system

### Braxton-Hicks Contractions

- Braxton-Hicks \_\_\_\_\_:
  - are \_\_\_\_\_ during the third trimester
  - are named after the \_\_\_\_\_ who first described them
  - involve a \_\_\_\_\_ of the muscles surrounding the uterus
  - may lead a mother to think \_\_\_\_\_ is starting
  - are \_\_\_\_\_ from labor contractions
  - come and go
  - may be \_\_\_\_\_ but are not usually painful

### Week 28

- Weight is \_\_\_\_\_
- Skin is \_\_\_\_\_ out
- Organs are \_\_\_\_\_
- Eyelids are partially open
- Eyelashes have \_\_\_\_\_
- Length from head to \_\_\_\_\_ is approximately ten inches

### Weeks 29 to 30

- Bones are fully developed but soft and \_\_\_\_\_
- \_\_\_\_\_ is producing red blood cells
- Eyes are \_\_\_\_\_ open
- Fetus weighs about \_\_\_\_\_ pounds
- Central \_\_\_\_\_ system can control body temperature
- Toenails are visible
- Body begins absorbing minerals
- \_\_\_\_\_ begins to fall off
- Fetus is practicing \_\_\_\_\_

- Pupils can \_\_\_\_\_, dilate and detect light

### Weeks 34 to 36

- Fingernails have reached the \_\_\_\_\_
- \_\_\_\_\_ begins to thicken
- Fetus is \_\_\_\_\_ approximately one-half pound per week
- Head to rump length is approximately \_\_\_\_\_ inches

### Monitoring Fetal Movement

- \_\_\_\_\_ of fetus:
  - will be \_\_\_\_\_
  - includes \_\_\_\_\_ of movement and \_\_\_\_\_
  - includes rolling, \_\_\_\_\_ and kicking
- Changes in patterns is cause for \_\_\_\_\_
- Noticeable changes should be \_\_\_\_\_ to healthcare practitioner

### Weeks 37 to 38

- \_\_\_\_\_ are ready to function on their own
- Fetus may begin the \_\_\_\_\_ into the birth canal
  - the birth canal is the \_\_\_\_\_ extending from the uterus to the outside of the body
- Fetus develops a firm \_\_\_\_\_
- \_\_\_\_\_ have reached the tips of the toes
- Most of the \_\_\_\_\_ has been shed
- Fetus weighs approximately \_\_\_\_\_ and a half pounds

### Weeks 39 to 40

- Fetus is considered \_\_\_\_\_
- Chest is becoming more \_\_\_\_\_
- Placenta continues to supply \_\_\_\_\_
- \_\_\_\_\_ is reached at 40 weeks
- Average size is \_\_\_\_\_ and a half pounds and about \_\_\_\_\_ inches from head to toe

# Reproductive System: Embryological Development Key Concepts Answer Key

## First Trimester

### Essential Questions

1. What are the stages of development in the first trimester?
2. What are the physical signs of pregnancy in the first trimester?

### Pregnancy (Part 1)

- Pregnancy is the period of time in which a new life develops inside the uterus (or womb)
  - the uterus is a hollow, pear-shaped organ located in the pelvis
- Gestation refers to the time it takes for the new life to grow and develop from conception to full-term
  - the designation of full-term begins at **39** weeks and continues through **40** weeks six days
  - gestational age is counted from the first day of the mother's last menstrual cycle
  - another way to count the milestones of prenatal development is from the time of conception

### Pregnancy (Part 2)

- Prior to pregnancy, ovulation must take place
  - ovulation is the ejection of a mature egg (or ovum) from the ovary into the fallopian tube
- Conception, or fertilization, takes place when a sperm penetrates the egg
  - this combined cell is called a zygote
  - the zygote contains the genetic information from both parents to become a fully developed human being

### Cleavage & Implantation

- The zygote travels down the fallopian tube toward the uterus
- During this journey, the zygote replicates and splits to become two identical cells within the same structure
  - this process is called cleavage
- Cleavage continues over and over again, creating multiple cells within the same structure
  - after 16 replications, the cluster of cells is called a morula because it resembles a mulberry

### Cleavage & Implantation (Part 2)

- As the cell replication continues, the morula becomes a blastocyst

- the blastocyst is made up of an inner group of cells and an outer structure of cells
- the inner group of cells will become the **embryo**
  - embryo is the term describing the developing fetus inside the womb from **five weeks** to eight weeks
- the outer structure will later grow into the **placenta**
- Once the blastocyst reaches the uterus, it implants into the thickened lining of the **uterine** wall
  - the uterine wall is called the **endometrium**

## The Zygote

- The embryo is the body of the baby during the **prenatal** developmental period from four weeks to eight weeks
- The placenta is an **organ** produced by the body during pregnancy which nourishes and protects the developing baby
- The inner **structure** of cells continues to grow and change
  - layers form, take shape and being forming the **foundation** of the different body structures and systems, such as:
    - the central **nervous** system
    - the gastrointestinal tract
    - internal organs
  - this development of the zygote takes place in the first **four** weeks after conception
  - by four weeks the zygote is approximately the size of a **poppy** seed

## Physical Signs of Pregnancy

- Common **indicators** of pregnancy include:
  - tender swollen breasts, fatigue, nausea and/or vomiting, a missed **menstrual** cycle, headaches, mood swings, and frequent urination
- A pregnancy test is designed to identify the human chorionic gonadotropin or (hCG) **hormone**
  - this hormone is released into the urine of the female after **implantation** has taken place
    - about 14 days after fertilization
- A **urine** test will not be able to confirm pregnancy until the monthly menstrual cycle has been missed

## Embryonic Stage

- The **embryonic** stage begins at week five after conception, or seven weeks gestation
- This stage is a critical time for **development**
  - this is when all the major systems and **structures** develop
  - external features begin to form as well

- Cells continue to **replicate** and multiply
- Cells begin to **differentiate**
  - differentiation means cells take on specific **characteristics** and functions, for example:
    - blood cells
    - **muscle** cells
    - brain cells
    - bone **cells**

### Sixth Week

- The head and **tail** of the embryo become easily recognizable
- Limb **buds** form
- Facial features and **ears** begin to appear
- The heart **beats** in a regular rhythm
- Blood **pumps** through the main vessels
  - the earliest form of the **internal** organs appear, for example:
    - the liver, **pancreas**, lungs and thyroid gland
- The body is approximately one half of an **inch** long
  - about the length of a small **marble**

### Seventh Week

- Rapid development of the face and **brain** takes place
- **Nostrils** become visible
- Eye **lenses** begin to form
- Arm buds take on the shape of **paddles**
- Tissue grows which will later become the spine and other **bones**

### Eighth Week

- At week eight, the embryo is called a **fetus**
  - fetus is the term used to describe the developing life from eight weeks until **birth**
- The **umbilical** cord is clearly visible
  - the umbilical **cord** is attached to the placenta and to the fetus
  - it functions as a **lifeline** carrying nutrients and oxygen to the fetus and carrying waste products away
- The **arm** and leg buds have grown longer
- Webbed fingers and toes are visible
- **Eyelids** begin to form
- Ears, upper lip and tip of the **nose** become recognizable
- Teeth develop under the **gums**
- Gonads are forming

- The **body** of the fetus is approximately one and a fourth to one and a half inches long
  - about the length of a small **paper** clip

### **Ninth Week**

- Hair **follicles** form
- Arms continue to **grow**
- **Elbows** develop
- Fingers and **toes** are visible
- A distinct **neck** can be seen
- All **essential** organs are formed and continue to grow
- Eye muscles and upper **lip** form
- The first fetal movements can be detected using an **ultrasound**

### **Tenth Week**

- Eyelids are further developed and begin to **close**
- Outer ears begin to take **shape**
- Facial features become more distinct
- Rapid brain **development** is occurring
- Males begin producing **testosterone**
- The embryonic **tail** has disappeared
- The **palate** and roof of the mouth have formed
- The blood **volume** of the mother increases by 40 to 50 percent
- The **length** of the fetus is about two and a half inches long
  - about the size of a **plum**

## **Second Trimester**

### **Essential Questions**

1. What are the stages of development in the second trimester?
2. What are the physical signs and symptoms of pregnancy during the second trimester?

### **Second Trimester**

- Of pregnancy begins at week **14** gestational age or week 12 from **conception**

### **Signs and Symptoms of Pregnancy (Part 1)**

- Second trimester signs and **symptoms** of pregnancy include:
  - body **aches**
  - numb or **tingling** hands
  - swelling in the **ankles**, fingers and face
  - stretch **marks**
  - darkening of the areola

- **patches** of darker skin on the face or the mask of pregnancy
- vertical **line** on abdomen

## Signs and Symptoms of Pregnancy (Part 2)

- The following **changes** take place:
  - leveling out of **hormones**
  - decrease in nausea
  - increase in **energy**
- “**Quickening**” takes place

## Week 14

- Lanugo **develops**
  - lanugo is a soft, fine **hair** covering the body of the fetus during prenatal development
- **Ears** have moved to the sides of the head
- Digestive **glands** are complete
- Thyroid begins producing hormones
- Males begin developing the **prostate** gland
- Female **ovaries** are moving to the pelvis area
- Hands become **functional**
- All **nourishment** comes from the placenta

## Weeks 15 and 16

- Fetal **mobility** increases
- Blood vessels are seen through skin
- Legs are longer than arms
- Hair **follicles** produce pigment
- Bones and **marrow** begin to develop
- Fetus may suck **thumb** and show facial **expressions**
- Heart rate is approximately 117 to 157 **beats** per minute
- **Length** of fetus is about four and three fourths inches from head to **rump**

## Weeks 17 and 18

- **Rapid** growth begins to slow
- Production of “**brown fat**” begins
  - brown fat prepares the body for heat production and metabolism later in life
- Myelin begins to function
- **Lanugo** covers body
- Circulatory and urinary systems are **functioning**
- **Skeleton** can be clearly outlined through ultrasound
- Bones harden
- Taste **buds** develop



- Head to rump **length** is approximately five- and one-half inches

### **Weeks 19 to 21**

- Motor **neurons** are rapidly developing
- Vernix **caseosa** begins to coat skin
  - Vernix caseosa is a white **protective coating** which forms on the skin of the developing fetus to provide protection from the amniotic fluid
- Fetus is more active and able to **swallow**
- Head to rump **length** is approximately six inches

### **Weeks 22 to 24**

- **Eyebrows** are visible
- Weight is approximately one **pound**
- Skin is pink to red, wrinkled and translucent
- Rapid eye movement takes place
- Finger and **footprints** are forming
- Regular **sleep** and wake times are occurring
- Hair is **growing** on head

### **Weeks 25 to 27**

- Moro **reflex** begins to present
- Fetus may move in **response** to familiar sounds
- Lungs begin to produce **surfactant**
  - surfactant is a substance which allows the air sacs in the lungs to inflate and deflate without collapsing and **sticking together**
- Length from **head** to bottom is approximately nine inches
- Lungs and **nervous** systems continues to mature

## **Third Trimester**

### **Essential Questions**

1. What are the stages of development in the third trimester?
2. What are the stages and symptoms of pregnancy during the third trimester?

### **The Third Trimester**

- Begins at week 28, **gestational** age or week 26 from **conception**

### **Signs and Symptoms of Pregnancy**

- Third trimester signs and **symptoms** of pregnancy include:
  - shortness of **breath**
  - **heartburn**
  - **frequent** urination
  - swelling of the **ankles**, fingers and face
  - hemorrhoids

- sleeping **difficulties**
- tender breasts
  - **colostrum**:
    - often begins to **drip** from the breasts during the third trimester
    - is the first milk
    - is full of **nutrients** and other important substances which help build a healthy **immune** system, stomach, intestines and digestive system

### **Braxton-Hicks Contractions**

- Braxton-Hicks **contractions**:
  - are **common** during the third trimester
  - are named after the **doctor** who first described them
  - involve a **tightening** of the muscles surrounding the uterus
  - may lead a mother to think **labor** is starting
  - are **different** from labor contractions
  - come and go
  - may be **uncomfortable** but are not usually painful

### **Week 28**

- Weight is **increasing**
- Skin is **smoothing** out
- Organs are **maturing**
- Eyelids are partially open
- Eyelashes have **formed**
- Length from head to **rump** is approximately ten inches

### **Weeks 29 to 30**

- Bones are fully developed but soft and **pliable**
- **Marrow** is producing red blood cells
- Eyes are **wide** open
- Fetus weighs about **three** pounds
- Central **nervous** system can control body temperature
- Toenails are visible
- Body begins absorbing minerals
- **Lanugo** begins to fall off
- Fetus is practicing **breathing**
- Pupils can **constrict**, dilate and detect light

### **Weeks 34 to 36**

- Fingernails have reached the **fingertips**
- **Vernix** begins to thicken
- Fetus is **gaining** approximately one-half pound per week

- Head to rump length is approximately 12 inches

### Monitoring Fetal Movement

- Movement of fetus:
  - will be evident
  - includes patterns of movement and inactivity
  - includes rolling, squirming and kicking
- Changes in patterns is cause for concern
- Noticeable changes should be reported to healthcare practitioner

### Weeks 37 to 38

- Organs are ready to function on their own
- Fetus may begin the descent into the birth canal
  - the birth canal is the muscular passage extending from the uterus to the outside of the body
- Fetus develops a firm grasp
- Toenails have reached the tips of the toes
- Most of the lanugo has been shed
- Fetus weighs approximately six and a half pounds

### Weeks 39 to 40

- Fetus is considered full term
- Chest is becoming more prominent
- Placenta continues to supply antibodies
- Due date is reached at 40 weeks
- Average size is seven and a half pounds and about 20 inches from head to toe

# Human Reproductive System: Hormones Assessment

## Directions:

Answer the following questions.

- Which of the following body systems dictates hormonal changes in the ovaries and testes?
  - Integumentary system
  - Muscular system
  - Respiratory system
  - Reproductive system

- The endocrine system and reproductive system work separately.
  - True
  - False

- Mark the following statements as True or False.

Hormones are mechanical messengers which travel throughout the body.	T or F
The release of hormones regulates homeostasis.	T or F
The release of hormones does not affect sleep cycle.	T or F

- Fill in the blanks using the word bank provided below.

One of the most noticeable changes in \_\_\_\_\_ hormones occurs during \_\_\_\_\_. Pre-teens and \_\_\_\_\_ experience changes as the body prepares them for adulthood and the ability to have a \_\_\_\_\_.

adulthood baby	endocrine puberty	reproductive teens
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- Match the following hormones to the correct descriptions.

Description	Hormone
Hormone which closely works with estrogen	
Hormone which prepares the body for pregnancy	
Hormone responsible for deepening of the voice	

Estrogen	Progesterone	Testosterone
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- During menstruation \_\_\_\_\_.
  - An egg is fertilized
  - The lining of the uterus sheds

- C. A female becomes pregnant
- D. A female has the highest level of estrogen

7. Place the following hormone stages a female goes through after birth in the correct order.

- \_\_\_ Menopause
- \_\_\_ Puberty
- \_\_\_ Gestation

8. Select all the following which happen in puberty to females with high levels of estrogen.

- Breast development
- Deepening of voice
- Mood changes
- More hair growth
- Sperm production
- Widening of hips

9. Which hormone is released from the brain and is responsible for controlling the menstruation cycle, triggering the release of an egg, or signaling the testes to begin producing testosterone and sperm?

- A. Progesterone
- B. Testosterone
- C. Luteinizing hormone
- D. Estrogen

10. Mark the following statements as True or False.

Males with high levels of testosterone experience puberty between the ages of 45 and 55.	T or F
Females with high levels of estrogen experience puberty between the ages of seven to 16.	T or F
Females with high levels of estrogen experience menopause between the ages of 30 and 40.	T or F

11. Fill in the blanks using the word bank provided below.

The phase when an egg is fertilized is called \_\_\_\_\_. A surge in \_\_\_\_\_ assists in preparing the body for a baby, such as facilitating the growth of \_\_\_\_\_ glands. Hormonal induced changes occur daily for the female and the fetus.

fat fetus	gestation milk-producing	progesterone puberty testosterone
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12. Select the correct answer from the choices provided in the underlined sections.  
A full-term pregnancy is roughly nine months / ten months. The hormone LH / HcG triggers more production of estrogen and progesterone during pregnancy.

13. Select all the following hormones which contribute to telling the body to stop menstruating and prepare for birth.

- Epinephrine
- Estrogen
- HcG
- Progesterone
- Testosterone

14. Most humans only go through one big change, the transition to gestation, when having a baby.

- A. True
- B. False

15. The stage when a female's estrogen levels decrease and can no longer have a baby is called \_\_\_\_\_.

- A. Puberty
- B. Menopause
- C. Gestation
- D. Adolescence

16. When does menopause occur?

- A. 12 months after the last menstruation cycle
- B. 10 months after the last menstruation cycle
- C. 24 months after the last menstruation cycle
- D. 15 months after the last menstruation cycle

17. Fill in the blanks using the word bank provided below.

Menopause lasts on average \_\_\_\_\_ years. This is caused by lowered \_\_\_\_\_ which cause \_\_\_\_\_, weight gain, mood changes, loss of \_\_\_\_\_ tissue and thinning of \_\_\_\_\_.

breast estrogen fat fatigue	hair muscle pain progesterone	seven ten testosterone
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18. Changes in reproductive hormones are essential to growing older.

- A. True
- B. False

19. Which organ(s) does estrogen target to prepare the body for pregnancy?
- A. The testes
  - B. Uterus and ovaries
  - C. Fallopian tubes
  - D. Breasts
20. During menopause, \_\_\_\_\_ decreases, as the body is no longer preparing to provide for a baby.
- A. Progesterone
  - B. Testosterone
  - C. Estrogen
  - D. LH

# Human Reproductive System: Hormones

## Assessment Answer Key

### Directions:

Answer the following questions.

1. Which of the following body systems dictates hormonal changes in the ovaries and testes?
- A. Integumentary system
  - B. Muscular system
  - C. Respiratory system
  - D. Reproductive system**

2. The endocrine system and reproductive system work separately.
- A. True
  - B. False**

3. Mark the following statements as True or False.

Hormones are mechanical messengers which travel throughout the body.	T or F
The release of hormones regulates homeostasis.	T or F
The release of hormones does not affect sleep cycle.	T or F

4. Fill in the blanks using the word bank provided below.  
 One of the most noticeable changes in **reproductive** hormones occurs during **puberty**. Pre-teens and **teens** experience changes as the body prepares them for adulthood and the ability to have a **baby**.

adulthood baby	endocrine puberty	reproductive teens
-------------------	----------------------	-----------------------

5. Match the following hormones to the correct descriptions.

Description	Hormone
Hormone which closely works with estrogen	<b>Progesterone</b>
Hormone which prepares the body for pregnancy	<b>Estrogen</b>
Hormone responsible for deepening of the voice	<b>Testosterone</b>

Estrogen	Progesterone	Testosterone
----------	--------------	--------------

6. During menstruation \_\_\_\_\_.
- A. An egg is fertilized
  - B. The lining of the uterus sheds**
  - C. A female becomes pregnant



D. A female has the highest level of estrogen

7. Place the following hormone stages a female goes through after birth in the correct order.

- 3 Menopause
- 1 Puberty
- 2 Gestation

8. Select all the following which happen in puberty to females with high levels of estrogen.

**Breast development**

Deepening of voice

**Mood changes**

More hair growth

Sperm production

**Widening of hips**

9. Which hormone is released from the brain and is responsible for controlling the menstruation cycle, triggering the release of an egg, or signaling the testes to begin producing testosterone and sperm?

- A. Progesterone
- B. Testosterone
- C. Luteinizing hormone**
- D. Estrogen

10. Mark the following statements as True or False.

Males with high levels of testosterone experience puberty between the ages of 45 and 55.	T or <b>F</b>
Females with high levels of estrogen experience puberty between the ages of seven to 16.	<b>T</b> or F
Females with high levels of estrogen experience menopause between the ages of 30 and 40.	T or <b>F</b>

11. Fill in the blanks using the word bank provided below.

The phase when an egg is fertilized is called gestation. A surge in progesterone assists in preparing the body for a baby, such as facilitating the growth of milk-producing glands. Hormonal induced changes occur daily for the female and the fetus.

fat fetus	gestation milk-producing	progesterone puberty testosterone
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12. Select the correct answer from the choices provided in the underlined sections.

A full-term pregnancy is roughly nine months / ten months. The hormone LH / HcG triggers more production of estrogen and progesterone during pregnancy.

13. Select all the following hormones which contribute to telling the body to stop menstruating and prepare for birth.

- Epinephrine
- Estrogen**
- HcG**
- Progesterone**
- Testosterone

14. Most humans only go through one big change, the transition to gestation, when having a baby.

- A. True
- B. False**

15. The stage when a female's estrogen levels decrease and can no longer have a baby is called \_\_\_\_\_.

- A. Puberty
- B. Menopause**
- C. Gestation
- D. Adolescence

16. When does menopause occur?

- A. 12 months after the last menstruation cycle**
- B. 10 months after the last menstruation cycle
- C. 24 months after the last menstruation cycle
- D. 15 months after the last menstruation cycle

17. Fill in the blanks using the word bank provided below.

Menopause lasts on average seven years. This is caused by lowered estrogen which cause fatigue, weight gain, mood changes, loss of breast tissue and thinning of hair.

breast estrogen fat fatigue	hair muscle pain progesterone	seven ten testosterone
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18. Changes in reproductive hormones are essential to growing older.

- A. True**
- B. False

19. Which organ(s) does estrogen target to prepare the body for pregnancy?

- A. The testes
- B. Uterus and ovaries**
- C. Fallopian tubes
- D. Breasts

20. During menopause, \_\_\_\_\_ decreases, as the body is no longer preparing to provide for a baby.
- A. Progesterone
  - B. Testosterone
  - C. Estrogen**
  - D. LH



# Human Reproductive System: Hormones Key Concepts

## Essential Questions

1. What are the functions of essential reproductive hormones?
2. What physiological changes occur due to hormones present throughout an individual's life?

## Hormonal Changes

- Occur throughout a person's life
- Are facilitated by the \_\_\_\_\_ system
  - \_\_\_\_\_ system contributes to reproductive changes
- Require use of the endocrine system
  - three hormone-producing glands in the \_\_\_\_\_
  - \_\_\_\_\_ hormone-producing glands throughout the rest of the body
    - \_\_\_\_\_ direct hormones to move throughout the body using blood vessels

## Hormones

- Are \_\_\_\_\_ messengers which travel throughout the body to perform specific functions, such as:
  - puberty
  - \_\_\_\_\_
  - menstruation
  - menopause
  - sex drive
  - sperm \_\_\_\_\_
- Also promote general functions throughout the body, such as:
  - regulate \_\_\_\_\_
  - \_\_\_\_\_ and development
  - sexual function
  - reproduction
  - sleep \_\_\_\_\_
  - mood

## Puberty (Part 1)

- Is applicable to \_\_\_\_\_ and teens
- Causes \_\_\_\_\_ in the body
- Is the fastest time for \_\_\_\_\_

## Puberty (Part 2)

- In females with high levels of estrogen experience \_\_\_\_\_
  - \_\_\_\_\_ hormone (LH): released from the brain and responsible for controlling the menstruation cycle
    - triggers the release of an \_\_\_\_\_ from the uterus
  - more estrogen is released
    - targets \_\_\_\_\_ and uterus to begin to prepare the body for pregnancy
  - thick lining is created
    - sheds once the egg is not \_\_\_\_\_
  - \_\_\_\_\_
    - works with estrogen to prepare the uterine lining
    - lower levels of estrogen so uterus can \_\_\_\_\_

### Puberty (Part 3)

- Other changes in females with high levels of \_\_\_\_\_ during puberty include:
  - \_\_\_\_\_ of the hips
  - breast development
  - \_\_\_\_\_
- In females with high levels of estrogen \_\_\_\_\_ occurs between the ages of seven and 16

### Puberty (Part 4)

- In males with high levels of \_\_\_\_\_ experience changes in testes
  - \_\_\_\_\_ (LH): released from the brain and signals the testes to begin the producing testosterone and \_\_\_\_\_
- Other changes in males with high levels of testosterone during puberty include:
  - growth \_\_\_\_\_
  - deepening of the \_\_\_\_\_
  - \_\_\_\_\_ hair growth
- In males with \_\_\_\_\_ levels of testosterone typically occurs between the ages of nine and 15

### Gestation

- Refers to the period when an female \_\_\_\_\_ a baby
  - begins when an egg is fertilized
  - period between \_\_\_\_\_ and birth
- Is marked by an increase in progesterone
  - facilitates growth of \_\_\_\_\_ glands in breast
- Includes hormonal changes daily for the carrier and fetus
- For a \_\_\_\_\_ pregnancy lasts approximately nine months/40 weeks

- Includes an increase in Human Chorionic Gonadotropin ( \_\_\_\_\_ )
  - triggers \_\_\_\_\_ production of estrogen and progesterone during pregnancy

## Menopause

- Occurs in females with high levels of \_\_\_\_\_
- Begins around the ages of 45 to 55
- Occurs \_\_\_\_\_ months after the last menstruation cycle
- Lasts an average of \_\_\_\_\_ years
- Is marked by lower levels of estrogen
  - effects include:
    - feeling \_\_\_\_\_
    - weight gain
    - \_\_\_\_\_ changes
    - loss of breast tissue
    - \_\_\_\_\_ hair

# Human Reproductive System: Hormones Key Concepts Answer Key

## Essential Questions

1. What are the functions of essential reproductive hormones?
2. What physiological changes occur due to hormones present throughout an individual's life?

## Hormonal Changes

- Occur throughout a person's life
- Are facilitated by the **reproductive** system
  - **endocrine** system contributes to reproductive changes
- Require use of the endocrine system
  - three hormone-producing glands in the **brain**
  - **seven** hormone-producing glands throughout the rest of the body
    - **glands** direct hormones to move throughout the body using blood vessels

## Hormones

- Are **chemical** messengers which travel throughout the body to perform specific functions, such as:
  - puberty
  - **pregnancy**
  - menstruation
  - menopause
  - sex drive
  - sperm **production**
- Also promote general functions throughout the body, such as:
  - regulate **homeostasis**
  - **growth** and development
  - sexual function
  - reproduction
  - sleep **cycle**
  - mood

## Puberty (Part 1)

- Is applicable to **pre-teens** and teens
- Causes **changes** in the body
- Is the fastest time for **growth**

## Puberty (Part 2)

- In females with high levels of estrogen experience **menstruation**
  - **luteinizing** hormone (LH): released from the brain and responsible for controlling the menstruation cycle
    - triggers the release of an **egg** from the uterus
  - more estrogen is released
    - targets **ovaries** and uterus to begin to prepare the body for pregnancy
  - thick lining is created
    - sheds once the egg is not **fertilized**
  - **progesterone**
    - works with estrogen to prepare the uterine lining
    - lower levels of estrogen so uterus can **shed**

### Puberty (Part 3)

- Other changes in females with high levels of **estrogen** during puberty include:
  - **widening** of the hips
  - breast development
  - **mood changes**
- In females with high levels of estrogen **typically** occurs between the ages of seven and 16

### Puberty (Part 4)

- In males with high levels of **testosterone** experience changes in testes
  - **luteinizing hormone** (LH): released from the brain and signals the testes to begin the producing testosterone and **sperm**
- Other changes in males with high levels of testosterone during puberty include:
  - growth **spurts**
  - deepening of the **voice**
  - **more** hair growth
- In males with **high** levels of testosterone typically occurs between the ages of nine and 15

### Gestation

- Refers to the period when a female **carries** a baby
  - begins when an egg is fertilized
  - period between **conception** and birth
- Is marked by an increase in progesterone
  - facilitates growth of **milk-producing** glands in breast
- Includes hormonal changes daily for the carrier and fetus
- For a **full-term** pregnancy lasts approximately nine months/40 weeks
- Includes an increase in Human Chorionic Gonadotropin (**HcG**)
  - triggers **more** production of estrogen and progesterone during pregnancy



## Menopause

- Occurs in females with high levels of **estrogen**
- Begins around the ages of 45 to 55
- Occurs **12** months after the last menstruation cycle
- Lasts an average of **seven** years
- Is marked by lower levels of estrogen
  - effects include:
    - feeling **fatigued**
    - weight gain
    - **mood** changes
    - loss of breast tissue
    - **thinning** hair