LESSON

1

Reproductive Health and Disease Education Unit

Human Growth and Development – Anatomy, Menstruation, Fertilization, Pregnancy, and Childbirth

HEALTH SKILLS - PERFORMANCE SCALE – RHDE – HOPE course – Lesson 1

Learning Goal Outcome from State Standards:
Demonstrate ability to comprehend and use concepts for health promotion, disease prevention, interpersonal skills and decision-making to reduce or avoid health risks

Lesson 1 Learning Goal Target:
Explain human reproductive anatomy, organs, systems, functions, including pregnancy and childbirth and the consequences/risks associated

Directions: Using the Performance Scale checklist below. **Start at Level 1**, check off those you can do and work on those you need more practice. Then move up the levels as you build both knowledge and skill competency. Time and practice may be necessary to reach Target Mastery at level 3.

Level	Learning Target Tasks: I can: ✓
4 beyond desired effect	○ Demonstrate evidence of comprehending reproductive anatomy concepts including structures and functions, fertilization, pregnancy and childbirth, including consequences and risks of teenage pregnancy
3 level of desired goal	**Explain human reproductive anatomy, organs, systems, functions, including pregnancy and childbirth and the consequences/risks associated.** ○ Explain human reproductive anatomy, organs, systems, and their functions ○ Explain organs, systems and functions included in pregnancy and childbirth ○ Explain the consequences and risks related to teenage pregnancy and childbirth
2 This is the **foundational** level tasks, practice of skills, cues, vocabulary needed to get to required goal	○ Explain some consequences or risks associated with teenage pregnancy and childbirth ○ Explain Stages of childbirth ○ Explain trimesters of pregnancy ○ Explain fertilization and the initial process of conception ○ Explain menstruation cycle/phases ○ Explain some male and female reproductive system functions ○ Explain some appropriate male reproductive anatomy ○ Explain some appropriate female reproductive anatomy
1 Beginning cognitive and physical	○ Identify the importance of the endocrine system and hormones ○ Recognize some body functions related to human growth and development ○ Recognize some reproductive anatomy and reproductive system functions ○ Recognize some endocrine system glands, organs and functions

START HERE CHECK OFF THOSE YOU CAN DO

Student Learning Targets

I CAN:

- Explain human reproductive anatomy, organs, systems, and their functions.
- Explain organs, systems and functions included in pregnancy and childbirth.
- Explain the consequences and risks related to teenage pregnancy and childbirth.
- Explain the mental, intellectual, emotional, physical, social, and financial consequences of a teen pregnancy.

Lesson Start Up

Using the graphic organizer below, list 6 elements of Human Growth and Development that are directly connected to either **heredity** or **environment.** *See examples below.*

Heredity	Environment
• Number of chromosomes	• Nutrition

Lesson Vocabulary Check for Understanding

- Vagina
- Uterus
- Cervix
- Fallopian Tubes
- Ovaries/Ova
- Penis
- Urethra

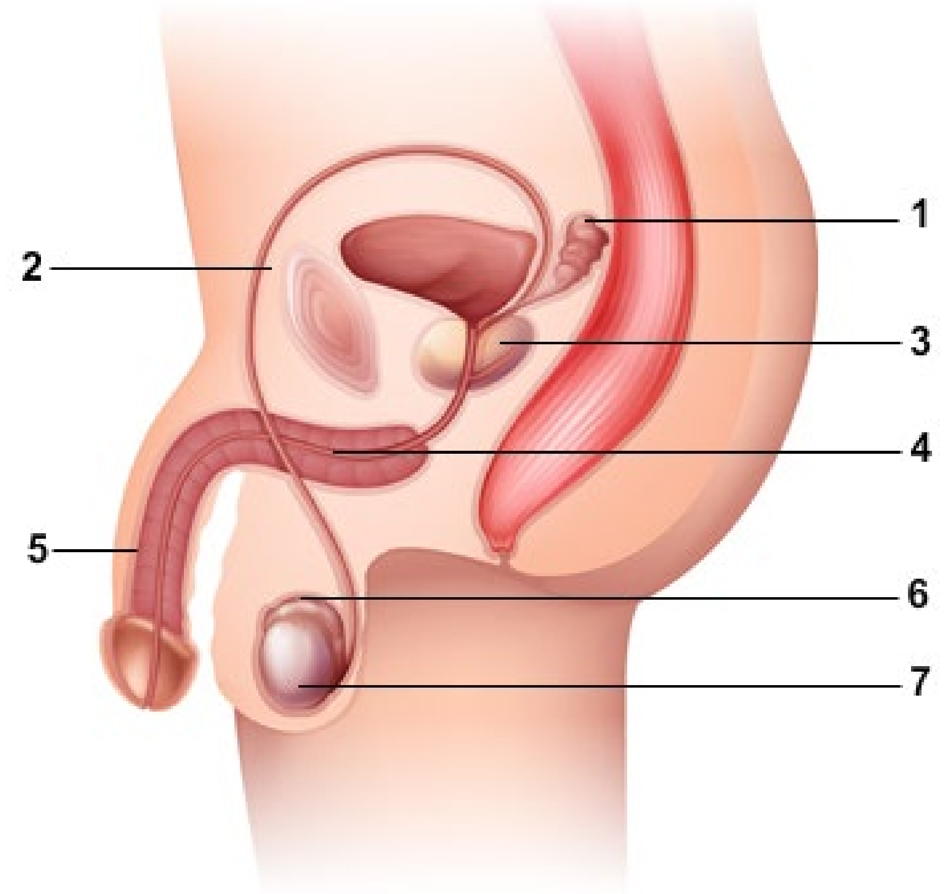
- Vas deferens
- Cowper's Gland(Bulbourethral Gland)
- Prostate Gland
- Seminal Vesicles
- Epididymis
- Testes
- Scrotum

- Menstruation
- Ovulation
- Fertilization
- Zygote
- Embryo
- Fetus
- Placenta
- Amniotic Sac/fluid
- Breast/Testicular Self Exams
- Labor/Delivery/Afterbirth
- Dilation

#2____________/ _#3___________

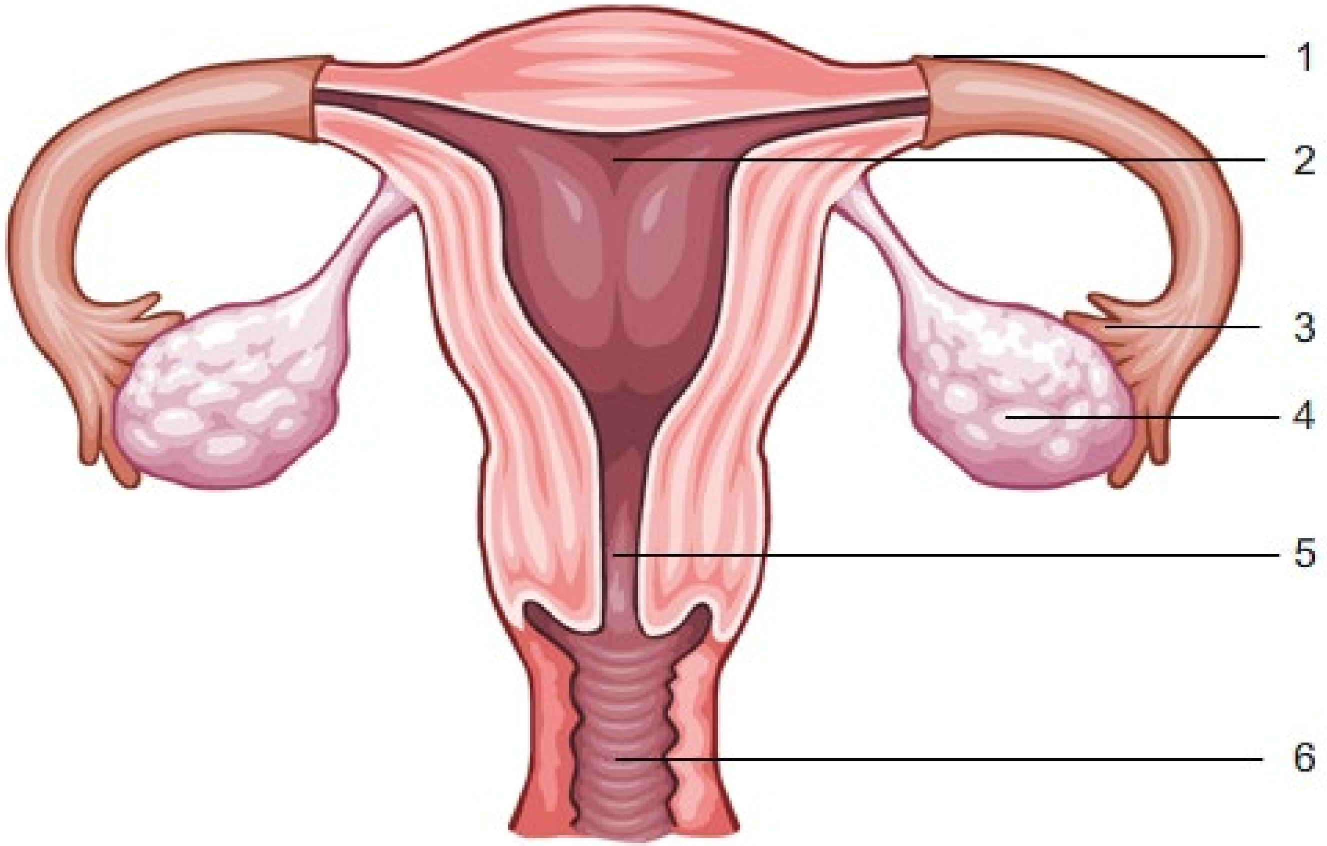
Background Knowledge Check (pretest)

Label the scientific reproductive male anatomy.



Background Knowledge Check (pretest)

Label the scientific female reproductive anatomy.



Male Reproductive System – Structures and Functions

A. PENIS: the male sex organ used to pass urine and the passageway for the release of semen from the body
B. SCROTUM: the sac-like pouch that helps regulates temperature and protects the testes
C. TESTES: the two glands that produce testosterone and sperm. Male reproductive cells are called sperm cells located in the testicles
D. SEMINAL VESICLES: the two small glands that add a fluid to semen to help sperm move
E. VAS DEFERENS: one of the two long tubes through which sperm passes from the testes to the urethra
F. PROSTATE GLAND: a gland that makes fluid that is added to sperm to help sperm stay alive
G. COWPER'S GLAND: a gland that makes the final protective fluid for sperm for easier mobility (sometimes called Bulbourethral gland)
H. URETHRA: a narrow tube through which urine and semen pass out of the body

Female Reproductive System - Structures and Functions

A. **Ovaries** - Female sex glands/organs - where eggs containing your DNA are stored and released
B. **Fallopian Tubes** - The structure that allows egg(s) to travel from the ovaries to the uterus
C. **Uterus** - The organ that houses a fertilized egg/fetus/baby during pregnancy and sheds it's lining during menstruation
D. **Cervix** - The lower part of the uterus that allows the flow of menstrual blood and passage of a baby during labor
E. **Vagina**- A muscular structure that allows menstrual blood to leave the body and allows baby to pass through during delivery
F. **Ova** – the single egg released by the ovaries through the fallopian tubes (in typical healthy systems occurs monthly, alternating ovaries)

Pause and Read

Reproductive System

The human reproductive system allows for the conception, development, and delivery of offspring. It differs, of course, between males and females but ultimately serves the overall purpose of reproduction. In the male reproductive system, sperm is produced in the testicles for release through the penis during sexual activity (figure 1).

The female reproductive system includes the uterus, ovaries, fallopian tubes, vagina, and external genitalia (figure 2). The female menstrual cycle is a monthly cycle that results in the release of a mature egg and prepares the walls of the uterus to implant the egg if it *is* fertilized by sperm. If fertilization does not occur, the lining of the uterus is shed through menstruation, and the cycle begins again.

Review Slides 8 and 9

FIGURE 1 Cross-section of the male human reproductive anatomy.

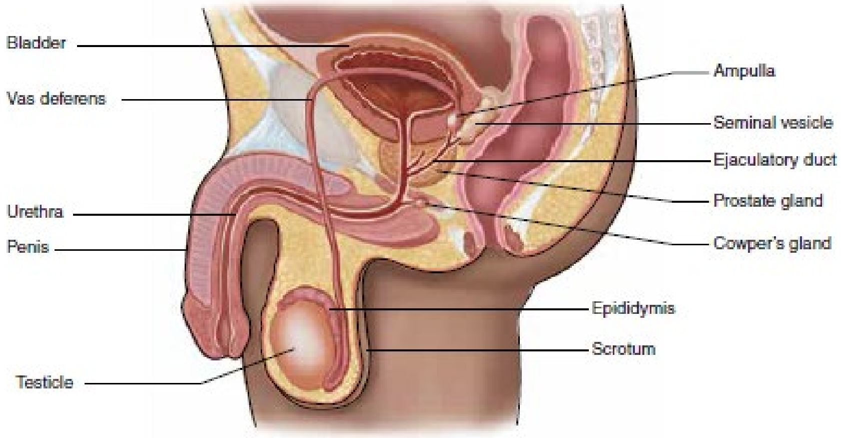
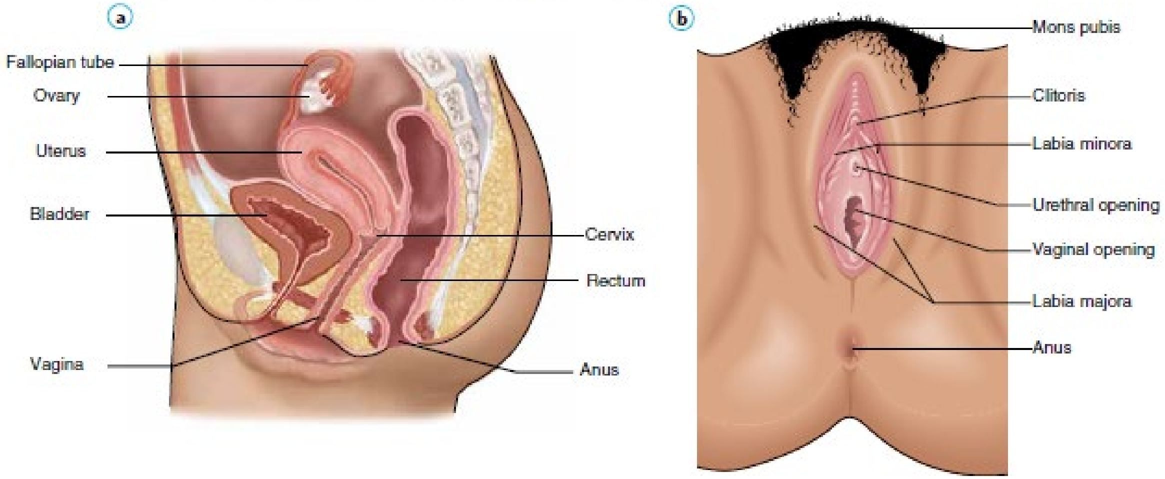


FIGURE 2 (*a*) Cross-section of the female human reproductive anatomy and (*b*) front view (supine) of the female reproductive anatomy.

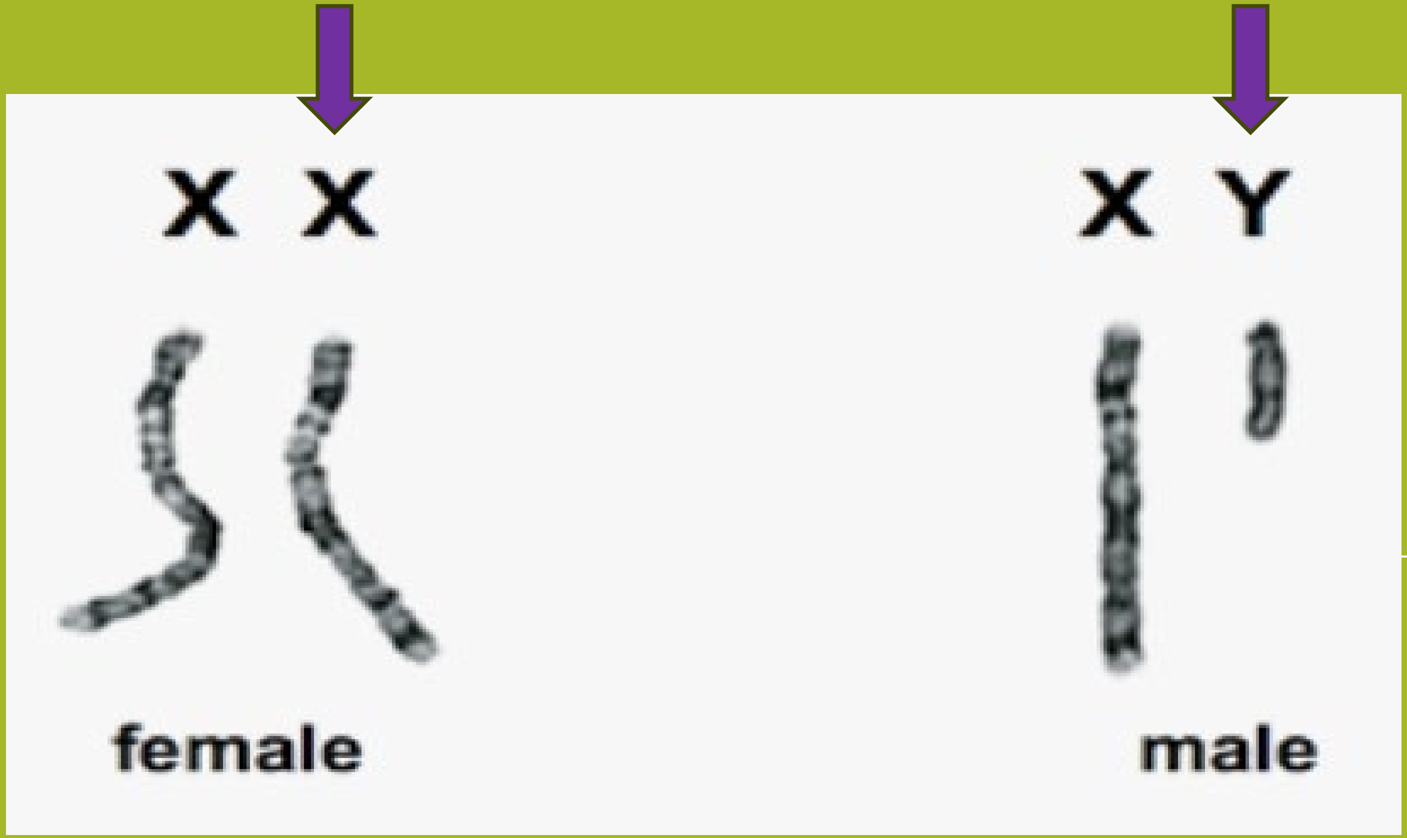


Student Activity

Structure/Function

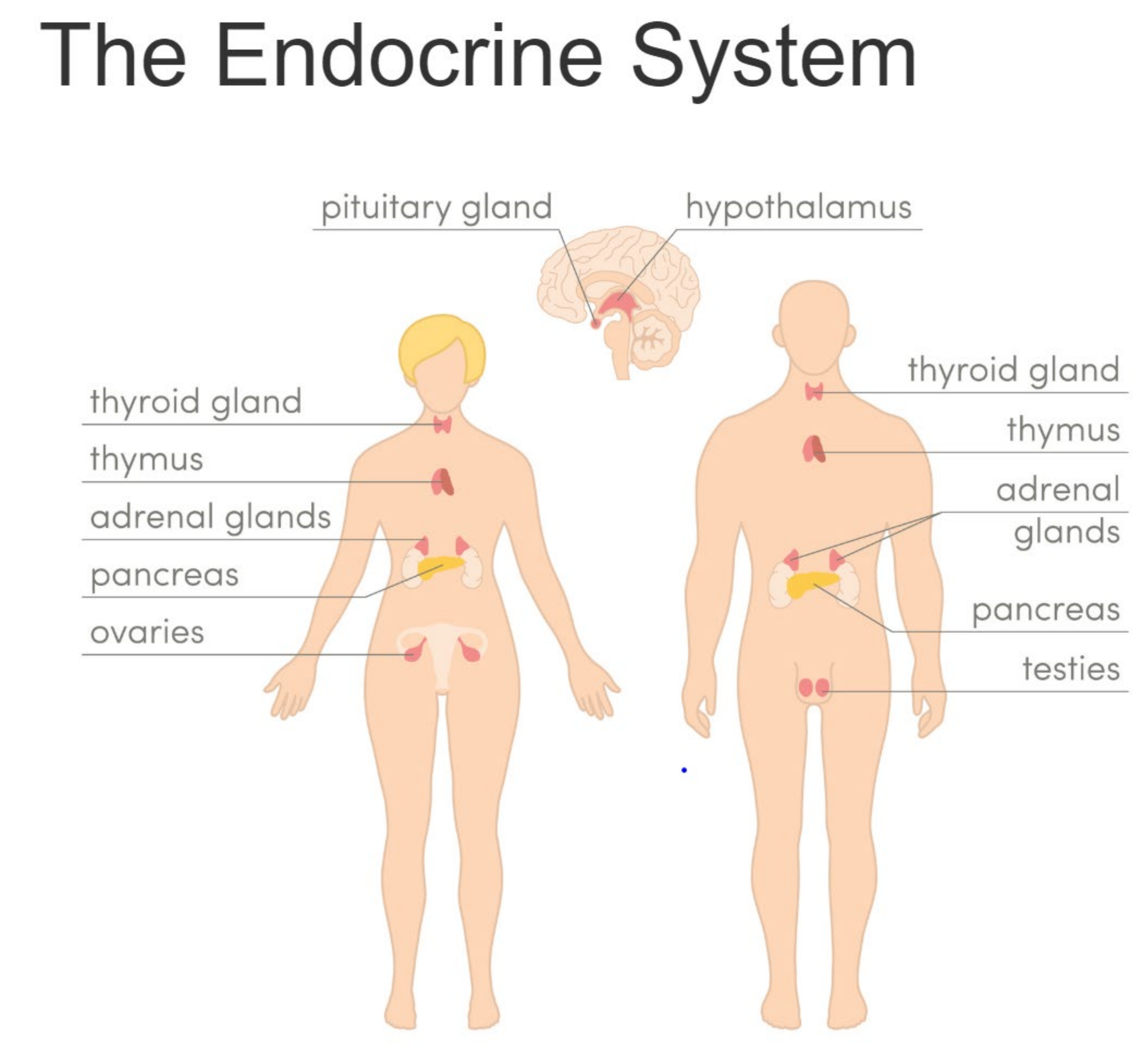
Identify/Correct

Directions: Using the 2 printable diagram slides (6 and 7) at each small table group - make sure you can identify both the structure and the function. (15 total)
You may use page slides 8 and 9 to support your findings or correct them.



A person's sex as female or male is indicated by the person's sex chromosomes, naturally occurring sex hormones, and internal and external genitalia at birth. Male and female reproductive roles are binary, stable, and unchangeable.

Endocrine System and Hormones



The **endocrine system** is a network of glands in your body that make the hormones that help cells talk to each other. Hormones are responsible for almost every function in your body.

If your endocrine system isn't working properly, you might have problems during puberty or with simply managing stress.
This organ system is the control system for major responses such as flight, fight, freeze (adrenaline), metabolism (pancreas) and ability to reproduce (ovaries/testes).
The endocrine system is directly related and connected to reproductive and sexual health, including menstruation, pregnancy, and even childbirth

Pause and Read

Menstrual Cycle

The **menstrual cycle** is a monthly series of changes involving ovulation, the uterine lining, and menstruation (also referred to as a "period"), in which the unfertilized egg and the lining of the uterus leave the body in a menstrual flow. The menstrual cycle consists of four stages (figure 3) and lasts for an average of 28 days, though some women have longer or shorter cycles. Menstrual flow usually lasts about five days but can vary from woman to woman.

Stage 1 of the menstrual cycle is the menstrual flow, in which the endometrium (the uterine lining that has thickened during the cycle) is partially shed and expelled through the vagina. The menstrual cycle consists of dark-colored blood mixed with mucous secretion from the uterine lining and secretion from the vagina. This stage lasts about five days and ends when the shedding is completed.

Stage 2 of the cycle includes days 6 through 12, during which an egg, or ovum, matures. The maturation process of the ovum includes the ovum being released from the follicle where it developed and the secretion of progesterone.

Progesterone is a steroid hormone secreted by the ovary and is necessary for pregnancy. The uterine lining or endo-metrium begins to thicken, and the uterus prepares for ovulation and the possibility that an ovum will be fertilized. During this time the cervix also begins to secrete a thick mucus, which will assist in the passage of sperm.

Stage 3 of the cycle includes days 13 and 14, which are marked by ovulation—the release of an egg from one of the fallopian tubes. After release, an egg lives for only 24 hours; if it isn't fertilized, it deteriorates and leaves the uterus during the next menstrual cycle.

Stage 4 consists of days 15 through 28. During this stage, if an egg has been fertilized, it moves from the fallopian tube into the uterus and attaches itself to the endometrium. Progesterone continues to be secreted throughout the pregnancy to support the fertilized ovum. If an ovum has not been fertilized, the ovum disintegrates and the woman begins her next menstrual period, and the cycle begins again. Figure 3 illustrates the complete menstrual cycle.

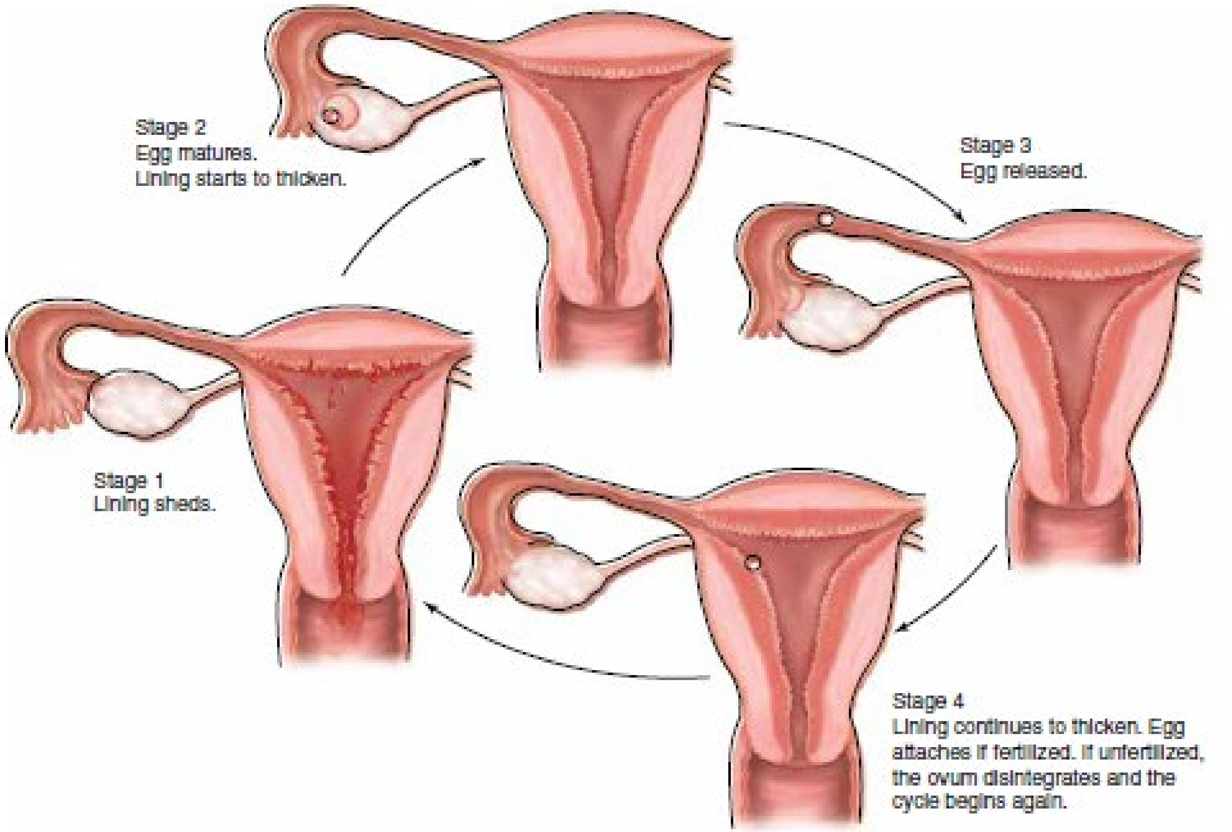


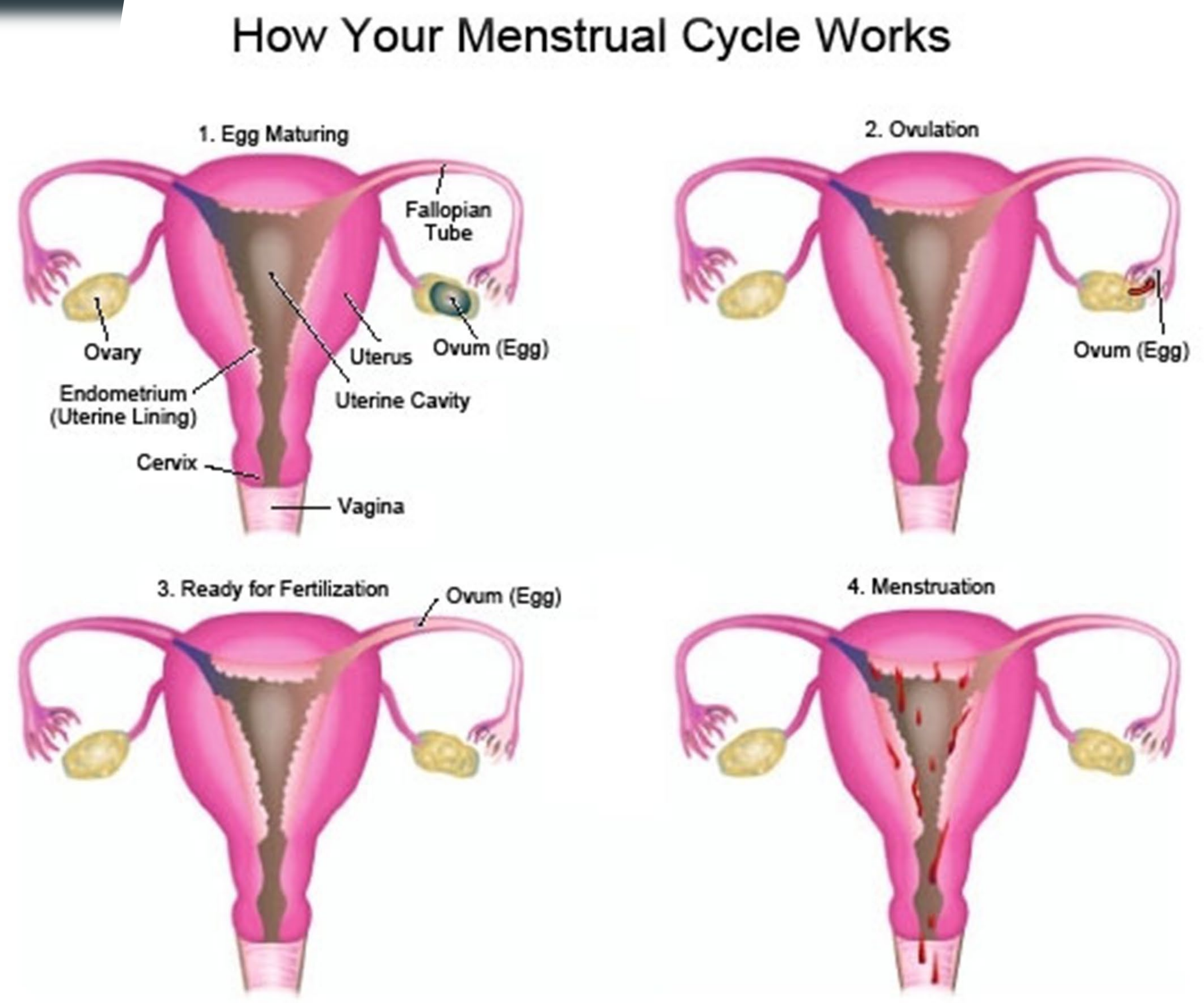
FIGURE 3 Cross-section of the uterus: one fallopian tube and one ovary. The four stages of the menstrual cycle last for a total of about 28 days, though some women have shorter or longer cycles.

Menstrual Cycle

Menstrual Cycle is a series of changes or 4 phases in the female body that includes: maturation of ovum/egg, release of egg (ovulation), uterine lining preparation and menstruation(shedding of lining).

Menstruation is the time when blood from uterine lining is shed from contractions in the uterine walls(cramps) and exits through the vagina typically 3-7 days, light to heavy flow, all girls are different.

- Menstruation usually lasts from 4-7 days



Student Activity

Refer to pages 12-14

In your group answer the 3 questions for each stage of the menstrual cycle:

1. Approximately how long does each stage of the cycle last?
2. What happens/occurs in each stage?
3. Additional information helpful to understand each stage of the cycle…

STAGE 1

STAGE 2

STAGE 3

STAGE 4

Pause and Read Text

Text Supplement 1.c

Conception

Conception, or fertilization, is the union of an ovum (figure 4) and a sperm (figure 5). When ovulation occurs (usually on day 13 or 14 of the menstrual cycle), an ovum is released into a fallopian tube. If sperm are present in the fallopian tube, the ovum can be fertilized. One ejaculation by the male releases about 200 to 500 million sperm, which may seem like a very high number, but many are irregular and never make it to the ovum's location. Sperm enter the uterus through the cervix, where they move into either the right or left fallopian tube in search of an ovum.

Once an ovum is found, the sperm work to penetrate it; if a sperm succeeds in doing so, the ovum changes so that no other sperm can get in. Conception has thus been completed. The fertilized ovum now begins cell division and continues to travel down the fallopian tube to the uterus, where it implants itself into the endometrium about 10 to 12 days after conception. This entire process is illustrated in figure 6.

FIGURE 4 An ovum, or egg.

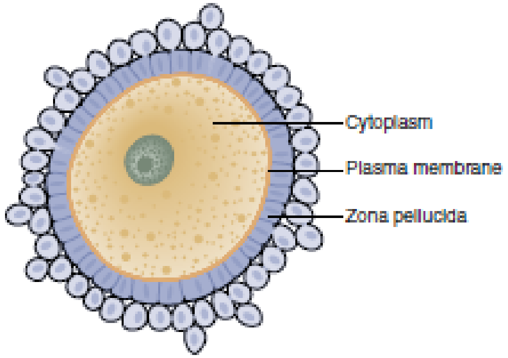


FIGURE 5 A mature sperm cell, or spermatozoa (magnified).

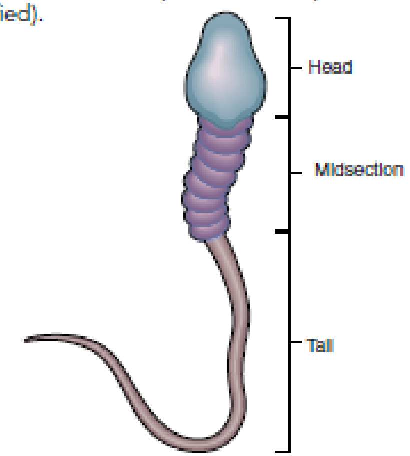
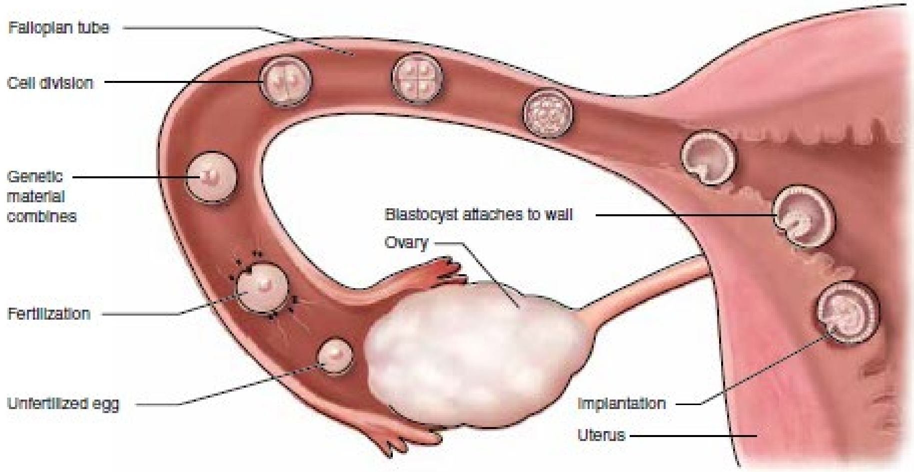


FIGURE 6 During conception and implantation, an egg becomes fertilized, undergoes cell division while traveling through the fallopian tube, and implants itself in the uterus. *Note:* The unfertilized egg is greatly magnified in the figure.



Fertilization/Conception

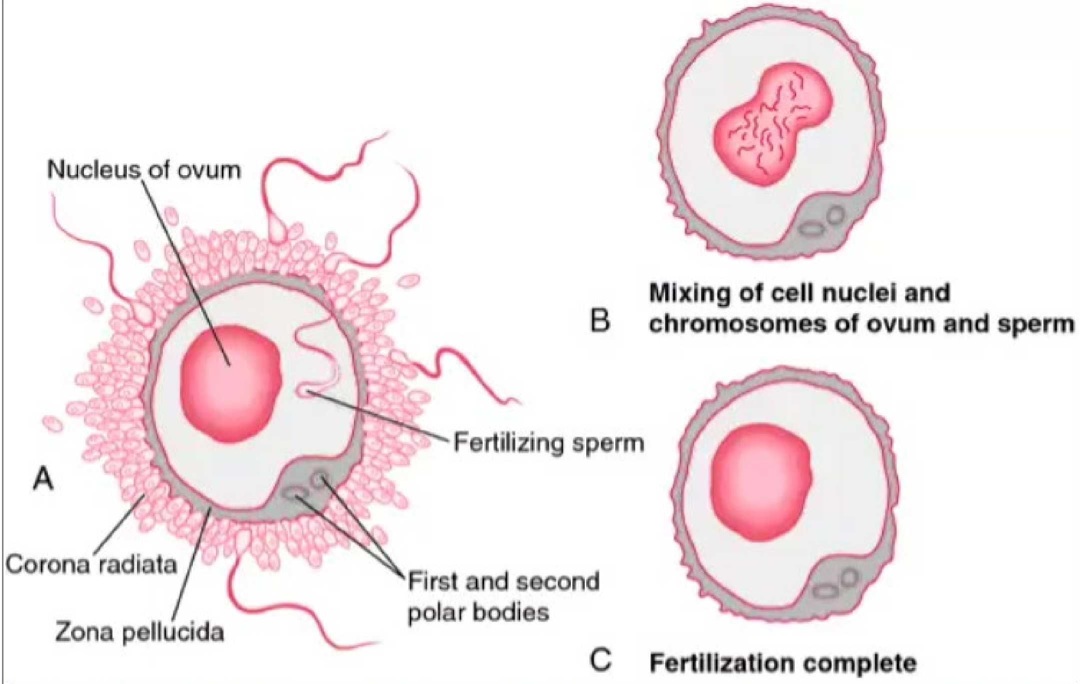
Fertilization: Union of a female ovum (egg) and a male sperm.

1. If sperm and an ovum are present in the female fallopian tube, the ovum can be fertilized.

2. Male sperm enters the uterus through the vagina to the cervix into the uterus and up through the fallopian tubes in search of an ovum.

3. Once a sperm penetrates an ovum, the ovum changes so no other sperm can get in. Conception is completed.

4. The fertilized ovum begins cell division and moves to the uterus where it attempts to implant itself into the uterine lining.



Development of the zygote. *A,* A sperm enters the ovum. *B,* The 23 chromosomes from the sperm mingle with the 23 chromosomes from the ovum, restoring the diploid number to 46. *C,* The fertilized ovum, now called a zygote, is ready for the first mitotic cell division. From McKinney et al., 2000.

*biological males impregnate biological females by fertilizing a female egg with male sperm; the female then gestates the offspring through pregnancy

Pause and Read

Text Supplement 1.d

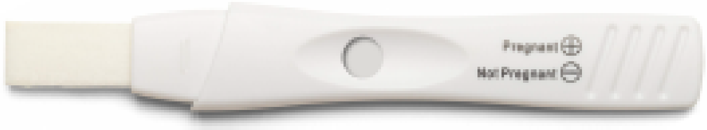
Pregnancy

From the time of conception, human pregnancy lasts about 38 weeks, or 9 months, and it is often viewed as consisting of three-month increments known as trimesters. During the first trimester (the first three months), the fertilized ovum becomes an embryo (i.e., a developing baby through approximately the first six weeks after conception). The embryo begins to develop within the amniotic sac, which is a sac of fluid that surrounds the embryo. The amniotic sac protects the embryo from damage and helps maintain a steady temperature. The embryo receives oxygen and nourishment through the umbilical cord, which connects the embryo to the placenta (i.e., an organ that anchors the embryo to the uterus). By the third month of the first trimes-ter, the term used to describe the developing baby changes from embryo to fetus. This marks the end of the embryonic period during which time the brain, arms and legs, heart, lungs, and internal organs begin to form. Also, the fetal period begins, which is more about growth and development.

At this time, the fetus begins showing male or female genitalia; in addition, limbs, eyebrows, and fingernails begin to become distinguishable by the end of the third month. At the end of the first trimester, the fetus measures approximately two inches.

During the second trimester—months 4 through 6—the fetus begins to breathe the amniotic fluid, and organs continue to develop including hearing, lungs, and brain waves. During the second trimester, the fetus may be startled by loud noises and can start to hear and recognize voices. Lungs continue to develop as the fetus is inhaling and exhaling small amounts of amniotic fluid. Brain wave activity measured in a developing fetus shows different sleep cycles. It is also during this trimester that the mother begins to gain weight and feels the baby move. By the end of the second trimester, the baby weighs approximately 2 pounds and is 12 inches in length.

The third trimester begins with month 7 and ends at childbirth. During these last three months of pregnancy, the baby has a fully formed brain and nervous system and begins to build up fat, which will provide energy and help keep the baby warm—all in preparation for birth. At birth, the baby weighs approximately 7 pounds and is 18 to 20 inches in length.



Over-the-counter pregnancy tests can be done at home. It's important to follow the instructions carefully to increase the changes of an accurate reading. If the test indicates pregnancy, you should follow up with a visit to the doctor.

Below are some facts about teen pregnancy

Facts About Teen Pregnancy

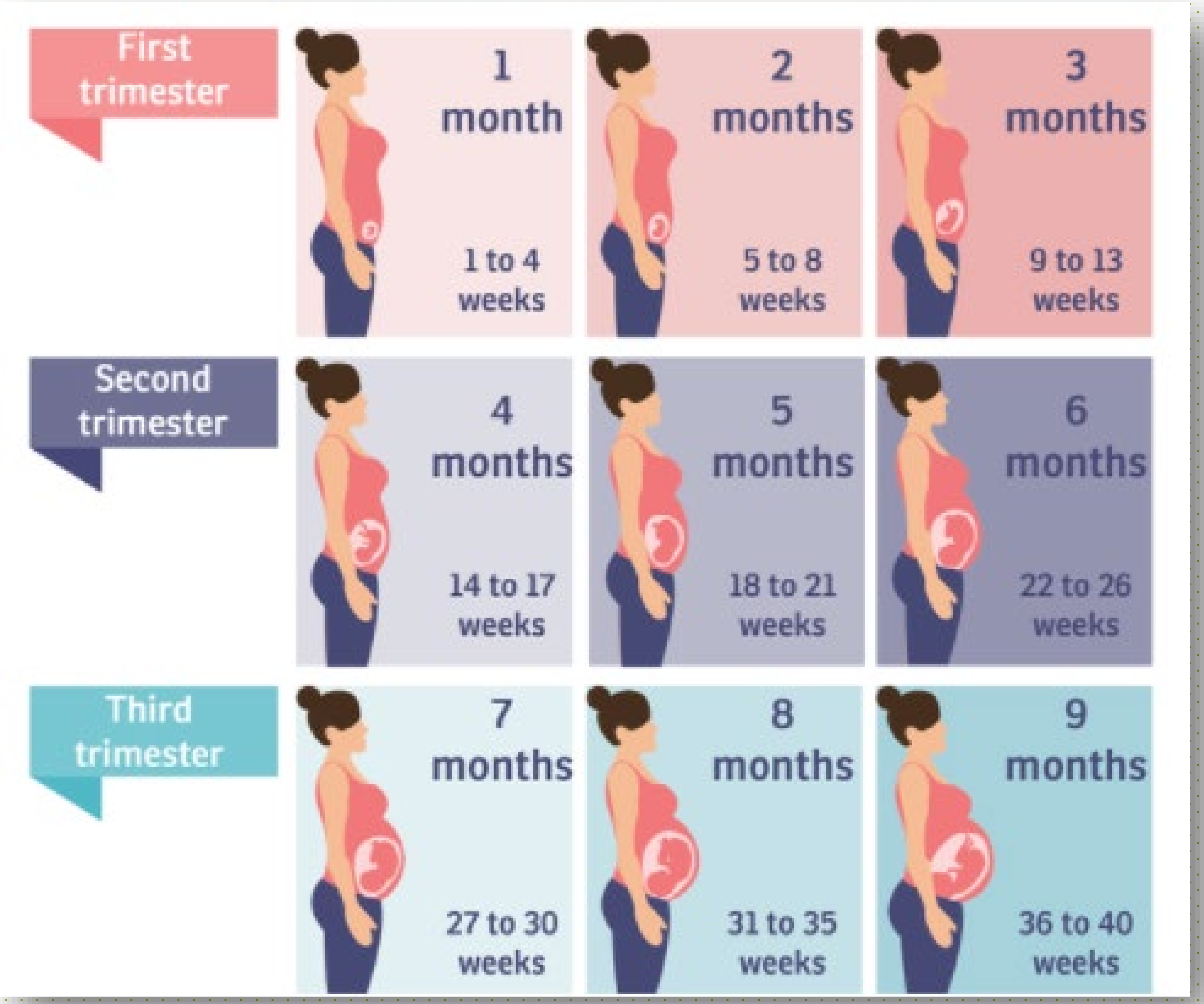
- Each year, almost 750,000 teens aged 15 to 19 become pregnant.
- The U.S. teen pregnancy rate is one of the highest in the developed world.
- More than 80 percent of teen pregnancies are unplanned.
- Risk factors for adolescent pregnancy include poor school performance and economic disadvantages. Adolescents who are pregnant are less likely to finish high school than teens who do not become pregnant.
- Teens are more likely than older mothers to have a second child within two years of their first child.
- Only about 50 percent of teen mothers receive a high school diploma by the age of 22 versus about 90 percent of women who do not give birth during adolescence.
- Less than 2 percent of teen mothers complete a two- or four-year college program by the age of 30.
- Teen fathers are 25 to 30 percent less likely to graduate from high school than teenage boys who are not fathers.
- Children of teenage mothers tend to achieve less in school; they are also more likely to drop out of high school, experience more health problems and chronic medical conditions, receive less emotional support and cognitive stimulation, and exhibit behavioral problems.
- Boys born to teen mothers have a higher incidence of serving time in juvenile detention centers or jail during adolescence, and girls born to teen mothers are more likely to become teen mothers themselves and face unemployment as young adults.
- Nearly all births among teen mothers are nonmarital (89 percent in 2011, up from 79 percent in 2000).
- Infants born to teen mothers are two to six times more likely to have low birth weight than those born to mothers who are age 20 or older.
- The younger a mother is (below the age of 20), the greater her infant's risk of dying during the first year of life. Teen mothers are more likely to have unhealthy habits and thus place their infants at greater risk for infection, chemical dependence, and inadequate growth.

Pregnancy

Conception to birth is about 38 weeks, or 9 months.

Pregnancy consists of 3-month increments known as trimesters.

- 1st Trimester- Months 1 to 3
- 2nd Trimester- Months 4 to 6
- 3rd Trimester- Months 7 to Birth



Pregnancy: First Trimester, Months 1 to 3

- Ovum becomes an embryo and begins to develop within the amniotic sac. The end of the first trimester marks the end of the embryonic period (embryo) and the beginning of the fetal period (fetus).
- Fetus begins to show male or female genitalia. Limbs, eyebrows, and fingernails begin to become distinguishable.

Pregnancy: Second Trimester, Months 4 to 6

- Lungs continue to develop as the fetus inhales and exhales small amounts of amniotic fluid.
- Fetus begins to hear and recognizes voices.
- Brain wave activity can be measured.
- Mother begins to gain weight and feels the fetus move.

Pregnancy: Third Trimester, Months 7 to Birth

- Brain and nervous system are fully formed.
- Fat buildup increases, which will provide energy and help keep the baby warm in preparation for birth.

Student Activity

Teenage Pregnancy

- Discuss the potential Physical, Mental/Emotional, Intellectual, and Social consequences related to a teenage pregnancy.
- In your notes, highlight important connections under each component of health from each perspective.

Pause and Read Text

Childbirth

In preparation for birth, the fetus usually turns and positions his or her head against the mother's pelvic bone (figure 7). In addition, the cervix begins to dilate, and the amniotic sac may rupture (which is also known as "water breaking").

Childbirth includes three stages of labor (figure 8). The first stage is the longest, lasting anywhere from a couple of hours to an entire day. During it, contractions begin, initially lasting 20 to 40 seconds and occurring every 10 to 20 minutes, then progressively getting stronger and lasting longer. The cervix continues to dilate (up to 8 to 10 centimeters wide), and the baby begins to move into the birth canal or vagina.

The second stage of childbirth lasts from a few minutes to a couple of hours. During this stage, the woman begins to push during contractions to help the baby move through the birth canal or vagina.

Once delivered, the baby can breathe on his or her own, and the umbilical cord is cut.

The third stage of childbirth is the delivery of the placenta, which happens very shortly after delivery of the baby and lasts only about 10 minutes.

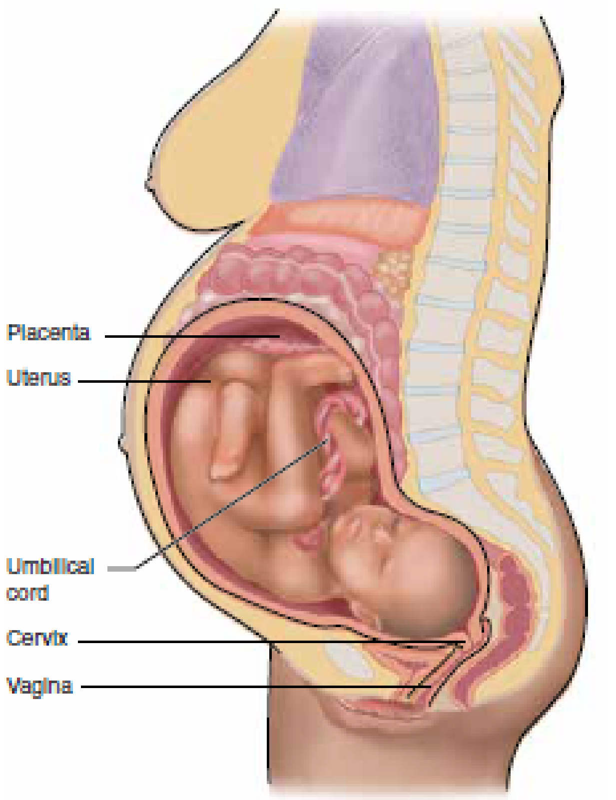
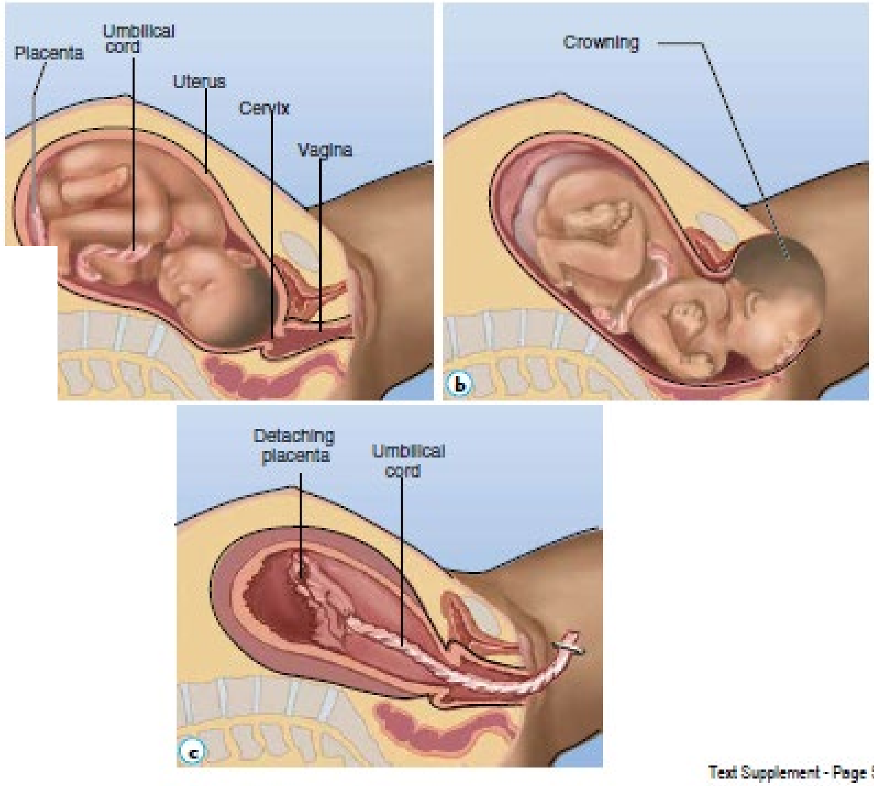
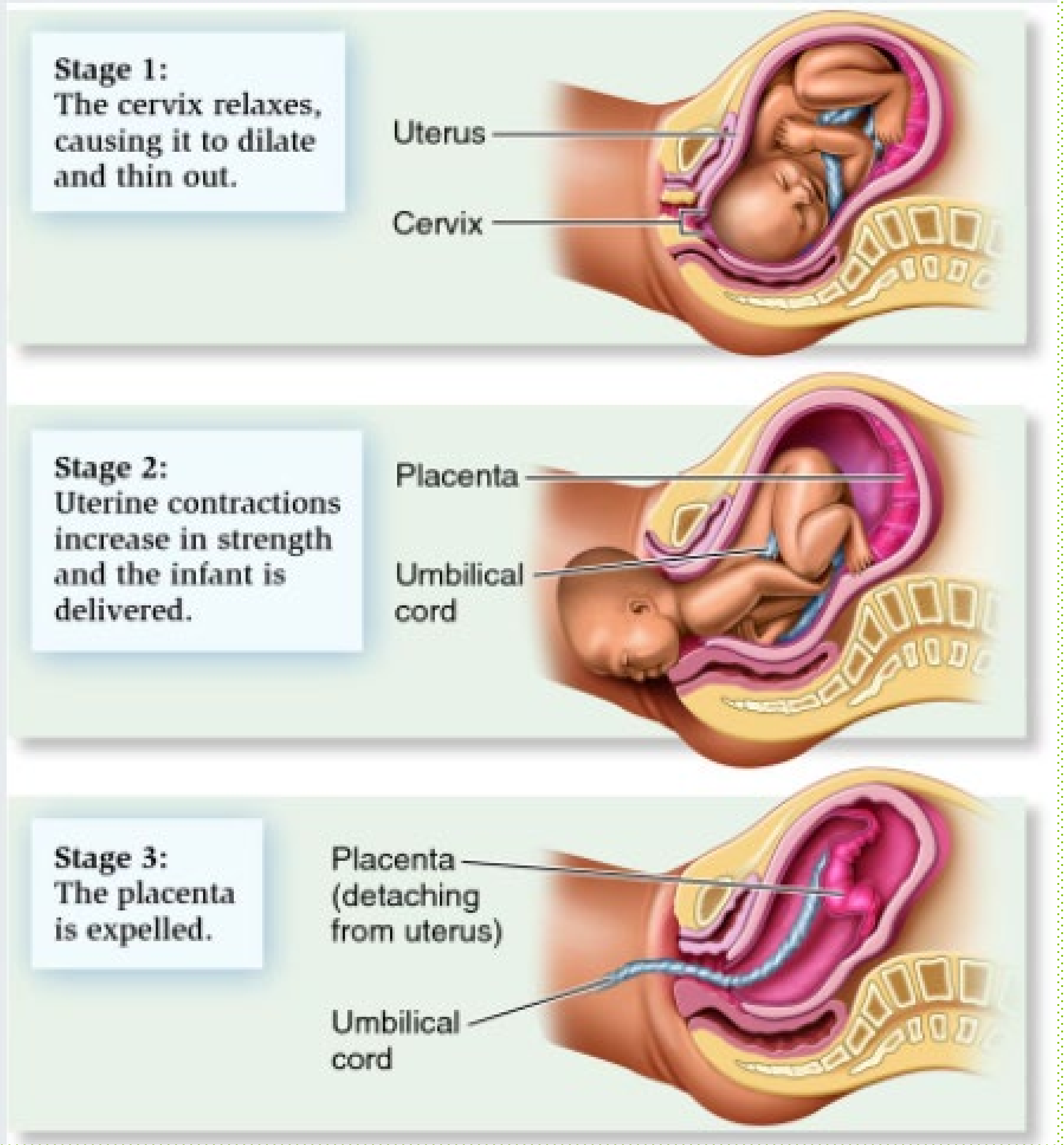


FIGURE 7 Near the end of pregnancy, the fetus positions his or her head against the mother's pelvic bone.

FIGURE 8 During childbirth, the mother goes through three stages of labor: (a) stage 1, (b) stage 2, and (c) stage 3.



3 Stages of Labor



3 Stages of Labor in Vaginal Delivery

Refer to pages 15-18

First stage

- Contractions begin, cervix dilates, and baby begins to move into the birth canal (vagina).

Second stage

- Woman begins to push during contractions to help the baby move through the birth canal; this can last 2-24 hours

Third stage

- It is the delivery of the placenta, which happens shortly after delivery of the baby.

Caesarian Section – Surgical Delivery

Cesarean deliveries, or **C-sections**:

- Can prevent injury and death in women who are at higher risk of complicated **deliveries** or have unexpected complications
- Is major surgery to **deliver** a baby through the mother's abdomen and uterus
- Requires Epidural/Anesthesia to lower body so baby can be surgically removed (mother is often awake and able to feel pressure, but not pain)
- Used when a vaginal **birth** is not safe or becomes unsafe
- Recovery takes longer due to the nature of surgical procedure and healing of internal and external incisions
- The placenta is removed during the surgical process as well
- Surgeries increase risks of infection, other complications due to major surgery are also increased
- Individuals that had a complicated delivery with a previous birth may have a scheduled C-Section, or may, depending on age and risks attempt a vaginal delivery

In 2019 in the US:

- Number of vaginal deliveries: 2,558,882
- Number of Cesarean deliveries: 1,186,397
- Percent of all deliveries by Cesarean: 31.7%

Current Birth/Delivery Statistics

- US birth rate saw a 2% decline from 2022, with 3,591,328 births recorded in 2023 The number of births in 2023 is the lowest since 1980
- The cesarean delivery rate increased for the fourth year in a row to 32.4% in 2023; the low-risk cesarean delivery rate increased to 26.6%.
- Teenagers—The birth rate for teenagers aged 15–19 was down 3% in 2023 to 13.2 births per 1,000 women.

Student Activity – Budgeting Expenses

- **Create an expense report from childbirth at a hospital through the first year of life**.
- Divide the tasks among each group member into 4 categories:
  - Hospital birth/Doctor Expenses and regular wellness and sick visits without insurance
  - Formula/Food/Diaper Expenses
  - Childcare/Babysitting Expenses
  - Clothes/Furniture/1st Year Necessities
- Include data for each category for 1 year with the total per category and overall, yearly approximate total
- List sources used or references for information found (Are they valid?)

HEALTH SKILLS - PERFORMANCE SCALE – RHDE – HOPE course – Lesson 1

<u>Learning Goal Outcome from State Standards</u>:
Demonstrate ability to comprehend and use concepts for health promotion, disease prevention, interpersonal skills and decision-making to reduce or avoid health risks

<u>Lesson 1 Learning Goal Target</u>:
Explain human reproductive anatomy, organs, systems, functions, including pregnancy and childbirth and the consequences/risks associated

<u>Directions:</u> Using the Performance Scale checklist below. **Start at Level 1**, check off those you can do and work on those you need more practice. Then move up the levels as you build both <u>knowledge and skill competency</u>. Time and practice may be necessary to reach Target Mastery at level 3.

Level	Learning Target Tasks: I can: ✓
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2 This is the **foundational** level tasks, practice of skills, cues, vocabulary needed to get to required goal	○ Explain some consequences or risks associated with teenage pregnancy and childbirth ○ Explain Stages of childbirth ○ Explain trimesters of pregnancy ○ Explain fertilization and the initial process of conception ○ Explain menstruation cycle/phases ○ Explain some male and female reproductive system functions ○ Explain some appropriate male reproductive anatomy ○ Explain some appropriate female reproductive anatomy
1 Beginning cognitive and physical	○ Identify the importance of the endocrine system and hormones ○ Recognize some body functions related to human growth and development ○ Recognize some reproductive anatomy and reproductive system functions ○ Recognize some endocrine system glands, organs and functions

START HERE CHECK OFF THOSE YOU CAN DO