

SECTION

2

Human Reproduction

BEFORE YOU READ

After you read this section, you should be able to answer these questions:

- How are sperm and eggs made?
- How does fertilization occur?
- What problems can happen in the reproductive system?

National Science Education Standards
LS 1d, 1f

What Happens in the Male Reproductive System?

The male reproductive system has two functions:

- to make sperm
- to deliver sperm to the female reproductive system

To perform these functions, organs in the male reproductive system make sperm, hormones, and fluids. The **testes** (singular, *testis*) are a pair of organs that hang outside the body covered by a skin sac called the *scrotum*. They make sperm and *testosterone*, the main male sex hormone.

A male can make millions of sperm each day. Immature sperm cells divide and change shape as they travel through the testes and epididymis. The *epididymis* is a tube attached to the testes that stores sperm as they mature. ✓

Mature sperm pass into the *vas deferens*, which connects the epididymis and urethra. The *urethra* is a tube that runs from the bladder through the penis. The **penis** is the male organ that delivers sperm to the female. Before leaving the body, sperm mixes with a fluid mixture to form *semen*.

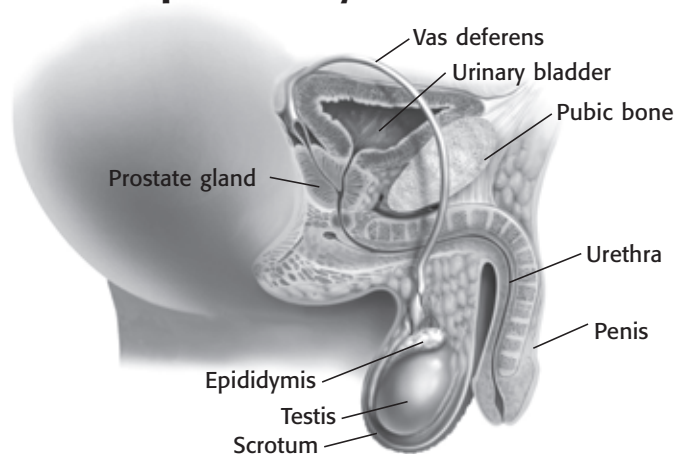


Summarize As you read, create two Process Charts. In the first, describe the path an egg takes from ovulation to fertilization. In the second, describe the path of an egg that does not get fertilized.



1. Identify How many sperm can a male make in one day?

The Male Reproductive System



TAKE A LOOK

2. Identify On the diagram, draw an arrow pointing to the structure that makes sperm.

SECTION 2 Human Reproduction *continued*

What Happens in the Female Reproductive System?

The female reproductive system has three functions: to produce eggs, to protect and nourish developing offspring, and to give birth. Unlike males, who produce new sperm throughout their lives, females have all their eggs when they are born.

Eggs are produced in an **ovary**. Ovaries also release the main female sex hormones: estrogen and progesterone. These hormones control the release of eggs from the ovaries and the development of female characteristics. Females generally have two ovaries.

Math Focus

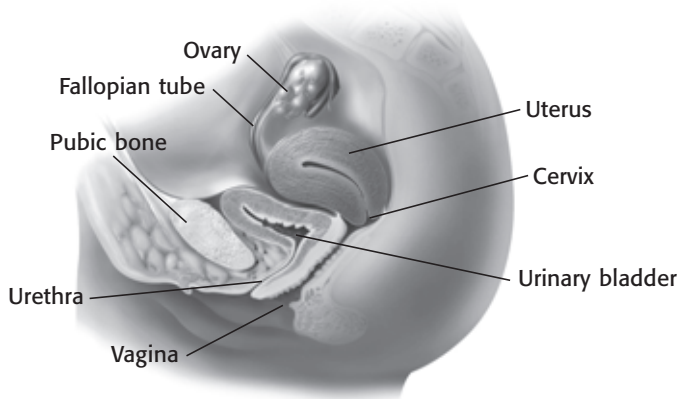
3. Calculate The average woman ovulates each month from about the age of 12 to about the age of 50. How many mature eggs does she release from age 18 to age 50? Assume that she has never been pregnant.

THE EGG'S JOURNEY

During *ovulation* an ovary releases an egg. The egg passes into a *fallopian tube*. The fallopian tube leads from the ovary to the uterus. If sperm are present, fertilization usually takes place in the fallopian tube.

After fertilization, the embryo moves to the uterus and may embed in the thick lining. An embryo develops into a fetus in the **uterus**. When the baby is born, it passes from the uterus and through the vagina. The **vagina** is the canal between the outside of the body and the uterus.

The Female Reproductive System



TAKE A LOOK

4. Identify On the diagram, put a circle around the structure that produces eggs. Put a square around the structure where an embryo develops.

THE MENSTRUAL CYCLE

From puberty through her late 40s or early 50s, a woman's reproductive system goes through the *menstrual cycle*. This cycle of about 28 days prepares the body for pregnancy. An ovary releases an egg at *ovulation*. This happens at around the 14th day of the cycle. If the egg is not fertilized, menstruation begins. *Menstruation* is the monthly discharge of blood and tissue from the uterus.

SECTION 2 Human Reproduction *continued*

What Problems Can Happen in the Reproductive System?

Problems such as disease can cause the reproductive system to fail. When couples cannot have children, they are considered *infertile*. Men are infertile if they do not make enough healthy sperm. Women are infertile if they do not ovulate normally. Reproductive problems are often caused by sexually transmitted diseases and cancers.

SEXUALLY TRANSMITTED DISEASES

A *sexually transmitted disease* (STD) is a disease that can pass from one person to another during sexual contact. STDs are also called *sexually transmitted infections* (STIs). Sexually-active young people have the highest risk for STDs.

One example of an STD is human immunodeficiency virus (HIV), the virus that leads to AIDS. HIV destroys the immune system of the infected person. People with AIDS generally die from infections that are not fatal to people with healthy immune systems. Below is a table showing the most common STDs and how fast they are spreading in the United States.

STD	Approximate number of new cases each year
Chlamydia	3 to 10 million
Genital HPV (human papilloma virus)	5.5 million
Genital herpes	1 million
Gonorrhea	650,000
Syphilis	70,000
HIV/AIDS	40,000 to 50,000

CANCER

Sometimes cancer happens in reproductive organs. *Cancer* is a disease in which cells grow at an uncontrolled rate. In men, the two most common cancers of the reproductive system happen in the testes and prostate gland. In women, two common reproductive cancers are cancer of the cervix and cancer of the ovaries.

STANDARDS CHECK
<p>LS 1f Disease is the breakdown in structures or functions of an organism. Some diseases are the result of intrinsic failures of the system. Others are the result of damage by infection by other organisms.</p>
<p>5. Identify What are two common causes of reproductive problems?</p> <p>_____</p> <p>_____</p>

Critical Thinking

6. Infer In women, some untreated STDs can block the fallopian tubes. How would this affect fertilization?

Say It

Research Use your school library or the internet to research one of the STDs in the chart. What organism or virus causes it? How does it affect the body? What treatments are available? Present your findings to the class.

Section 2 Review

NSES LS 1d, 1f

SECTION VOCABULARY

<p>ovary an organ in the female reproductive system of animals that produces eggs</p> <p>penis the male organ that transfers sperm to a female and that carries urine out of the body</p> <p>testes the primary male reproductive organs which produce sperm and testosterone (singular, <i>testis</i>)</p>	<p>uterus in female placental mammals, the hollow, muscular organ in which an embryo embeds itself and develops into a fetus</p> <p>vagina the female reproductive organ that connects the outside of the body to the uterus</p>
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1. Explain What is the purpose of the menstrual cycle?

2. Organize Complete the chart below to describe the functions or characteristics of structures in the female reproductive system.

Structure	Characteristic or function
	produces eggs; releases female sex hormones
uterus	
fallopian tube	
	canal that connects uterus to the outside

3. Explain What is fertilization and where does it occur?

4. Apply Concepts Fraternal twins are created when two sperm fertilize two different eggs. Paternal, or identical, twins are created when a single egg divides after fertilization. Why are fraternal twins not identical?
