

Name \_\_\_\_\_

Date \_\_\_\_\_

Use with textbook pages 191–193.

## What happens in meiosis?

### Vocabulary

2	fertilization
3	gametes
4	haploid
23	meiosis
46	meiosis I
body cell	meiosis II
chromosome	mitosis
diploid	zygote
embryo	

Use the terms in the vocabulary box to fill in the blanks. You can use each term more than once. You will not need to use every term.

- Female and male organisms produce specialized cells called \_\_\_\_\_ that are necessary for reproduction. Eggs are the \_\_\_\_\_ from female parents. Sperm are the \_\_\_\_\_ from male parents.
- During sexual reproduction, the gametes from the two parents combine during a process called \_\_\_\_\_ to form a new cell called a \_\_\_\_\_.
- As the zygote undergoes repeated \_\_\_\_\_ and cell division, it matures into a(n) \_\_\_\_\_.
- A human diploid body cell has \_\_\_\_\_ pairs of chromosomes.
- Human gamete cells have a total of \_\_\_\_\_ chromosomes. Gametes are said to be \_\_\_\_\_.
- During meiosis, each \_\_\_\_\_ in a cell is duplicated once and then the cell divides twice.
- The first division of the cell is called \_\_\_\_\_, which starts with a diploid cell and finishes with two haploid cells.
- Each of the two haploid cells undergoes a second division called \_\_\_\_\_, which starts with two haploid cells and ends with four haploid cells.
- Meiosis starts with one \_\_\_\_\_ cell and ends with \_\_\_\_\_ haploid cells.

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Use with textbook pages 188-202.

## Meiosis

Match each Term on the left with the best Descriptor on the right. Each Descriptor may only be used once.

Term	Descriptor
1. _____ diploid number	A. matching chromosomes
2. _____ embryo	B. process in which gametes from two parents combine
3. _____ fertilization	C. two sets of chromosomes
4. _____ gametes	D. produces offspring that are genetically different from each other
5. _____ genetic diversity	E. develops from a zygote
6. _____ haploid number	F. new diploid cell formed by the process of fertilization
7. _____ homologous chromosomes	G. the process of mitosis
8. _____ sexual reproduction	H. variety in a species
9. _____ zygote	I. one set of chromosomes
	J. specialized cells; sperm from males and eggs from females

Circle the letter of the best answer.

10. Human body cells have

- A. 17 chromosomes
- B. 23 chromosomes
- C. 46 chromosomes
- D. 92 chromosomes

11. The process of meiosis produces gametes with \_\_\_\_\_ as body cells.

- A. the same number of chromosomes
- B. one quarter the number of chromosomes
- C. half the number of chromosomes
- D. double the number of chromosomes

12. Sexual reproduction

I.	always produces identical offspring
II.	requires two parents
III.	increases genetic diversity

- A. I and II only
- B. I and III only
- C. II and III only
- D. I, II, and III

13. Meiosis I

- A. starts with a diploid cell and ends with two haploid cells
- B. starts with a haploid cell and ends with two diploid cells
- C. starts with two diploid cells and ends with a haploid cell
- D. starts with a two haploid cells and ends with a diploid cell

14. Meiosis II

- A. starts with two haploid cells and ends with four haploid cells
- B. starts with two diploid cells and ends with four haploid cells
- C. starts with four diploid cells and ends with two haploid cells
- D. starts with four haploid cells and ends with two haploid cells

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**Cloze  
Activity**

**Section 6.3**

Use with textbook pages 224–229.

## Types of assisted reproductive technologies

### Vocabulary

artificial insemination	infertility
assisted reproductive technologies	intracytoplasmic sperm injection
embryos	sperm
fallopian tubes	stem cells
gamete intrafallopian transfer	surrogate mother
gametes	uterus
in vitro fertilization	

Use the terms in the vocabulary box to fill in the blanks. You can use each term more than once. You will not need to use every term.

- \_\_\_\_\_ is the inability of a couple to have a baby.
- Most \_\_\_\_\_ include removing egg cells from a woman's body, fertilizing them, and placing one or more embryos in the uterus.
- The \_\_\_\_\_ is the organ in a female mammal, such as a human, in which an embryo develops and is nourished before birth.
- Techniques for collecting \_\_\_\_\_ from a male and injecting it into a female were first developed for animals more than 200 years ago.
- \_\_\_\_\_ is a very specialized procedure in which a single sperm cell is injected into an egg cell. The fertilized egg is then injected into the mother's \_\_\_\_\_.
- In \_\_\_\_\_, egg cells are removed from a woman's ovaries and combined with sperm cells. The mixture of eggs and sperm is then injected into the mother's \_\_\_\_\_ so an egg cell may be fertilized.
- Sometimes, one or both \_\_\_\_\_ may be provided so a \_\_\_\_\_ can become pregnant and give birth to a child for someone else to raise.
- In \_\_\_\_\_, a woman's egg cell is placed in a petri dish, and then sperm are injected into the dish.
- Embryos are a source of \_\_\_\_\_ that could be used to help cure diseases or regrow impaired or lost organs.

## Asexual Reproduction

Textbook pages 166-183

### Before You Read

What kinds of organisms reproduce by making exact copies of the parent organism? Give three or four examples on the lines below.

\_\_\_\_\_

\_\_\_\_\_

#### Create a Quiz

After you have read this section, create a five-question quiz based on what you have learned. After you have written the questions, be sure to answer them. Then share them with your classmates.

#### What is asexual reproduction?

Asexual reproduction is the formation of a new individual that has the same genetic information as its parent. The individual is a clone, or an exact copy, of its parent. Asexual reproduction occurs in one-celled organisms such as bacteria and in multicellular organisms such as plants.

#### What types of asexual reproduction are there?

There are several types of asexual reproduction, as shown in the table below.

Type of asexual reproduction	Definition	Examples of organisms that use this form of reproduction
<b>binary fission</b>	the splitting of a single parent cell into two equal parts that have the same copies of genetic material	<ul style="list-style-type: none"> <li>• some kinds of bacteria</li> <li>• amoeba</li> </ul>
<b>budding</b>	a group of rapidly dividing cells develops on an organism and breaks away to become a new organism	<ul style="list-style-type: none"> <li>• some simple multicellular organisms such as hydras and sponges</li> <li>• one-celled yeasts</li> </ul>
<b>fragmentation</b>	a small piece of an organism breaks away from it and develops into a new individual	<ul style="list-style-type: none"> <li>• some plants, such as mosses and liverworts</li> <li>• some animals, such as some sea stars and corals</li> </ul>
<b>spore formation</b>	parent organism produces spores: single cells that can develop into new individuals by repeated mitosis	<ul style="list-style-type: none"> <li>• common in fungi</li> <li>• some plants and algae</li> </ul>
<b>vegetative reproduction</b>	special cells, usually in the stems and roots of plants, divide repeatedly to form structures that develop into a plant that is identical to the parent	<ul style="list-style-type: none"> <li>• very common in most kinds of plants</li> </ul>

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**Cloze  
Activity**

**Section 5.2**

Use with textbook pages 166–178.

## Types of asexual reproduction

### Vocabulary

asexual reproduction  
binary fission  
budding  
clone  
cuttings  
DNA

fragmentation  
grafts  
spore formation  
stem cells  
vegetative reproduction

Use the terms in the vocabulary box to fill in the blanks. You can use each term more than once. You will not need to use every term.

1. A \_\_\_\_\_ is an identical genetic copy of its parent.
2. In \_\_\_\_\_, only one parent is required to produce offspring.
3. \_\_\_\_\_ is a method of reproduction for some types of bacteria.
4. Some simple organisms, such as hydras and sponges, are able to reproduce asexually by \_\_\_\_\_.
5. Certain species of sea stars, corals, and mosses can reproduce asexually by \_\_\_\_\_.
6. \_\_\_\_\_ occurs when special cells in the stems and roots divide repeatedly to form structures that eventually develop into a plant identical to the parent.
7. Some bacteria can reproduce asexually when their single cells split in two, forming new individuals in a process called \_\_\_\_\_.
8. Human-assisted cloning can be used to save the \_\_\_\_\_ of an organism or mass produce an organism with a desired trait.
9. \_\_\_\_\_ are cells that have the potential to become many different types of cells.

Use with textbook pages 166–178.

## Asexual reproduction

Match each Term on the left with the best Descriptor on the right. Each Descriptor may be used only once.

Term	Descriptor
1. _____ asexual reproduction	<b>A.</b> reproductive cells that develop into new individuals by repeated mitosis
2. _____ binary fission	<b>B.</b> a group of rapidly dividing cells develops on an organism and breaks away to become a new organism
3. _____ budding	<b>C.</b> a form of asexual reproduction in which each fragment of an organism develops into a clone of its parent
4. _____ clone	<b>D.</b> single parent cell splits into two equal parts that have the same copies of genetic material
5. _____ fragmentation	<b>E.</b> an identical genetic copy of an organism's parent
6. _____ spores	<b>F.</b> only found in human embryos
7. _____ vegetative reproduction	<b>G.</b> reproduction that requires only one parent
	<b>H.</b> root cells divide repeatedly to form structures that develop into a plant that is identical to the parent

Circle the letter of the best answer.

8. Asexual reproduction requires

- A.** only one parent to produce offspring
- B.** two parents to produce offspring
- C.** a combination of parents to produce offspring
- D.** two clones to produce offspring

9. Bacteria reproduce asexually by

- A.** budding
- B.** fragmentation
- C.** binary fission
- D.** cloning

10. Stem cells have the potential to

- A.** divide rapidly
- B.** increase the amount of DNA
- C.** become many different types of cells
- D.** invade other types of cells

11. During the process of cloning, scientists

- A.** add more DNA to the parent cell
- B.** remove the nucleus from an egg cell
- C.** remove cytoplasm from an egg cell
- D.** allow the egg cells to bud

12. One of the key advantages of asexual reproduction is

- A.** offspring compete for food and space
- B.** large numbers of offspring reproduce quickly
- C.** extreme temperatures can wipe out entire colonies
- D.** offspring are genetic clones

13. One of the disadvantages of asexual reproduction is

- A.** species cannot survive when predators increase
- B.** large colonies can out-compete other organisms for nutrients and water
- C.** large numbers of offspring reproduce very slowly
- D.** extreme temperatures can wipe out entire colonies