

## Unit 6 Vocabulary - Reproduction

1. Reproduction	
2. Asexual Reproduction	
3. Sexual Reproduction	
4. Internal Fertilization	
5. External Fertilization	
6. Gametes	
7. Zygote	
8. Offspring	
9. Gonads	Example (Male):                      Example (Female):
10. Meiosis	
11. Mitosis	
12. IPMAT	
13. Sex Cells	
14. Body Cells (SOMATIC)	
15. Daughter Cells	
16. Haploid Cell	
17. Diploid Cell	
18. Chromosome	

## Unit 6 - Reproduction

Reproduction is when organisms

- (living things) \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_

### I. Asexual reproduction

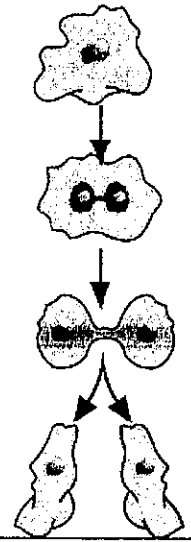
- Does NOT \_\_\_\_\_
- Only \_\_\_\_\_
- Offspring is \_\_\_\_\_ to the parent
- Ex. Binary fission (\_\_\_\_\_), \_\_\_\_\_, regeneration, etc.

### Asexual Reproduction (continued)

- New Organisms \_\_\_\_\_
- Offspring have characteristics (\_\_\_\_\_) \_\_\_\_\_
- Done by \_\_\_\_\_
- NO \_\_\_\_\_

### How do body cells multiply?? MITOSIS

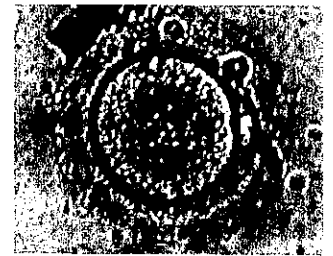
- Cells multiply by \_\_\_\_\_
- MITOSIS - \_\_\_\_\_
- See animations



### II. Sexual reproduction

- Sex Cells \_\_\_\_\_
- TWO \_\_\_\_\_ (\_\_\_\_\_ and \_\_\_\_\_)
- \_\_\_\_\_

They SHARE traits from both parents EX. Labradoodle



### III Fertilization

- The union of \_\_\_\_\_ (\_\_\_\_\_) and \_\_\_\_\_ (male).
- These cells are also called \_\_\_\_\_.
- Fertilization may be:
  - External: \_\_\_\_\_
    - Fish, Amphibians (water environment)
    - \_\_\_\_\_ (ex. NEMO)

- Internal: \_\_\_\_\_
  - Reptiles, \_\_\_\_\_, \_\_\_\_\_
  - FEWER eggs, \_\_\_\_\_

IV How are SEX CELLS MADE? (MEIOSIS)

- \_\_\_\_\_ (aka GAMETES) \_\_\_\_\_
- Human body cells have \_\_\_\_\_
- Human EGG CELLS \_\_\_\_\_
- Human SPERM CELLS \_\_\_\_\_
- EGG + SPERM = \_\_\_\_\_

which eventually becomes a BABY (Embryo, fetus, baby)

**MEIOSIS: the name of cell division that results in sex cells**

Mitosis vs. Meiosis

**Mitosis**

- Has \_\_\_\_\_ division
- results in \_\_\_\_\_ " \_\_\_\_\_ "
- \_\_\_\_\_ as the parent cell.

**Meiosis**

- Has 2 divisions
- results in \_\_\_\_\_
- Each sex cell has HALF \_\_\_\_\_

● \_\_\_\_\_ is the process that aids in the \_\_\_\_\_ for growth and \_\_\_\_\_ (ex. cut on toe!)

● \_\_\_\_\_ is the process that aids in the production of \_\_\_\_\_

**Body Cells**

1. Every cell in your body has \_\_\_\_\_

2. You receive a set of 23 from your mother's egg and a matching set of 23 from your father's sperm (haploid).

3. These chromosomes \_\_\_\_\_

# Sex Cells

1. Sex cells - \_\_\_\_\_

a cellular division process that is DIFFERENT from MITOSIS

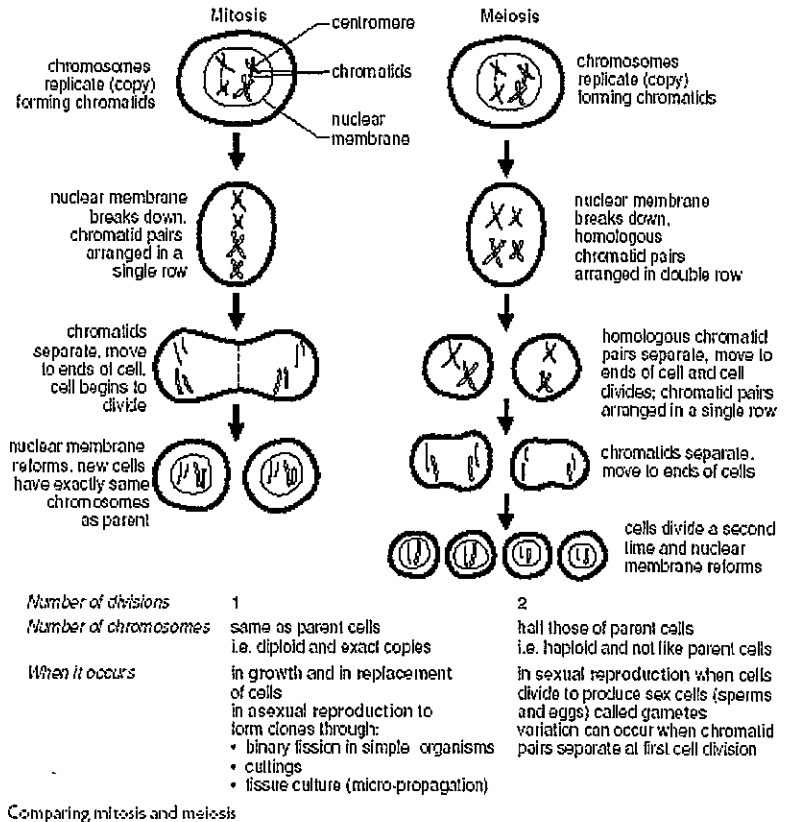
2. Meiosis - Produces new cells with HALF the

a. When the sex cells are made, the chromosomes are copied once and the nucleus divides twice

b. The resulting sperm and egg \_\_\_\_\_

## Mitosis vs. Meiosis

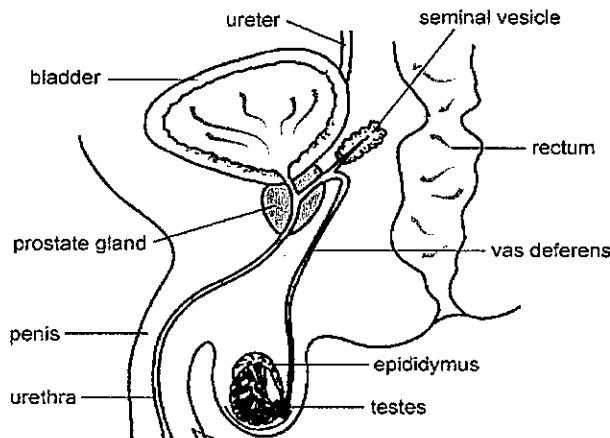
	Body Cell Production	Sex Cell Production
<b>Role</b>		
<b>Where Process Occurs</b>		
<b>Number of chromosomes in new cells</b>		
<b>How many new cells are created?</b>		
<b>Significance (Importance)</b>		
<b>Name of Process</b>		



**Male Reproductive System :** the main function of the male reproductive system is to \_\_\_\_\_

1. **Testicle (testes)** - pair of \_\_\_\_\_ contained in small pouch called the **scrotum** produce \_\_\_\_\_ and \_\_\_\_\_
2. **Urethra** - tube which carries semen and millions of sperm runs thru the penis outside of the body

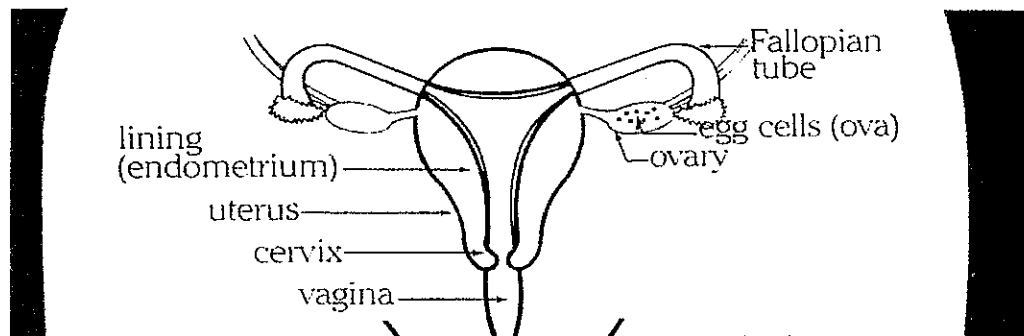
**Male Reproductive System Diagram** [http://www.prodigy.nhs.uk/patient\\_information/diagrams/male\\_reproductive\\_system\\_diagram.jpg](http://www.prodigy.nhs.uk/patient_information/diagrams/male_reproductive_system_diagram.jpg)



**Female Reproductive System :** the main function is to \_\_\_\_\_

1. **Ovary (Ovaries)** - pair of \_\_\_\_\_ located in the abdominal cavity close to the \_\_\_\_\_
  - a. Produce \_\_\_\_\_ (release 1 mature OVUM per month) and \_\_\_\_\_ (female hormone)
    - i. OVUM - \_\_\_\_\_ - 1 EGG
2. **Uterus** - \_\_\_\_\_ Fallopian tubes lead to the uterus
3. **Cervix** - muscular ring at the bottom of the uterus
4. **Vagina (birth canal)**- tube that connects \_\_\_\_\_

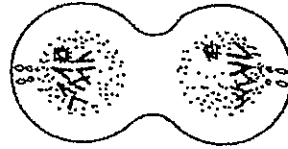
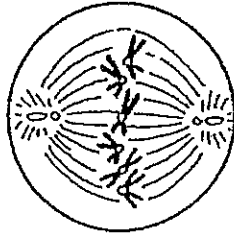
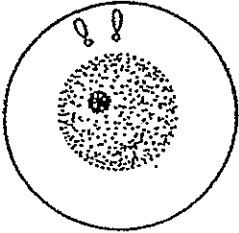
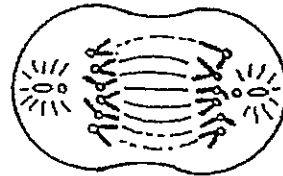
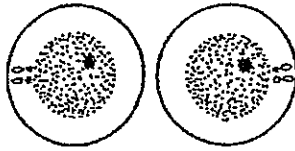
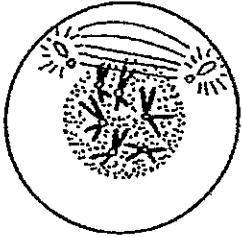
**Female Reproductive System Diagram** <http://www.heumann.org/body.of.knowledge/m2/female.jpg>



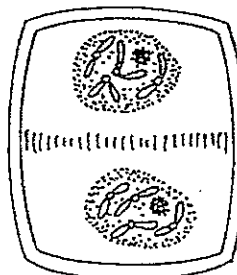
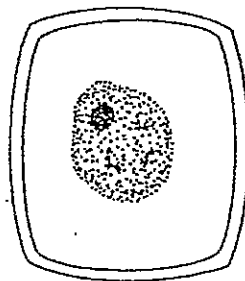
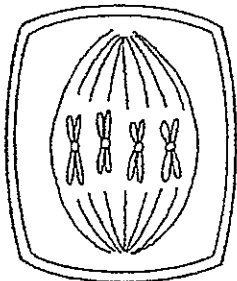
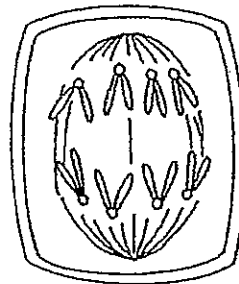
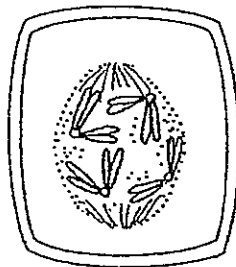
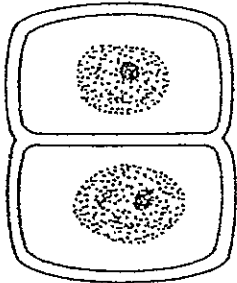
# STAGES OF MITOSIS

Name \_\_\_\_\_

Number the following six diagrams of the stages of mitosis in animal cells in the proper order. Label each stage with the proper name.



Do the same for the following diagrams of mitosis in plant cells.



6

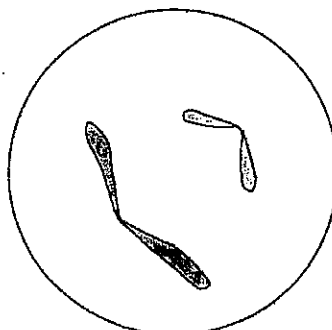
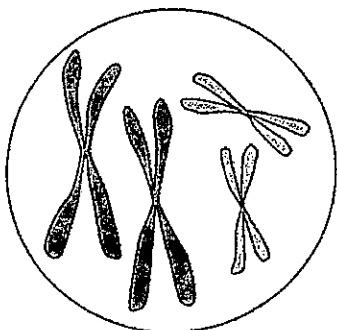
## 3-2 What is meiosis?

### Lesson Review

**PART A** Complete the following.

1. What is a gamete? \_\_\_\_\_
2. What is meiosis? \_\_\_\_\_
3. What are the two kinds of gametes? \_\_\_\_\_
4. List the stages of Meiosis Part 1 in order. \_\_\_\_\_

**PART B** Study the diagrams below. Identify which diagram is the gamete and which diagram is the body cell in the spaces provided. Then, answer the question.

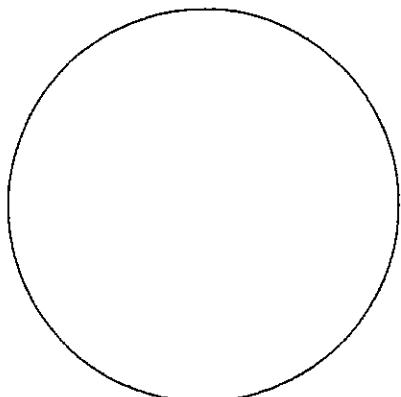


1. \_\_\_\_\_
  2. \_\_\_\_\_
3. Why did you classify each cell nucleus as you did? \_\_\_\_\_

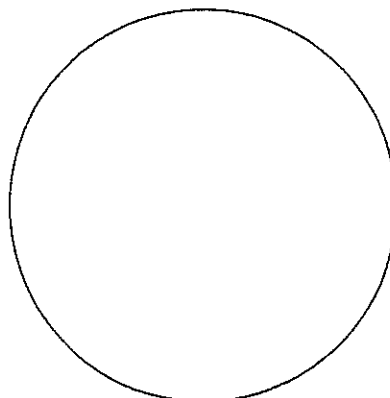
### Skill Challenge

**Skills:** diagramming, applying concepts, calculating

In the space provided, draw the chromosomes in the nucleus of a fruit fly gamete and the chromosomes in the nucleus of a bullfrog gamete. Fruit flies have 8 chromosomes in each body cell. Bullfrogs have 26 chromosomes in each body cell.



Nucleus of a Fruit Fly Gamete



Nucleus of a Bullfrog Gamete

Name: \_\_\_\_\_ Date: \_\_\_\_\_

**Mitosis and Meiosis: Reinforcement Activity****To the student observer:** Why do you think chromosomes are copied during cell division?

\_\_\_\_\_

\_\_\_\_\_

**Analyze:** Is cell division a form of reproduction? Explain. \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

**Directions:** Complete the following sentences.

1. \_\_\_\_\_ is the process by which cells reproduce body cells.
2. In mitosis, the nucleus \_\_\_\_\_ first, and then the cytoplasm.
3. During cell division, each chromosome makes an exact \_\_\_\_\_ of itself.
4. The two new cells that are formed by mitosis are called \_\_\_\_\_  
\_\_\_\_\_.
5. Each body cell contains the same number of \_\_\_\_\_.
6. Reproductive cells are called \_\_\_\_\_.
7. \_\_\_\_\_ or \_\_\_\_\_ are produced by meiosis.
8. Gametes contain \_\_\_\_\_ the number of chromosomes of the body cells.
9. Humans have \_\_\_\_\_ chromosomes in their body cells, and \_\_\_\_\_ chromosomes in their reproductive cells.
10. During mitosis, the nucleus divides \_\_\_\_\_, and during meiosis, the nucleus divides \_\_\_\_\_.

Match the phase of mitosis to its proper description.

- |  |               |
|--|---------------|
| _____ 1. Chromosomes make exact copies of themselves.            | A. Interphase |
| _____ 2. Nucleus disappears, and fibers stretch across the cell. | B. Prophase   |
| _____ 3. Nuclear membranes return, and the cell pinches apart.   | C. Metaphase  |
| _____ 4. Paired chromosomes line up in the middle of the cell.   | D. Anaphase   |
| _____ 5. Paired chromosomes tugged to opposite ends of the cell. | E. Telophase  |

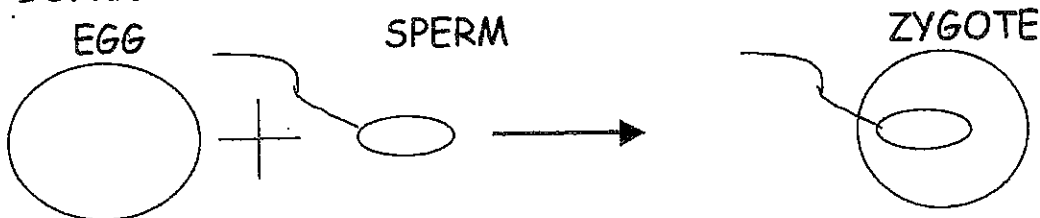


NAME \_\_\_\_\_ DATE \_\_\_\_\_ PER \_\_\_\_\_

USE THE TERMS MEIOSIS OR MITOSIS TO ANSWER THE FOLLOWING QUESTIONS:

1. TWO CELLS ARE PRODUCED \_\_\_\_\_
2. PRODUCES EGGS \_\_\_\_\_
3. PRODUCES CELLS WITH  $\frac{1}{2}$  THE CHROMOSOMES AS THE ORIGINAL \_\_\_\_\_
4. PRODUCES SPERM \_\_\_\_\_
5. SKIN CELLS ARE MADE THIS WAY \_\_\_\_\_
6. RESULTS IN THE GROWTH OF THE ORGANISM \_\_\_\_\_
7. PRODUCES CELLS WITH THE SAME NUMBER OF CHROMOSOMES AS THE ORIGINAL \_\_\_\_\_
8. FOUR CELLS MAY BE PRODUCED \_\_\_\_\_
9. OCCURS IN THE GONADS \_\_\_\_\_
10. PRODUCES TWO CELLS  $\frac{1}{2}$  THE SIZE OF THE ORIGINAL \_\_\_\_\_

BONUS: WHAT IS THIS PROCESS CALLED? \_\_\_\_\_



Name \_\_\_\_\_

Class \_\_\_\_\_

Date \_\_\_\_\_

### What are the parts of the female reproductive system?

#### Lesson Review

24C - Ch.19

Match each term in Column B with its description in Column A. Write the correct letter in the space provided.

#### Column A

- 1. birth canal
- 2. narrow end of the uterus
- 3. organ in which an embryo develops
- 4. long tube between the ovary and the uterus
- 5. female sex cells
- 6. organs that produce sex cells

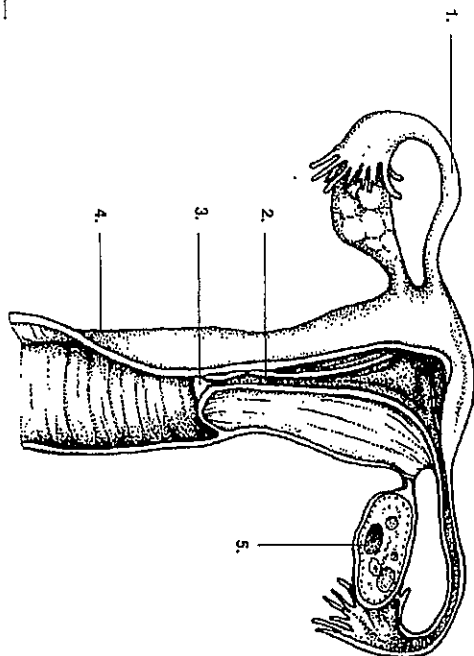
#### Column B

- a. oviduct
- b. uterus
- c. cervix
- d. ovaries
- e. eggs
- f. vagina

#### Skill Challenge

Skills: identifying, labeling

Label the parts of the female reproductive system in the spaces provided. Use the labels: ovary, oviduct, vagina, cervix, and uterus.



- 1. \_\_\_\_\_
- 2. \_\_\_\_\_
- 3. \_\_\_\_\_
- 4. \_\_\_\_\_
- 5. \_\_\_\_\_

### What are the parts of the male reproductive system?

#### Lesson Review

PART A Match each term in Column B with its description in Column A. Write the letter of the correct term in the space provided.

#### Column A

- 1. pocket of skin that holds the testes
- 2. tube that carries sperm and urine to the outside of the male's body
- 3. organs of the male reproductive system that produce hormones and sperm
- 4. coiled tube that stores sperm
- 5. hormone produced in the testes

#### Column B

- a. testosterone
- b. urethra
- c. epididymis
- d. scrotum
- e. testes

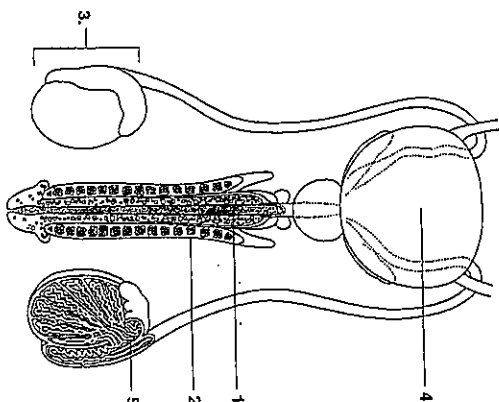
#### PART B Complete the following.

- 1. What is the job of testosterone? \_\_\_\_\_
- 2. How does the function of the urethra differ in males and females? \_\_\_\_\_
- 3. To what two body systems does the urethra belong in males? \_\_\_\_\_

#### Skill Challenge

Skills: labeling, identifying

Label the parts of the male reproductive system in the spaces provided. Use these labels: bladder, epididymis, penis, testis, and urethra.



- 1. \_\_\_\_\_
- 2. \_\_\_\_\_
- 3. \_\_\_\_\_
- 4. \_\_\_\_\_
- 5. \_\_\_\_\_

# HUMAN REPRODUCTION

## Reproductive Organs

Match the letters of the parts of the reproductive organs with the functions listed below.

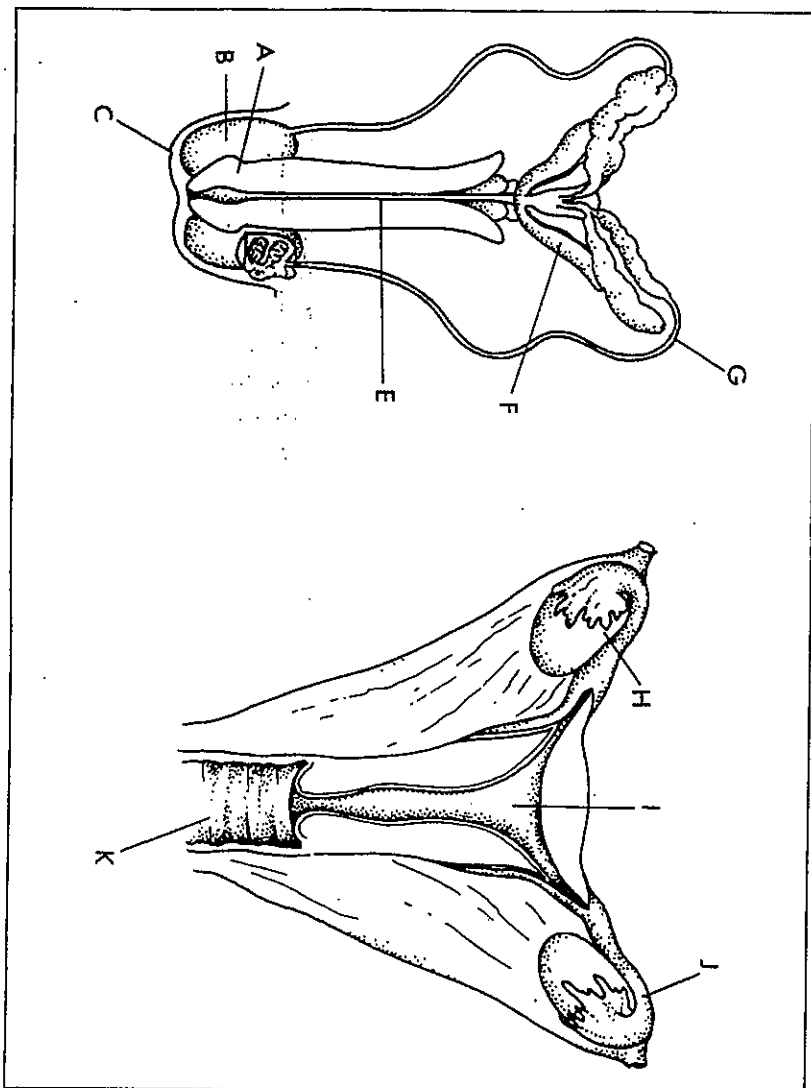


FIGURE 19-1

FIGURE 19-2

1. Where embryo develops \_\_\_\_\_
2. Secretes fluid that helps sperm to swim \_\_\_\_\_
3. Produces sperm \_\_\_\_\_
4. Takes sperm to glands that secrete fluid \_\_\_\_\_
5. Tube through which sperm leave the body \_\_\_\_\_
6. Produces eggs \_\_\_\_\_

7. Where sperm are deposited \_\_\_\_\_
8. Where fertilization occurs \_\_\_\_\_
9. External sac that encloses the testes \_\_\_\_\_
10. Where placenta forms \_\_\_\_\_

**Fertilization:**  
Examine Figures 3 through 6. These figures show diagrams of the female reproductive systems.

Some of these diagrams include sperm and eggs....

- A) Write "yes" OR "no" if fertilization can take place....
- B) Explain why fertilization could or could not take place.

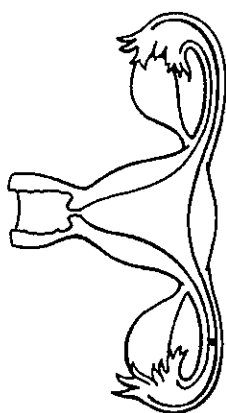


Figure 3

A) \_\_\_\_\_  
B) \_\_\_\_\_

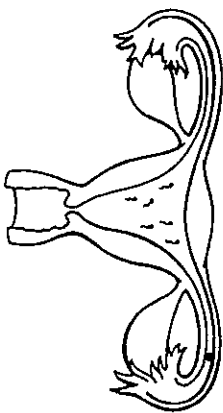


Figure 4

A) \_\_\_\_\_  
B) \_\_\_\_\_

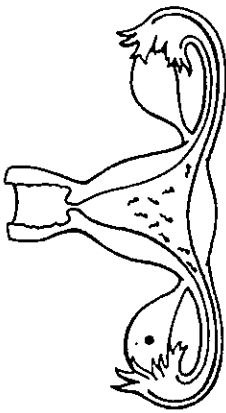


Figure 5

A) \_\_\_\_\_  
B) \_\_\_\_\_

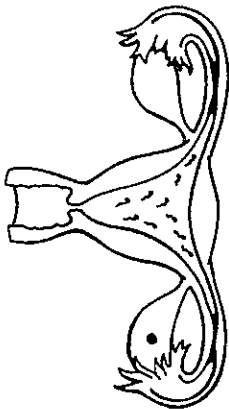


Figure 6

A) \_\_\_\_\_  
B) \_\_\_\_\_

**TRUE OR FALSE**

In the space provided, write "true" if the sentence is true. Write "false" if the sentence is false.

1. The chromosomes of body cells are paired. \_\_\_\_\_
2. The process by which gametes form is meiosis. \_\_\_\_\_
3. A human body cell has 23 chromosomes. \_\_\_\_\_
4. In sexual reproduction, an offspring inherits traits from only one parent. \_\_\_\_\_
5. Fertilization links the chromosomes of gametes. \_\_\_\_\_
6. Every organism has the same number of chromosomes. \_\_\_\_\_
7. Spindle fibers form twice during meiosis. \_\_\_\_\_
8. A gamete has the same number of chromosomes as a body cell. \_\_\_\_\_
9. A gamete has twice the number of chromosomes as a body cell. \_\_\_\_\_
10. A frog gamete has 13 chromosomes. Every frog body cell, then, has 26 chromosomes. \_\_\_\_\_

**FILL IN THE BLANK**

Complete each statement using a term or terms from the list below. Write your answers in the spaces provided.

- |         |         |           |
|---------|---------|-----------|
| one set | parent  | just like |
| half    | traits  | paired    |
| two     | meiosis |           |

1. In asexual reproduction there is only one \_\_\_\_\_.
2. In asexual reproduction, \_\_\_\_\_ of chromosomes is passed on from parent to offspring.
3. In asexual reproduction, offspring are \_\_\_\_\_ the parent.
4. In sexual reproduction, there are \_\_\_\_\_ parents. Offspring inherit \_\_\_\_\_ from both parents.

5. Gamete cells are produced by cell division called \_\_\_\_\_.
6. A sperm or egg cell has only \_\_\_\_\_ as many chromosomes as a body cell.
7. Chromosomes in a body cell are \_\_\_\_\_.

**MORE ABOUT MEIOSIS**

Scientists often study fruit flies because they have large chromosomes whose genes are easy to see.

- Every body cell of a fruit fly has 8 chromosomes.
- Every fruit fly gamete (sperm or egg) has 4 chromosomes.

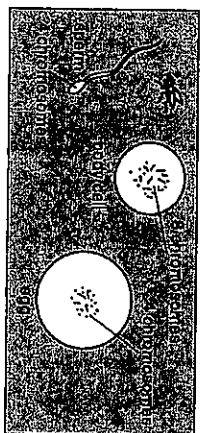


Figure G

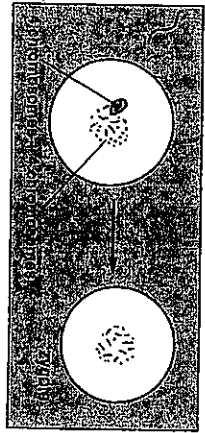


Figure H A sperm fertilizes an egg.

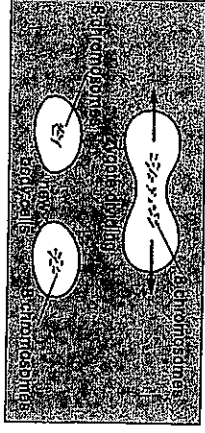


Figure I The zygote divides. Then each new cell divides.

**REACHING OUT**

Why must a gamete have only one half the number of chromosomes found in body cells?

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

Name \_\_\_\_\_

**DO NOW: Mitosis vs. Meiosis**

1. Mitosis is cell division of \_\_\_\_\_ cells.
2. What are somatic cells? \_\_\_\_\_
3. How many daughter cells are produced by mitosis? \_\_\_\_\_ Meiosis? \_\_\_\_\_
4. What are the phases of Mitosis? \_\_\_\_\_
5. Which phase has chromosomes lining up in the center of the cell? \_\_\_\_\_
6. Which phase has the chromosomes being replicated? \_\_\_\_\_
7. What is cytokinesis? \_\_\_\_\_
8. What are gametes? \_\_\_\_\_
9. How are gametes produced? \_\_\_\_\_
10. How is a zygote formed? \_\_\_\_\_
11. How many chromosomes are in a human somatic cell? \_\_\_\_\_
12. How many chromosomes are in a human gamete? \_\_\_\_\_
13. Define diploid \_\_\_\_\_
14. Which process is "diploid?" \_\_\_\_\_
15. Define haploid \_\_\_\_\_
16. Which process is "haploid?" \_\_\_\_\_
17. Which process is asexual reproduction? \_\_\_\_\_
18. Which process is sexual reproduction? \_\_\_\_\_
19. Which process has two divisions which produce 4 daughter cells? \_\_\_\_\_
20. Which process has one division which produces 2 daughter cells? \_\_\_\_\_
21. Which process has daughter cells that are identical to the parent? \_\_\_\_\_
22. Which process has daughter cells that are NOT identical to the parent? \_\_\_\_\_
23. Which process involves duplication of chromosomes? \_\_\_\_\_
24. Which process is the chromosome number halved? \_\_\_\_\_
25. Which process is the chromosome number maintained? \_\_\_\_\_
26. How does the zygote cell divide once it is formed? \_\_\_\_\_

## Reproduction Review

### Asexual Reproduction

- Define
- How many parents?
- How do the offspring compare to the parents?
- What is budding? What is regeneration?

### Sexual Reproduction

- Define
- How many parents?
- How do the offspring compare to the parents?

### Chromosome

- Why is it important?

### Mitosis

- Describe the process of mitosis
- Name the different stages and know the characteristics of each
- In what cells does it occur?
- Determine the results (# of chromosomes) of mitosis and why is it needed
- How many divisions are there?
- How many cells result from mitosis?
- How do the chromosomes line up during the metaphase stage?

### Meiosis

- Describe the process of meiosis
- In what cells does it occur?
- Determine the results (# of chromosomes) of meiosis and why it is needed
- Determine where and when meiosis occurs
- How many divisions are there?
- How many cells result from meiosis?
- How do the chromosomes line up during the metaphase stage?

### Internal Fertilization

- Where does it occur?
- How many eggs are produced? Why?
- What type of environment is needed?
- Why is there a high survival rate?

### External Fertilization

- Where does it occur?
- How many eggs are produced? Why?
- What type of environment is needed?
- Why is there a lower survival rate?

### Body Cells and Sex Cells

- Compare and contrast

### Sperm and Egg

- Compare and contrast

### Plant Reproduction

- What are two types of pollination?

### Human Reproduction

- Male Reproductive System
- \*What is the male gonad called?

- \*What is the male gamete called?
- \*Where is sperm produced?
- \*What is semen?
- Female Reproductive System
- \*What is the female gonad called?
- \*What is the female gamete called?
- \*Where are eggs produced?
- \*Where does fertilization occur?

TRUE OR FALSE

*In the space provided, write "true" if the sentence is true. Write "false" if the sentence is false.*

- \_\_\_\_\_ 1. Chromosomes determine what characteristics a living thing will have.
- \_\_\_\_\_ 2. The division of the nucleus is called mitosis.
- \_\_\_\_\_ 3. Cell division is a form of sexual reproduction.
- \_\_\_\_\_ 4. Mitosis produces cells that are different from one another.
- \_\_\_\_\_ 5. Daughter cells formed by cell division look exactly alike.
- \_\_\_\_\_ 6. The cell membrane controls cell division.
- \_\_\_\_\_ 7. All cells are body cells except sex cells.
- \_\_\_\_\_ 8. Each of your body cells has two sets of 23 chromosomes.
- \_\_\_\_\_ 9. Animal and plant cells divide in the same way.
- \_\_\_\_\_ 10. Mitosis happens only in organisms that reproduce asexually.

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