**2 Types of Reproduction**

**U5-1**

**Reproduction! Sex or Not?**

*Use Page 17—3rd paragraph “Reproduction” to answer the following questions.*

1. What process do organisms use to make more of themselves (new organisms)?
2. What are the two types of reproduction?
3. Use your book to write the definition of **SEXUAL REPRODUCTION** in your notes (page 17).
4. How many parents are required during sexual reproduction?
5. Use your book to write the definition of **ASEXUAL REPRODUCTION** in your notes (page 17).
6. How many parents are required during asexual reproduction?

**WHO are we even talking about?!**

What organisms even participate in this asexual reproduction that only requires ONE parent? Do humans or other complex or simple animals make babies this way? No! We all know that it “takes two to tango” for animals like humans and lions and dogs and birds. So which types of organisms can make babies that are identical to themselves without the help of a mate? There are a few types of organisms that usually do ASEXUAL REPRODUCTION, make identical copies of themselves: bacteria and fungi. But wait! Plants can too! So each of these three types of organisms: bacteria, fungi and plants can make identical copies (clones) of themselves.

1. What three types of organisms can undergo asexual reproduction?
2. How many parent cells are involved in asexual reproduction that does NOT require a mate?
3. Describe how the organism (baby) produced during asexual reproduction compares to the parent in one sentence.

**Compare and contrast sexual and asexual reproduction below:**

Put the following words into the appropriate part of the venn diagram:

* 1parent
* 2 parents
* Identical (clones)
* Variation (differences)
* Humans
* Bacteria
* Plants

**Asexual**

**Sexual**

**Let’s talk about SEX!**

**U5-2**

**Purpose:** to create genetically \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ offspring!

**Gametes:**sex cells that come together to make a \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_(fertilized egg)

**2 types!:**

|  |  |
| --- | --- |
| **Egg** | **Sperm** |
| **Females** | **Males** |

**Haploid vs. Diploid**

**Diploid (2N):** all of your “\_\_\_\_\_\_\_\_\_\_\_\_” cells aka: body cells; \_\_\_\_ chromosomes

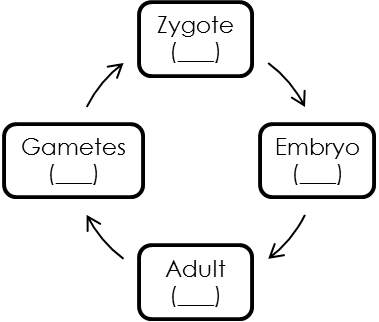
**Haploid cells (N)**: \_\_\_\_\_\_\_\_\_\_\_\_ & \_\_\_\_\_\_\_\_ ; \_\_\_ chromosomes (\*\*think **ha**ploid means **ha**lf\*\*)

Classify the following as **haploid** or **diploid**.

* N
* 2n
* Sperm
* Egg
* Zygote (fertilized egg)
* Liver cell
* Heart cell
* Nerve cell
* Muscle cell
* Embryo

|  |  |
| --- | --- |
| **haploid** | **diploid** |
|  |  |

**Sexual Life Cycle**



Process:

Process:

Process:

Process:

**U5-3**

**Mitosis & Meiosis**

(1 cell 🡪 2 cells) (1 cell 🡪 4 gametes)

|  |  |  |
| --- | --- | --- |
| **Type of Reproduction** | Asexual |  |
| **Used for?** |  | Sexual reproduction |
| **Starts with?** | 1 diploid cell (\_\_\_\_\_) | 1 diploid cell (2n) |
| **Makes?** | 2 \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ diploid cells | 4 haploid (n) \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |
| **# of Divisions?** |  | 2 |
| **Variation? (Genetic Difference)** | NO |  |
|  |  | Description: http://www.daviddarling.info/images/meiosis.jpg |

**Practice: Mitosis & Meiosis**

*Use the following chart to compare and contrast mitosis and meiosis:*

|  |  |  |
| --- | --- | --- |
|  | **MITOSIS** | **MEIOSIS** |
| Chromosome number stays the same |  |  |
| Chromosome number divides in half |  |  |
| DNA must first replicate |  |  |
| Takes place in somatic (body) cells |  |  |
| Takes place in sex cells |  |  |
| Divides once |  |  |
| Divides twice |  |  |
| Makes 2 cells |  |  |
| Makes 4 cells |  |  |
| Used for sexual reproduction |  |  |
| Used for asexual reproduction |  |  |
| Cells made are different from their parent cells |  |  |
| Cells made are identical to their parent cells |  |  |
| Used for growth |  |  |
| Used only for reproduction |  |  |
| If you start with 40 chromosomes, you end with 20 chromosomes |  |  |
| If you start with 40 chromosomes, you end with 40 chromosomes |  |  |
| Makes gametes |  |  |
| Makes daughter cells |  |  |
| Makes haploid cells |  |  |
| Makes diploid cells |  |  |

*Complete the graphic organizer:*

**U5-4**

**Word bank:**

Plant

Bacteria

Fungi

1

2

2

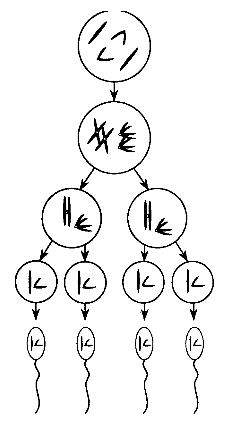
4

Sexual

Asexual

Mitosis

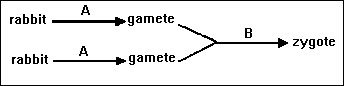
Meiosis



***EOC Practice***

|  |  |
| --- | --- |
| 1. During normal meiotic division of a diploid cell, the change in chromosome number that occurs is represented as  A. 4n🡪 n C. 2n🡪4n  B. 2n 🡪n D. n🡪½ n | 5. A cell with a diploid chromosome number of 12 divided two times, producing 4 cells with 6 chromosomes in each. The process that produced these four cells was most likely  A. Internal fertilization  B. Asexual reproduction  C. Mitotic cell division  D. Meiotic cell division |
| 2. Which term best describes the type of cell division in which parent cells produce daughter cells with the same number of chromosomes as the parent cells?   1. Mitosis C. Spermatogeneis 2. Meiosis D. Oogenesis |
| 3. Which is a true statement about normal diploid cells?  A. They contain only one chromosome of each homologous pair  B. They contain only half the number of chromosomes as a gamete  C. They contain homologous pairs of chromosomes  D. They contain chromosomes that are all of equal length | 6. Which process is represented by  the diagram to the right?  A. meiosis and fertilization  B. Mitosis and fertilization  C. Mitosis and Binary fission  D. Vegetative propagation |
| 4. If a sperm cell in a dog has 40 chromosomes, how many chromosomes will be found in its liver cells?  A. 10 B. 40 C. 80 D. 20  9. The diagram below represents chromosomes in a zygote. Which diagram best illustrates the daughter cells that result from normal mitotic division of this zygote?    A.  C.  B.  D. | 7. Radiation has caused a mutation in the DNA of a bird. This change will most likely be passed on to its offspring if the mutation occurs in its:  A. Sperm cell C. Feather cell  B. Skin cell D. Nerve cell |
| 8. Mitosis and meiosis are similar because both processes   1. Produce diploid gametes from haploid cells 2. Involve the formation of chromosomes 3. Make 4 cells 4. Involve the replication of DNA before division   14. Which sequence represents the correct order of processes that result in the formation and development of an embryo?  A. fertilization 🡪 meiosis 🡪 mitosis  B. fertilization 🡪 mitosis 🡪 meiosis  C. meiosis 🡪 fertilization 🡪 mitosis  D. mitosis 🡪 fertilization 🡪 meiosis   1. Analyze the diagram. What process is shown?   ScreenHunter_01 Mar   1. mitosis 2. meiosis 3. fertilization 4. cloning |

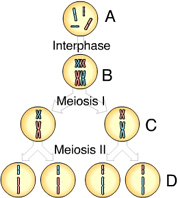
1. If an organism reproduces **asexually**, its offspring will most likely be
   1. genetically different from each other
   2. produced from cells known as gametes
   3. genetically identical to the parent
   4. produced as a result of fertilization
2. The diagram shows a sequence of events. Which processes are indicated by letters *A* and *B*?



1. meiosis and fertilization
2. mitosis and fertilization
3. meiosis and cleavage
4. mitosis and cleavage
5. Genetic variation is created during which of the following processes?
   1. Asexual reproduction
   2. Sexual reproduction
   3. Mitosis
   4. Budding
6. Which of the following is NOT an example of how meiosis creates genetic diversity (variation)?
7. nondisjunction
8. metaphase
9. crossing over
10. fertilization

16. The separation of homologous chromosomes during gamete formation is known as

**U5-5**

1. segregation
2. independent assortment
3. genetics
4. punnett squares
5. Which of these cells below is **haploid**?
   1. A
   2. B
   3. C
   4. D
6. What is the difference between a haploid cell and a diploid cell?
7. haploid cells have 2*n* number of chromosomes
8. diploid cells have *n* number of chromosomes
9. haploid cells have *n* number of chromosomes
10. diploid cells have 3*n* number of chromosomes
11. Which statement below is correct about asexual reproduction and sexual reproduction?
12. asexual reproduction and sexual reproduction both involve one parent
13. sexual reproduction involves making clones and asexual reproduction creates unique offspring
14. asexual reproduction creates clones and sexual reproduction creates unique offspring
15. asexual reproduction involves making haploid cells that eventually combine

**U5-6**

**Genetic Variation**

AKA: why you don’t look exactly like your mom or exactly like your dad!

Genetic = having to do with the \_\_\_\_\_\_\_\_\_\_.

Variation = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

Homologous Chromosomes = A pair of \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, one from \_\_\_\_\_\_\_\_\_ & one from \_\_\_\_\_\_\_\_\_. Each has the same \_\_\_\_\_\_\_\_\_\_\_\_!

Separate during the FIRST division 2n -> n

|  |  |  |  |
| --- | --- | --- | --- |
| **Sources of Genetic Variation** | **Definition** | **Example/ Picture** | **How does this cause**  **greater genetic**  **variety?** |
| **Crossing over**  Only in MEIOSIS! |  |  |  |
| **Gene Mutations** |  | **ATC GCA TTA TAT**  change  **ATC CCA TTA TAT** |  |
| **Nondisjunction** |  |  |  |
| **Fertilization**(animals)  sperm + egg  **Pollination** (plants)  female gamete + pollen |  |  |  |