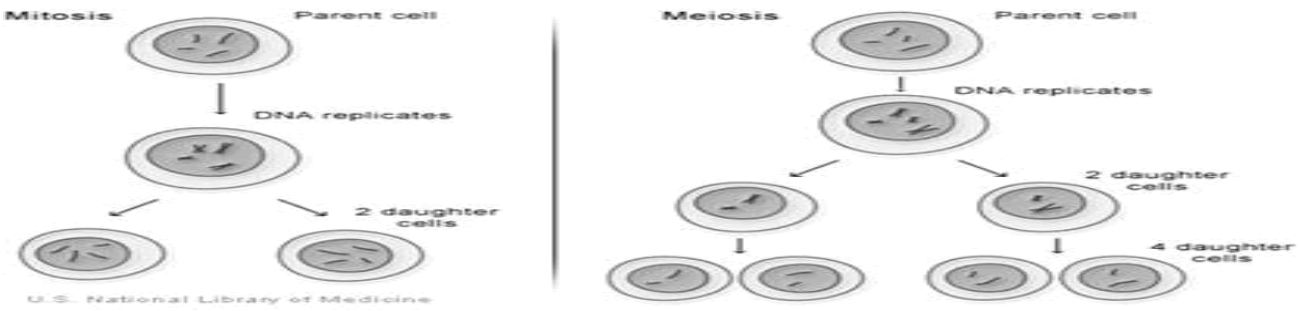
Key Idea 4/Standard 4 Living Environment Reproduction and Development

___**reproduction**____--- is not necessary for the individual but is needed for the continuation of the species

In __**asexual**_____ reproduction all the genetic information comes from one parent. The production of identical genetic copies is called ___**cloning**_____.

_____**Sexual**_____ reproduction involves two parents. The offspring have a mixture of genetic material with half coming from each __**parent**_____. This process is called ___**recombination**_____ and provides for ____**variation**_____ better suiting sexually reproduced offspring for survival.

Comparison of Mitosis and Meiosis		
Characteristic	Mitosis	Meiosis
Number of cell divisions	**1**	**2**
Number of cells formed	**2**	**4**
Genetic variation	**no**	**Yes (b/c of crossing over)**
Types of cells formed	**all cells but gametes**	**Gametes only**
Chromosome number of cells formed compared to the parent	**same #**	**Half the #**



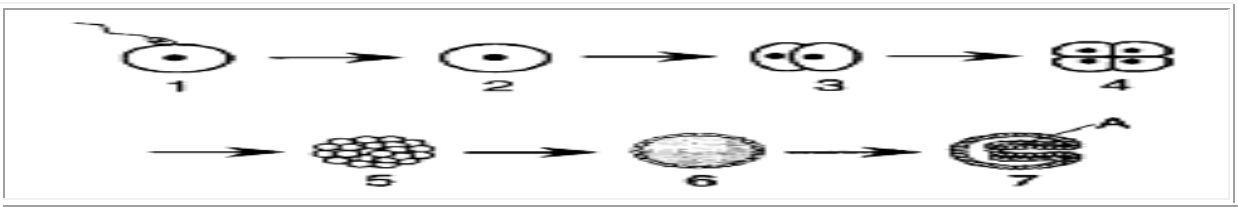
The egg or sperm contain __**1/2**_ of the genetic information of the offspring. The __**zygote**_____ is formed by the union of egg and sperm and has the _**2n** _____ chromosome number.

The processes of ____**meiosis**_____ and __**fertilization**_____ restore the chromosome number in the offspring formed by sexual reproduction.

n (____**egg**_____) + n (___**sperm**_____) → 2n (__**zygote**_____)

Development of the single celled zygote into a multicellular organism occurs by a cell division process called ____**mitosis**_____.

__**Differentiation**__ -- means to develop the specialized cells, tissues and organs of a living thing which have specific functions.



Use the diagram above to answer the following questions.

1.) What process is occurring at number one? _____**fertilization**_____

2.) What is cell two called and what is its chromosome number? __**zygote (2n)**_____

3.) The cell divisions following stage # 2 represent what process? ___**mitosis** _____

4.) The stage at number 7 (called a gastrula) is developing cells and tissues with specific functions. What is this process called?

_____ **differentiation** _____

5.) The cells of the embryo develop into different organs with different function because different _____ **genes** _____ in these cells are turned __ **on and off** _____ even though all non-sex cells in the fetus have identical DNA.

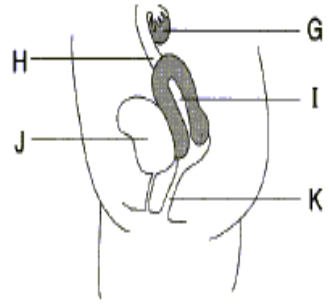
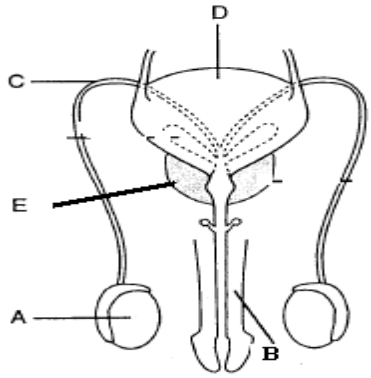
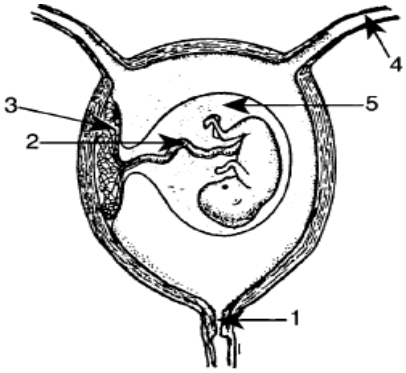
Testosterone ___ -- stimulates the development of male secondary sex characteristics

Estrogen _ -- stimulates the development of female secondary sex characteristics and initiates the thickening of the uterine lining

_**Progesterone**__ -- is produced by the corpus luteum in the empty follicle of the ovary and maintains the thickness of the uterus lining in case a _**pregnancy**_____ occurs

What is the function of the mammary glands? _____

Label each structure in the diagrams below and state their function.

	**g.) ovary -- forms egg** **h.) fallopian tube -- where fertilization occurs** **i.) uterus -- where fetus develops** **j.) urinary bladder -- stores urine** **k.) vagina -- where sperm is deposited or baby comes out**
	**a. testis -- makes sperm** **b. penis -- adaptation for internal fertilization** **c. vas deferens -- carries sperm from tests** **d. urinary bladder -- stores urine** **e. prostate gland -- a lubricating gland which helps form semen**
	**1 = cervix - entry to and from uterus** **2 = umbilical cord -- carries wasters from fetus to placenta and useful materials like food and O2 from placenta to fetus** **3 = placenta --- allows diffusion of materials from Mother to fetus and vice versa** **4 = fallopian tube -- where fertilization occurs** **5 = amnion -- protects fetus against injury**

List four environmental factors which adversely influence development and explain how they adversely influence this development.

___**smoking -- robs baby of oxygen so is born under weight**_____

___**lead --- reduces babies IQ**_____

___**alcohol -- fetal alcohol syndrome**_____

___**some drugs -- cause addiction of fetus** _____

Why is the fetus most vulnerable to the effects of drugs during the first three months of pregnancy?

_____**Most organ development occurs in the first three months** _____

Provide a specific example of an infection in the Mother threatening the development of the fetus.

_____**rubella-- may lead to deafness in fetus** _____

Explain how improper nutrition in the Mother could affect the fetus.

__**May lead to baby getting insufficient nutrients and being born under weight.** _____

Reproductive Technologies

What is an amnioscentesis and why might this be performed?

__ **Taking a sample of amniotic fluid containing fetal cells to see if the chromosomes have a genetic defect.** _____

What is in vitro fertilization and why might this be done?

____**Fertilization outside the body done if Mother can not conceive … early embryo implanted in Mother's uterus.** _____