

Topic 5: Cell Division

Methods of Reproduction:

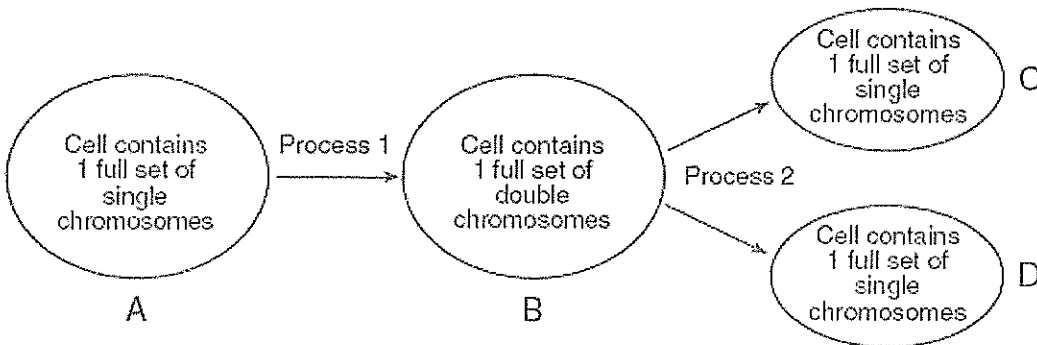
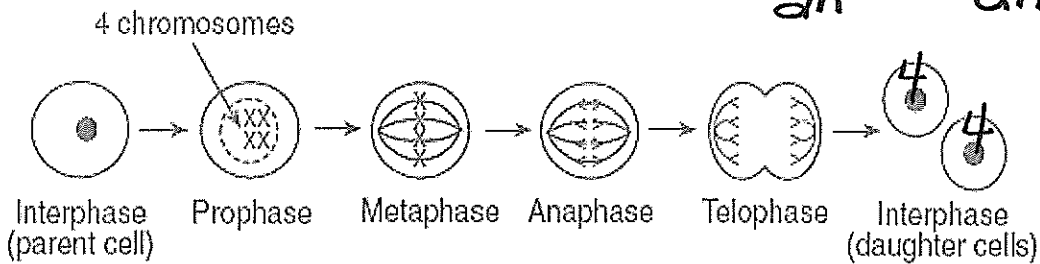
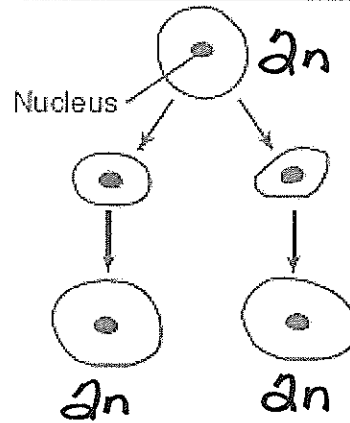
*Hate that!*

Method	Description	Sample Organisms
1. <b>Asexual</b>	-one parent -produces clones of original	<b>Amoeba</b>
2. <b>Sexual</b>	-two parents -egg and sperm -genetic recombination	<b>Humans</b>

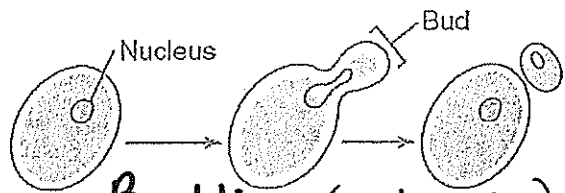
Cell Division:

	Mitosis	Meiosis
# of divisions	1	2
# of cells produced	2	4
Chromosome # of cells produced	2n	n
When?	Asexual repro, growth & repair	Make gametes (egg & sperm)

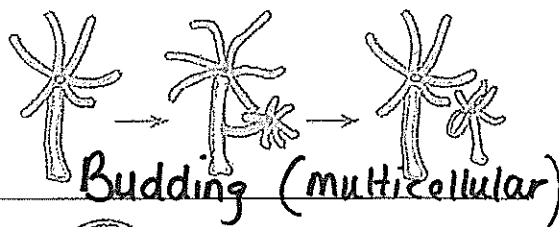
Mitosis: label the chromosome numbers on the cells below



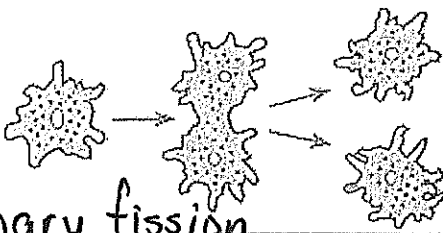
Types of Asexual Reproduction: Label each diagram



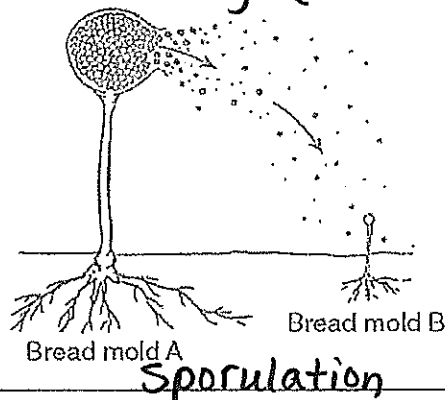
Budding (unicellular)



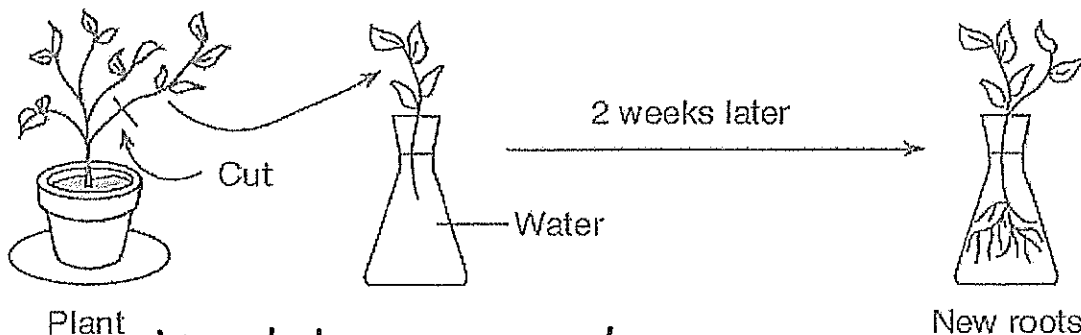
Budding (multicellular)



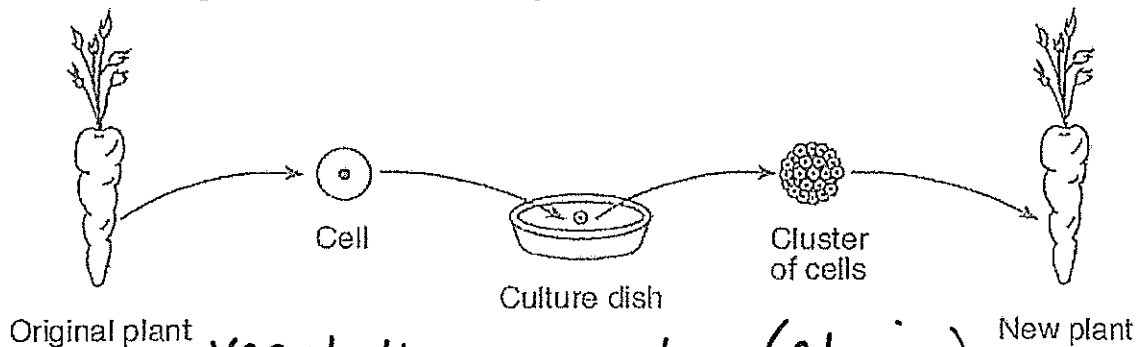
Binary fission



Sporulation



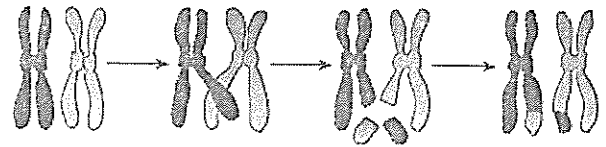
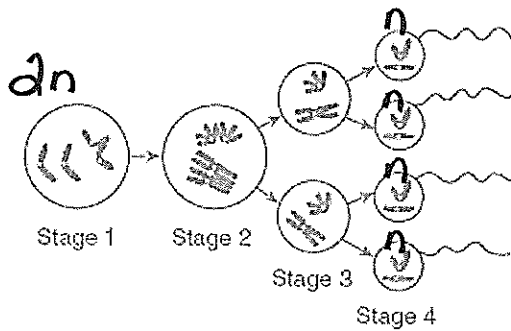
Vegetative propagation



Vegetative propagation (cloning)

Meiosis: label the chromosome #'s

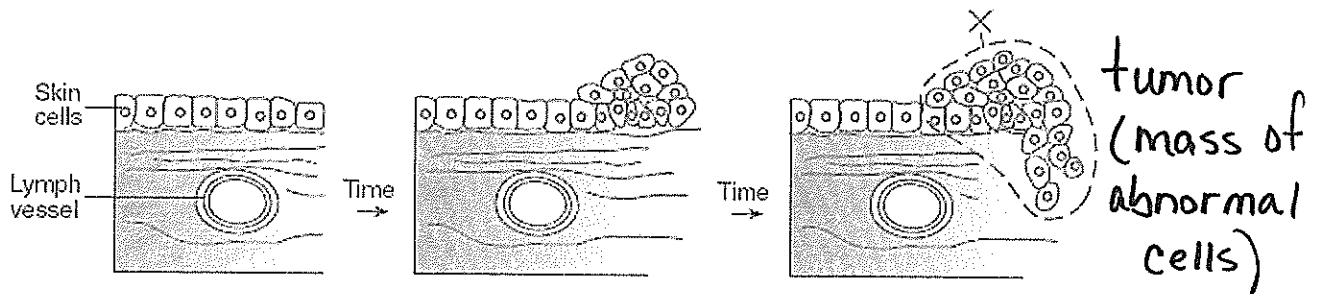
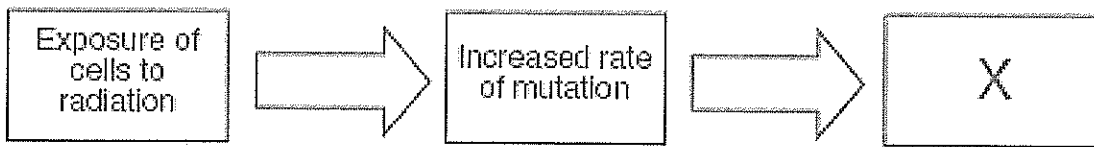
Crossing Over: increases genetic variation



Meiosis in Humans:

	Females	Males
Organ where it occurs	Ovaries	testes
Type of cells produced	ova	sperm
Number of cells produced	1 ovum 3 polar bodies	4 sperm
Chromosome # of new cells	23 (n)	23 (n)

Cancer: uncontrolled cell division



# Cell Division

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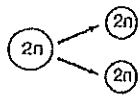
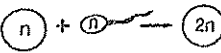
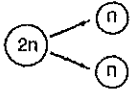
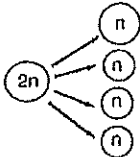
1. A cell with a diploid chromosome number of 12 divided two times, producing four cells with six chromosomes each. The process that produced these four cells was most likely

- 1) internal fertilization
- 2) external fertilization
- 3) mitotic cell division
- 4) meiotic cell division

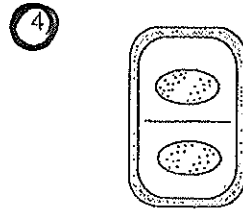
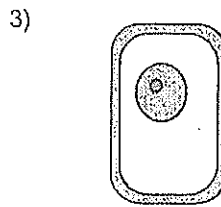
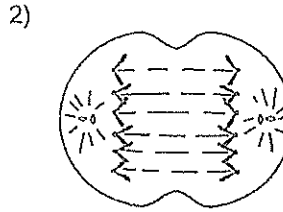
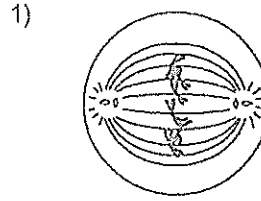
2. Which statement best explains why invertebrates regenerate lost tissue more readily than most vertebrates do?

- 1) Invertebrates contain specialized cells that produce the hormones necessary for this process.
- 2) Invertebrate cells exhibit a higher degree of uncontrolled cell division than vertebrate cells do.
- 3) Invertebrate animals reproduce asexually, but vertebrate animals reproduce sexually.
- 4) Invertebrate animals have more undifferentiated cells than vertebrate animals have.

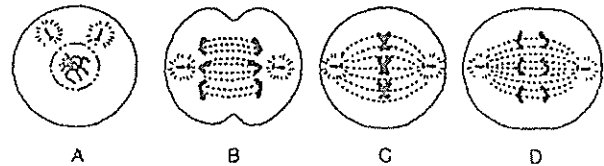
3. Which diagram best represents mitotic cell division?

- 1) 
- 2) 
- 3) 
- 4) 

4. Which diagram below represents a plant cell close to the final stage of mitotic cell division?



5. Which is the correct sequence for the stages of mitotic cell division represented by the diagrams below?

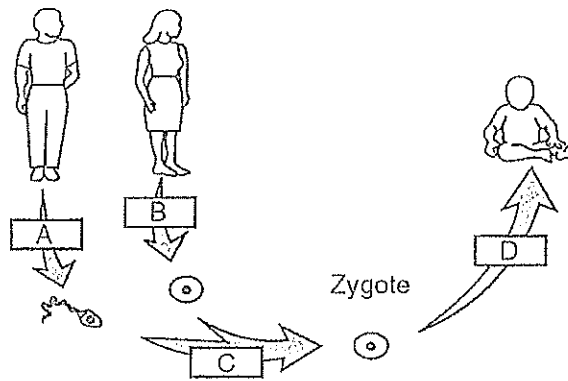


- 1) A → B → C → D
- 2) A → C → D → B
- 3) B → A → D → C
- 4) B → C → D → A

6. Which statement most accurately compares mitotic cell division in plant and animal cells?
- 1) It is exactly the same in plant and animal cells.
  - 2) The walls of plant cells pinch in, but the membranes of animal cells do not.
  - 3) Most plant cells use centrioles, but most animal cells do not.
  - 4) In both plants and animals, the daughter cells are genetically identical to the original cell.
7. Which cellular process involves DNA replication?
- 1) mitosis
  - 2) cyclosis
  - 3) pinocytosis
  - 4) protein synthesis
8. The chromosome number in an egg cell nucleus of a plant is 14. The normal chromosome number in a root epidermal cell of the same plant is
- 1) 7
  - 2) 14
  - 3) 21
  - 4) 28
9. Which process is most directly involved in the production of egg cells by a female frog?
- 1) meiosis
  - 2) metamorphosis
  - 3) regeneration
  - 4) cleavage
10. In meiotic cell division, the production of normal monoploid cells requires the separation of
- 1) homologous pairs of chromosomes
  - 2) genes on the chromatic
  - 3) nuclear organelles known as nucleoli
  - 4) cytoplasmic organelles

11. The diagram below represents processes involved in human reproduction.

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Row	A	B	C	D
(1)	mitosis	meiosis	fertilization	differentiation
(2)	meiosis	meiosis	fertilization	differentiation
(3)	meiosis	mitosis	differentiation	fertilization
(4)	mitosis	mitosis	differentiation	fertilization

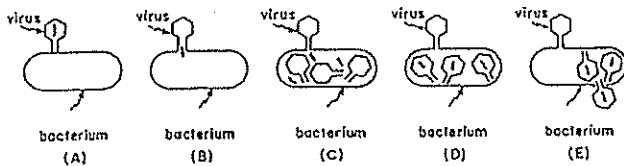
Which row in the chart below correctly identifies the processes represented by the letters in the diagram?

- 1) 1                                      2) 2                                      3) 3                                      4) 4

12. Which statement best describes chromosomes that contain genes for the same characteristics?

- 1) They are present in a normal gamete.
- 2) They are homologous.
- 3) They occur in the same monoploid cell.
- 4) They are linked.

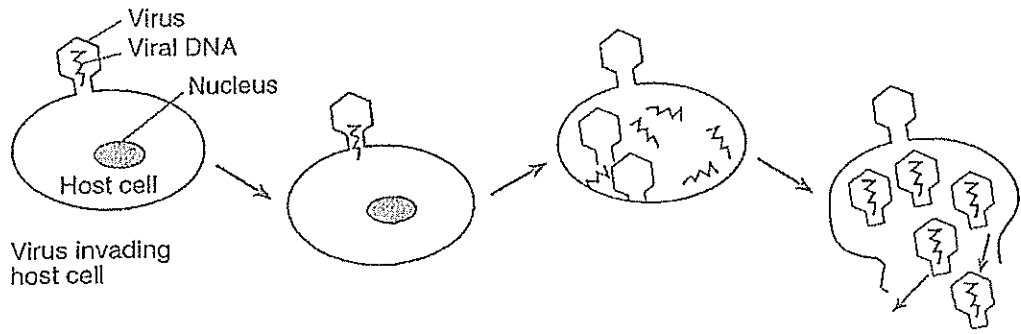
13. Base your answer to the following question on your knowledge of biology and on the series of sketches which represent a cycle initiated when a virus (bacteriophage) infects a bacterial cell.



The substance being transferred into the bacterial cell in B is

- 1) a nucleic acid                      3) an enzyme
- 2) a protein                              4) a hormone

14. Viral activity is represented in the diagram below.



Invading the host cell enables the virus to

- 1) increase its size
- 2) synthesize needed oxygen
- 3) obtain nutrients
- 4) reproduce

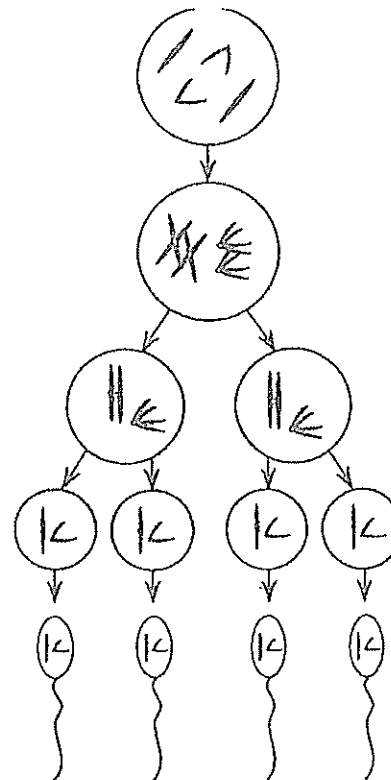
15. If an organism reproduces asexually, its offspring will most likely be

- 1) genetically different from each other
- 2) produced from specialized cells known as gametes
- 3) genetically identical to the parent
- 4) produced as a result of fertilization

16. The presence of a cancerous mass in the lung is a direct result of

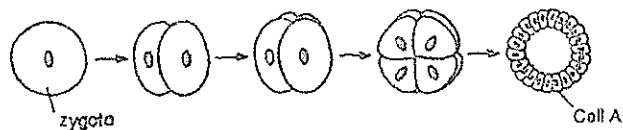
- 1) prolonged exposure to very dry air
- 2) the introduction of toxins through breaks in the skin
- 3) meiotic division of normal cells
- 4) the uncontrolled division and growth of abnormal cells

17. Which process is represented by the diagram below?



- 1) fertilization
- 2) gametogenesis
- 3) binary fission
- 4) vegetative propagation

18. Base your answer to the following question on the diagram below and on your knowledge of biology.



If the zygote contains a total number of 32 chromosomes, the total number of chromosomes normally contained in cell A is

- 1) 16
- 2) 32
- 3) 46
- 4) 64

19. Each body cell of a chimpanzee contains 48 chromosomes. How many chromosomes would normally be present in a gamete produced by this chimpanzee?

- 1) 24
- 2) 36
- 3) 48
- 4) 96

20. Which statement correctly describes the genetic makeup of the sperm cells produced by a human male?

- 1) Each cell has pairs of chromosomes and the cells are usually genetically identical.
- 2) Each cell has pairs of chromosomes and the cells are usually genetically different.
- 3) Each cell has half the normal number of chromosomes and the cells are usually genetically identical.
- 4) Each cell has half the normal number of chromosomes and the cells are usually genetically different.