

Cellular Reproduction

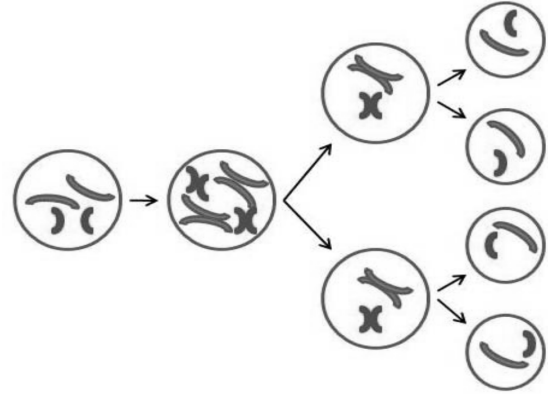
Name: _____

Date: _____

- Jack bought a small turtle. Three months later, the turtle had grown to twice its original size. Which of the following statements *best* describes why Jack's turtle got bigger?
 - Parts of the turtle stretched out as it grew larger.
 - The number of cells in the turtle's body increased.
 - The turtle's body absorbed the food it ate and water it drank.
 - The size of each cell in the turtle's body got bigger as it got older.

- The genome of a goldfish contains 96 chromosomes. How many chromosomes will each daughter cell have after mitosis of a goldfish cell is complete?
 - 24
 - 48
 - 96
 - 192

- The distribution of chromosomes in one type of cell division is shown in the diagram below.



Which process and type of resulting cells are represented in the diagram?

- mitosis, which produces gametes
 - mitosis, which produces body cells
 - meiosis, which produces gametes
 - meiosis, which produces body cells
-
- Which of the following produces identical nuclei in cells?
 - pollination
 - mitosis
 - osmosis
 - fertilization

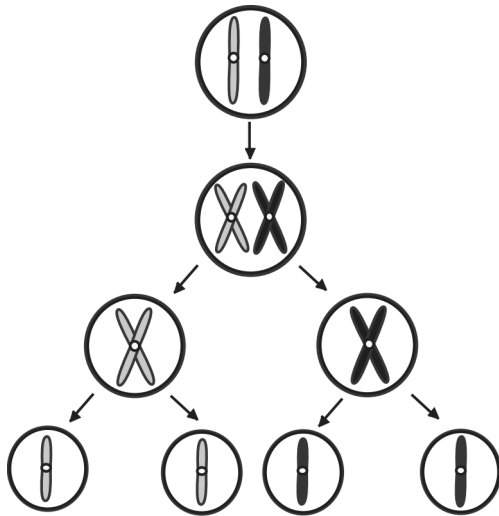
5. Which of the following cell types is formed by meiosis?

- A. muscle cells
- B. sperm cells
- C. skin cells
- D. blood cells

6. What process is necessary for the inherited traits of an organism to be passed along by sexual reproduction?

- A. mitosis
- B. meiosis
- C. mutation
- D. fission

7. The diagram below shows a cellular process that occurs in organisms.



This process is known as

- A. meiosis.
- B. mitosis.
- C. endocytosis.
- D. phagocytosis.

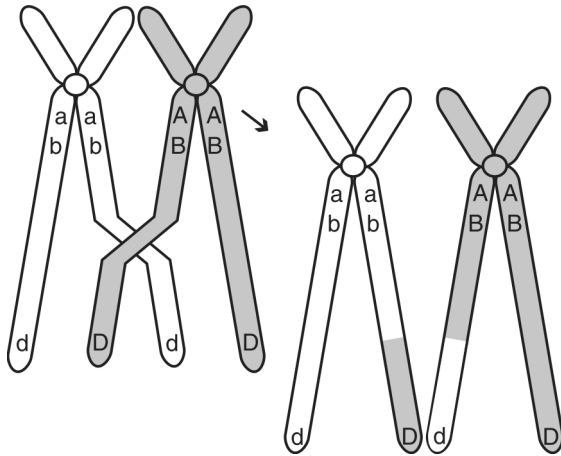
8. Which of the following statements correctly describes meiosis?

- A. Cells divide only once during meiosis.
- B. Meiosis does not occur in reproductive cells.
- C. The cells produced at the end of meiosis are genetically identical to the parent cell.
- D. The cells produced at the end of meiosis contain half the number of chromosomes as the parent cell.

9. Which of the following *best* describes meiosis?

- A. It is carried out in all tissues that require cell replacement.
- B. It occurs only in cells in the reproductive structures of the organism.
- C. It happens in all tissues except the brain and spinal cord.
- D. It is the first stage of mitosis.

10.



The diagram above shows homologous chromosomes during prophase I of meiosis. Which of the following correctly describes the process being illustrated?

- A. mutation in which the DNA content of the gene is altered
- B. segregation of sister chromatids
- C. condensation and segregation of alleles
- D. crossing-over in which alleles are exchanged

11. Which of the following sequences represents chromosome number during fertilization?

- A. $n + n \rightarrow 2n$
- B. $2n \rightarrow n + n$
- C. $n \rightarrow n$
- D. $2n \rightarrow 2n$

12. The table below lists the typical diploid number of chromosomes of several different organisms.

Diploid Chromosome Number

Goldfish	94
Potato	48
Human	46
Pea	14
Fruit fly	8

Which of the following is the *best* explanation for why the chromosome number is an even number in each of these organisms?

- A. It is only a coincidence; many other organisms have an odd number of chromosomes.
- B. The diploid chromosome number is always even so that when mitosis occurs each new cell gets the same number of chromosomes.
- C. The diploid chromosome number represents pairs of chromosomes, one from each parent, so it is always an even number.
- D. Chromosomes double every time the cell divides, so after the first division, the number is always even.

13. Based only on the sex chromosomes in typical human egg and sperm cells at fertilization, the probability of producing a female is

- A. 25%. B. 50%. C. 75%. D. 90%.

14. Mendel hypothesized that reproductive cells have only one factor for each inherited trait. This hypothesis is supported by the observation that

- A. haploid cells are produced by mitosis.
- B. diploid cells are produced by mitosis.
- C. haploid cells are produced by meiosis.
- D. diploid cells are produced by meiosis.

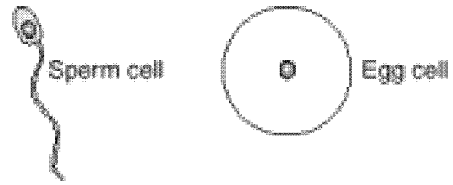
15. If an intestinal cell in a butterfly contains 24 chromosomes, a butterfly egg cell would contain

- A. 3 chromosomes.
- B. 6 chromosomes.
- C. 12 chromosomes.
- D. 24 chromosomes.

16. Mitosis, the process by which the nucleus of a cell divides into two nuclei, each containing a complete set of the cell's chromosomes, is essential to life because it

- A. contains four stages for gametes.
- B. maintains genetic continuity from one generation to the next.
- C. controls cell functions to ensure successful development.
- D. provides energy for the cells.

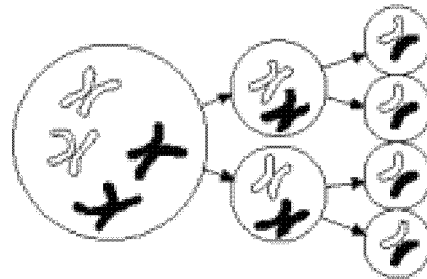
17. The diagram below represents two human cells.



These cells are a direct result of

- A. mitotic cell division.
- B. fertilization.
- C. sex linkage.
- D. gametogenesis.

18. The distribution of chromosomes in one type of cell division is shown in the diagram below.



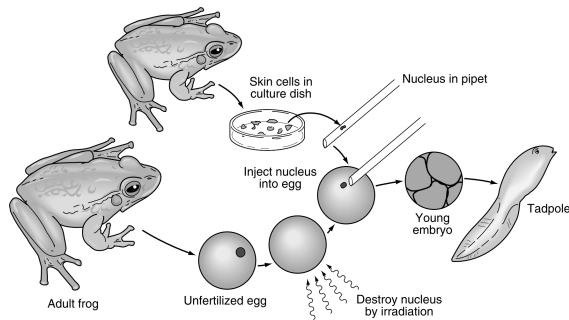
Which process is represented in the diagram?

- A. asexual reproduction
- B. mitosis
- C. meiosis
- D. vegetative propagation

19. Body cells of fruit flies contain only 8 chromosomes, compared to human cells that contain 46. Scientists used studies of fruit flies to discover how egg and sperm cells (gametes) are formed. What did they observe?

- A. Body cells of the offspring flies had 16 chromosomes.
- B. Sperm cells from the male had 8 chromosomes.
- C. Egg cells from the female had 4 chromosomes.
- D. Body cells of the offspring flies had 4 chromosomes.

20. The diagram below shows the procedure scientists used to clone a frog from the nucleus of a skin cell.



Every body cell in a frog contains the exact same genetic information. What accounts for the different tissues in an adult frog?

- A. Tissues cause mutations in the genetic material.
- B. Different tissues have different genes that are active.
- C. Frogs can alter their DNA to have genes produce different proteins.
- D. The genes undergo metamorphosis.

21. A scientist conducted a study of an organism and found that its body cells contained 40 chromosomes. These cells were cultured in the laboratory, and cell division was observed. What difference, if any, would the scientist expect to observe between body cell division and sex cell division in the organism?

- A. Body cells divide by mitosis, and sex cells divide by meiosis.
- B. Body cells divide by meiosis, and sex cells divide by mitosis.
- C. There is no difference; body cells and sex cells both divide by mitosis.
- D. There is no difference; body cells and sex cells both divide by meiosis.

22. What is one advantage of sexual reproduction?

- A. The offspring are identical to the parents
- B. The offspring are resistant to viruses.
- C. The offspring are born live, rather than from eggs.
- D. The offspring inherit a wider variety of genetic information.

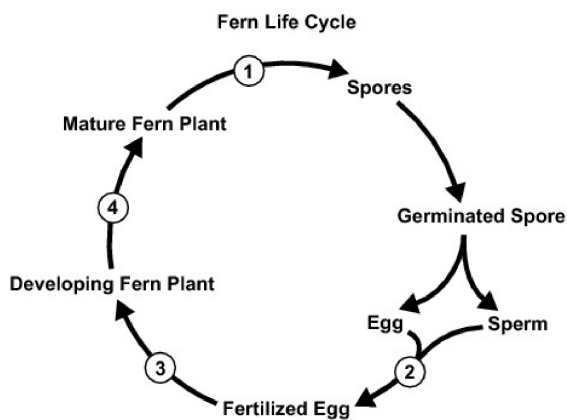
23. In humans, sex cells are produced by a different process than other body cells.

How is the process used to produce sex cells different from the process used to produce body cells?

- A. Only the process used to make sex cells uses spindle fibers,
- B. Only the process used to make sex cells produces haploid cells.
- C. Only the process used to make sex cells can result in mutations.
- D. Only the process used to make sex cells requires DNA replication.

24. The diagram shows the life cycle of a fern. During part of the life cycle, the fern's cells contain only half of the full number of chromosomes.

At which point in the life cycle is the full number of chromosomes first restored?



- A. 1
- B. 2
- C. 3
- D. 4

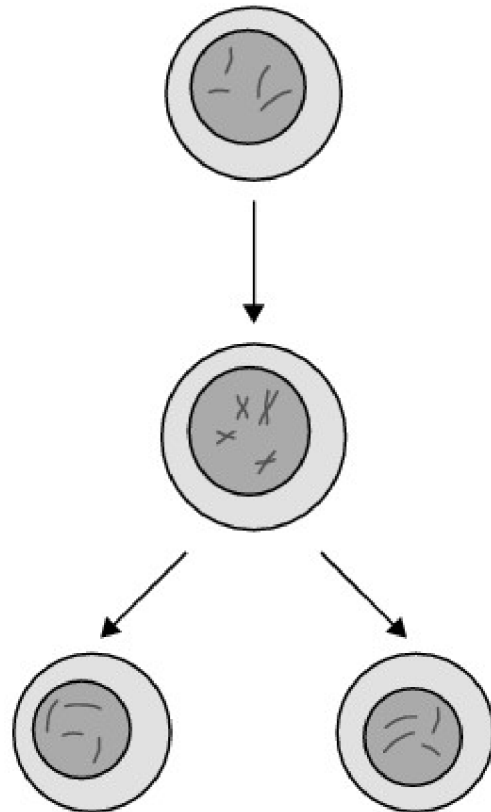
25. A male shark has 40 chromosomes in each of its sex cells.

How many chromosomes would be present in a normal body cell of a shark?

- A. 20
- B. 40
- C. 80
- D. 160

26. The diagram shows a cellular process.

How is this process used in the bodies of male animals?



- A. To produce sperm cells
- B. To produce DNA sequences
- C. To produce white blood cells
- D. To produce digestive enzymes

27. A liver cell in a mouse goes through cell division, and one of the resulting daughter cells contains a new mutation.

What could result from this mutation?

- A. The new liver cell could die.
- B. The new liver cell could undergo meiosis.
- C. The new mutation could be passed on to the mouse's offspring.
- D. The new mutation could spread to the mouse's reproductive cells.

28. Trisomy 21 is a genetic disorder in which an individual has an extra copy of chromosome 21?

Which process could cause trisomy 21?

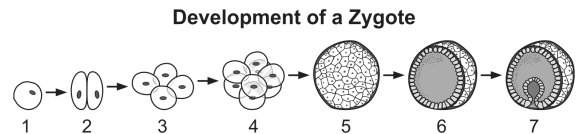
- A. Failure of a chromosome to replicate during mitosis
- B. Failure of chromosome pairs to join during fertilization
- C. Failure of a chromosome to cross over during replication
- D. Failure of chromosome pairs to separate properly during meiosis

29. A student uses a microscope to observe cells in the root tissue of an onion. He concludes that the cells are reproducing by mitosis.

Which hypothesis is supported by his conclusion?

- A. The root tissue cells all have the same set of chromosomes.
- B. The root tissue cells each have a unique genetic make-up.
- C. The root tissue cells produce identical gametes.
- D. The root tissue cells split to form stem cells.

30. Use the diagram to answer the question.



Between which two stages is cell differentiation occurring in the developing zygote?

- A. stage 1 and stage 2
- B. stage 3 and stage 4
- C. stage 4 and stage 5
- D. stage 6 and stage 7

Eli kept a garden. He wrote online in a blog about the activities in his garden. Read and study Eli's Garden Blog, then answer the following question(s)

Eli's Garden Blog—Monarchs and Milkweed

I learned that monarch butterflies lay their eggs only on milkweed plants. The adult butterflies get food from milkweed and other kinds of flowers.

I decided to plant milkweeds in my garden this year to see if I could attract monarch butterflies. I found some milkweed seeds and planted them in my garden in the spring. The seeds grew into milkweed plants.



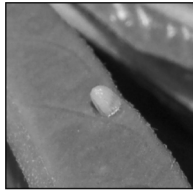
Source: Wikimedia Commons

Every day I watched for butterflies visiting the plants. One day, I finally saw a monarch! It landed on the flower clusters, and stuck its long tongue into the flowers. There were other butterflies and insects on the milkweed flowers too.



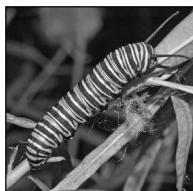
Source: homerewardprice, Wikimedia Commons

I read that monarchs lay their eggs on the undersides of the leaves. I started looking under leaves. After awhile, I found a small greenish egg. The egg matched pictures of monarch eggs I saw in a book about butterflies.



Source: Hectonichus, Wikimedia Commons

A little while later I found my first monarch caterpillar. The caterpillars eat nothing but milkweed leaves and flowers. I've read that they cannot live on any other kind of food.



Source: Hectonichus, Wikimedia Commons

After they have grown big enough, the caterpillars form a skin around themselves. The skin is called a chrysalis. I kept looking carefully for chrysalises, and I found one! It was hanging down from a twig. Inside the chrysalis the caterpillar turns into a butterfly. It is amazing how much their bodies change shape.



Source: Hectonichus, Wikimedia Commons

After they come out of the chrysalis, the adult butterflies fly off. They drink nectar from flowers, find mates, and lay more eggs on milkweed plants. This one landed on another flower in my garden.



Source: Lily M, Wikimedia Commons

Meanwhile, my milkweed plants were getting older too. After flowering, they grew seedpods. Later the seedpods cracked open. I could see that the seeds were attached to these amazing bits of fluff. The seeds are sort of like dandelion seeds, but the fluff is longer and silkier. I kept some seeds to plant again next year.



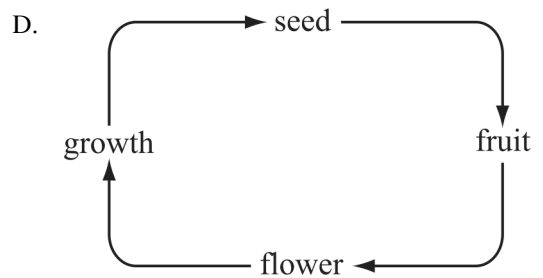
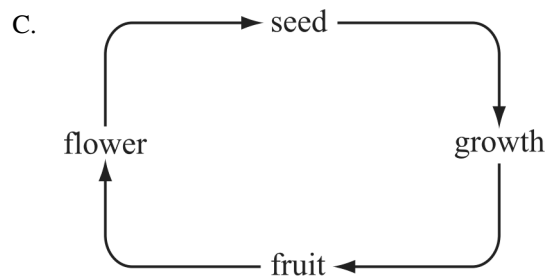
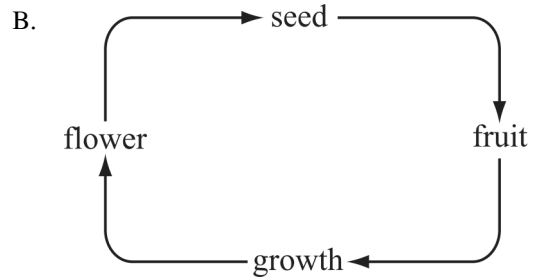
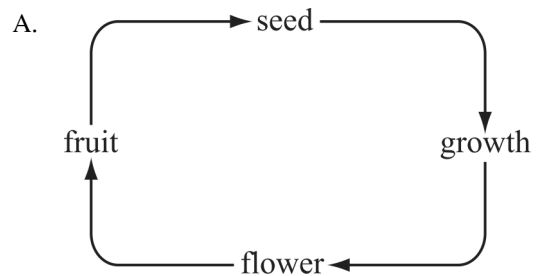
Source: Wikimedia Commons

31. Monarch butterflies can fly long distances. This allows them to spread to new areas.

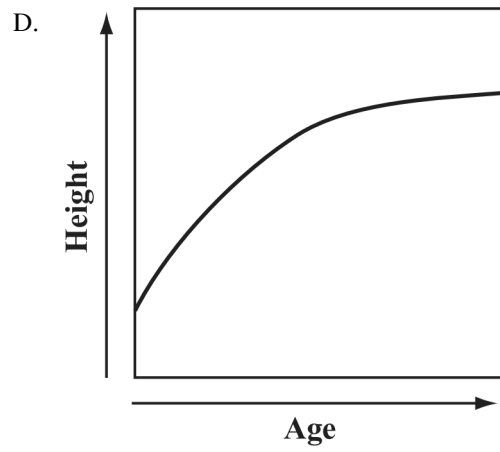
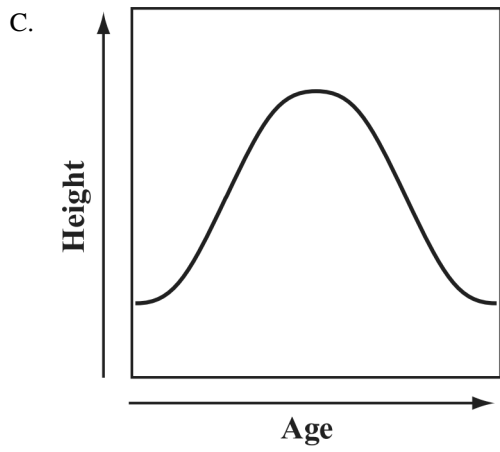
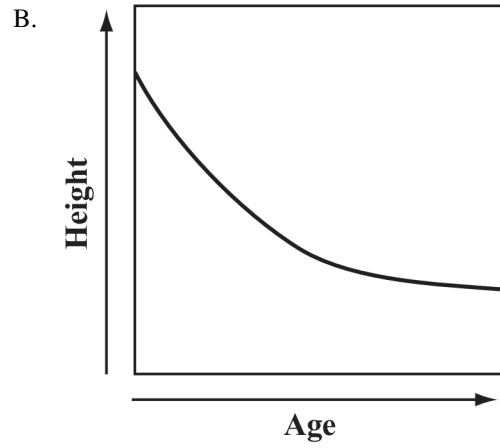
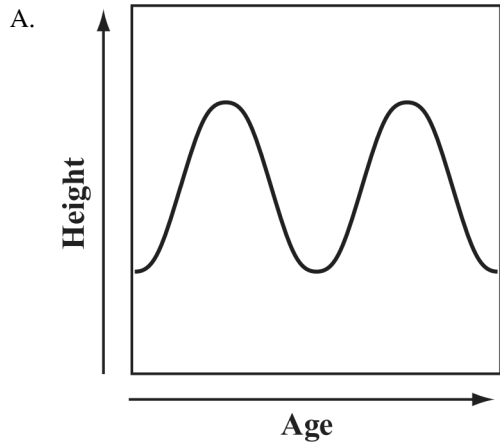
How do milkweed plants spread to new areas?

- A. The seeds stick to butterflies and get carried away.
- B. The seeds float and are blown by the wind.
- C. The seeds stick to the fur of animals.
- D. The seedpods burst open and scatter the seeds.

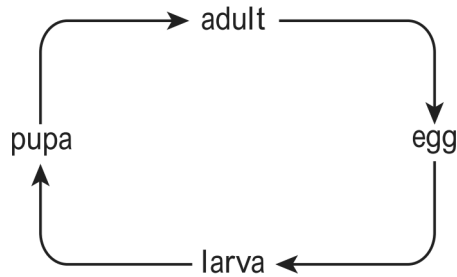
32. Which of the following drawings *best* shows the life cycle of berry bushes growing naturally in a forest?



33. Which of the following graphs *best* shows how the height of a lion changes from birth through adulthood?



34. The diagram below shows the life cycle of an organism.



Which of the following organisms has a life cycle like the one shown in the diagram?

- A. a bird B. a butterfly
C. a frog D. a snake
35. Which of the following must all plant and animal species do in order for each species to survive?
- A. migrate B. reproduce
C. make food D. change color
36. From year to year, farmers rotate different crops in the fields to improve soil nutrients. Why is crop rotation also an effective pest management method?
- A. It allows chemicals to kill more pests.
B. It creates crops that are pest-resistant.
C. It interrupts the life cycles of pests.
D. It allows pests to overpopulate.

37. *Spirogyra* are green algae that can reproduce sexually. Which of the following features identifies reproduction in *Spirogyra* as sexual reproduction?

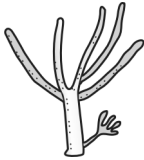
- A. The cells of parent algae have nuclei.
B. Each offspring contains chloroplasts.
C. Several offspring may be produced at once.
D. Genetic material is contributed by two parent cells.
38. Which of the following is the *primary* advantage of sexual reproduction when compared to asexual reproduction?
- A. There is a greater number of offspring.
B. There is more food available to offspring.
C. There is greater genetic variety in offspring.
D. There is a longer development time for offspring.

39. The diagrams below represent forms of reproduction. In which form of reproduction will the offspring differ most from the parent?

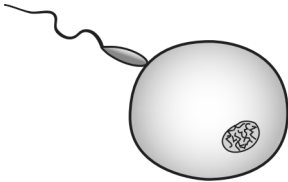
A.



B.



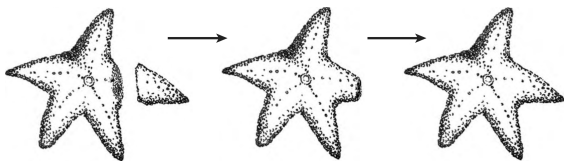
C.



D.



40. The diagram below shows a sea star in various stages of regeneration.



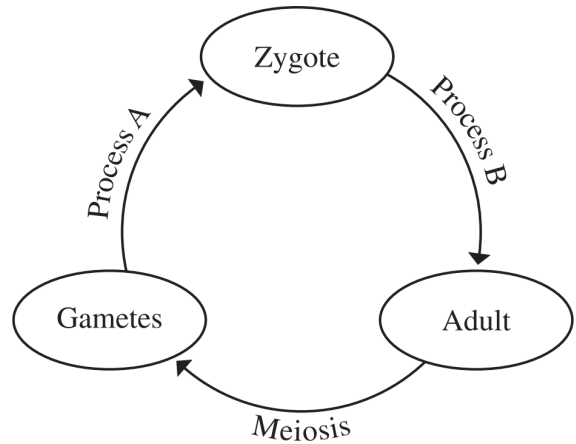
What cellular process is *directly* responsible for this regeneration?

- A. meiosis B. mitosis
C. transpiration D. respiration

41. A human zygote, like most other human cells, contains 46 chromosomes. How many chromosomes does a zygote receive from the mother?

- A. 0 B. 23 C. 46 D. 92

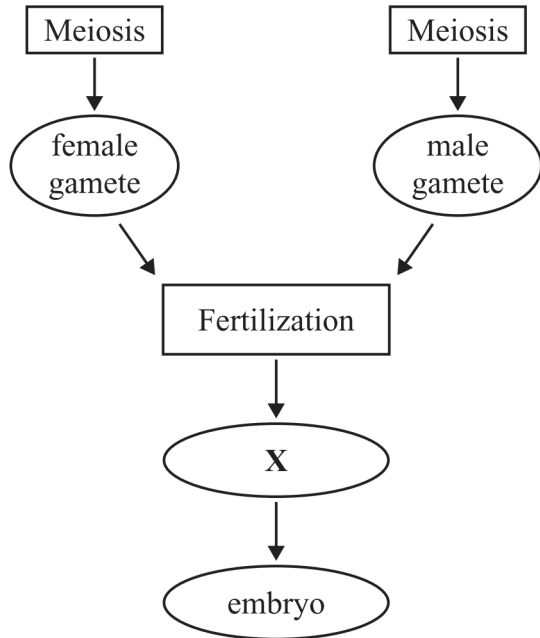
42. The diagram below shows a generalized cycle in sexually reproducing animals.



What is Process A in this cycle?

- A. fertilization B. mitosis
C. osmosis D. replication

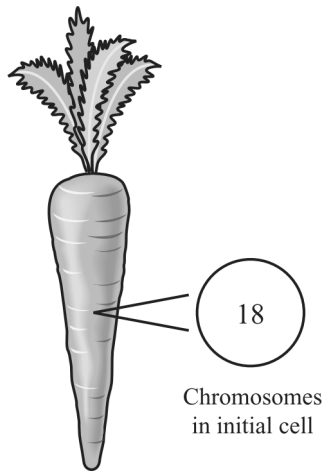
43. A partial diagram of a reproductive process is shown below.



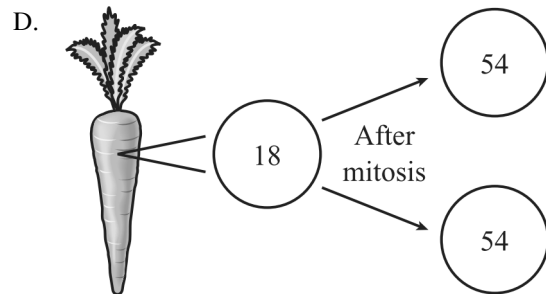
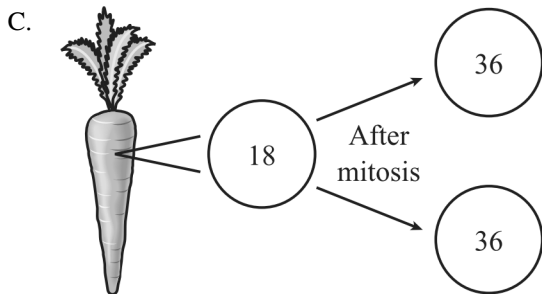
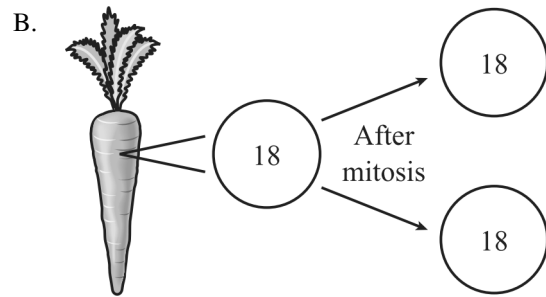
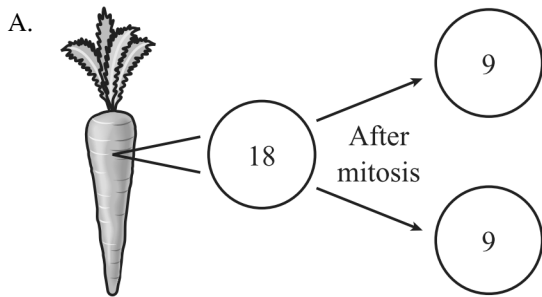
Which of the following labels belongs in the oval marked *X*?

- A. egg B. fetus
C. sperm D. zygote

44. The diagram below provides information about a carrot cell.



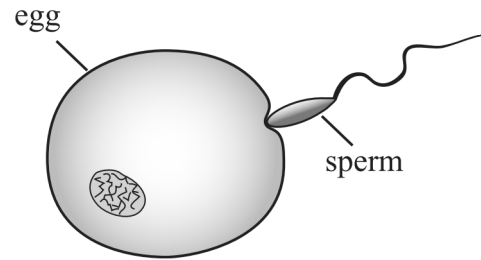
A carrot cell contains 18 chromosomes. Which of the following diagrams illustrates the correct number of chromosomes in new cells produced by mitosis?



45. In sexual reproduction, what is the source of the genetic material in a zygote?
- A. an egg cell only
 - B. a sperm cell only
 - C. an egg cell and a sperm cell
 - D. an egg cell and a polar body

46. Which of the following occurs in meiosis but *not* in mitosis?
- A. Chromosomes coil and condense.
 - B. Spindle fibers form across the cell.
 - C. The nuclear membrane breaks down.
 - D. Pairs of homologous chromosomes are separated.

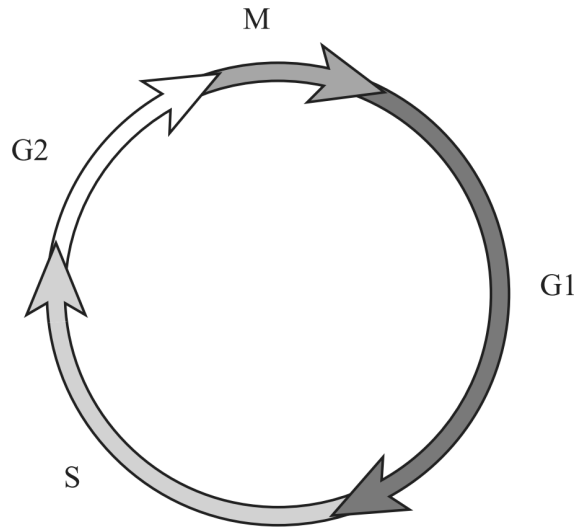
47. The figure below shows an egg cell and a sperm cell.



Which of the following is represented by this figure?

- A. the formation of a zygote
 - B. mitotic division of nuclei
 - C. the production of gametes
 - D. translation of genetic information
48. In the synthesis phase (*S* phase) of the cell cycle, a body cell copies its DNA. This DNA replication occurs in preparation for which of the following processes?
- A. cellular respiration
 - B. facilitated diffusion
 - C. mitosis
 - D. translation

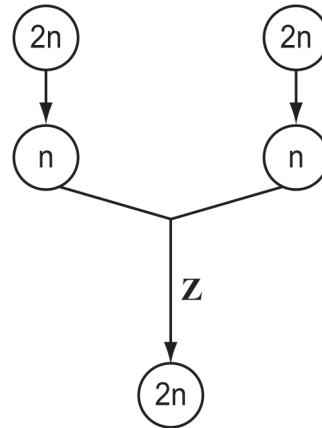
49. The diagram below shows the cell cycle.



Which of the following activities occurs in the G1 phase?

- A. growth of the cell
- B. replication of the DNA
- C. formation of the mitotic spindle
- D. breakdown of the nuclear membrane

50. The diagram below represents steps in sexual reproduction.



Which of the following occurs in the step labeled Z ?

- A. fertilization
- B. meiosis
- C. mitosis
- D. translocation

51. The fungus *Penicillium* reproduces asexually and forms genetically identical spores. Which of the following processes does *Penicillium* use to form its spores?

- A. fertilization
- B. mitosis
- C. osmosis
- D. transcription

52. Which of the following statements applies to *all* forms of sexual reproduction?

- A. All offspring from a mating look exactly the same.
- B. Offspring receive genetic material from two gametes.
- C. Offspring completely develop inside the mother's body before birth.
- D. All offspring are born with their organs and senses fully developed.

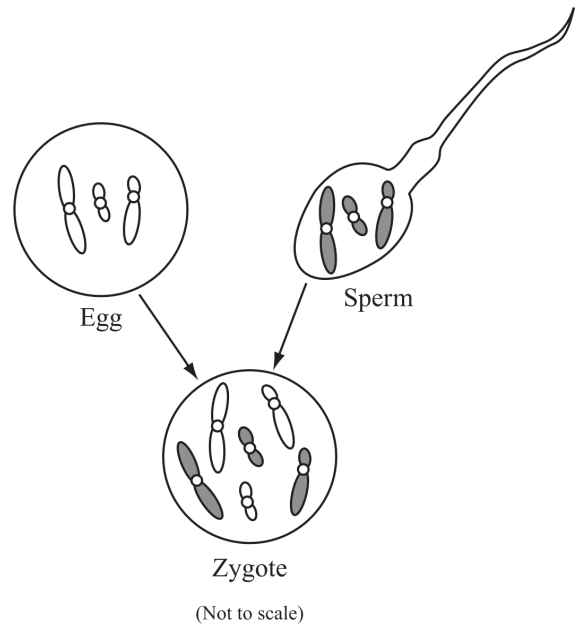
53. Which of the following normally results from meiosis in a human cell that contains 46 chromosomes?

- A. an egg cell with 46 chromosomes
- B. a liver cell with 23 chromosomes
- C. a blood cell with 46 chromosomes
- D. a sperm cell with 23 chromosomes

54. Which type of cell must contain a mutation in order for the mutation to be passed from a woman to her offspring?

- A. blood cell
- B. brain cell
- C. egg cell
- D. skin cell

55. A biological process is represented in the diagram below.



Which of the following concepts is *best* illustrated by the diagram?

- A. Crossing-over creates new genetic diversity in gametes.
- B. Mitosis increases the number of chromosomes in zygote cells.
- C. In asexual reproduction, the offspring produced are genetically identical to the parent.
- D. In sexual reproduction, the offspring receive the same number of chromosomes from each parent.

56. A bird has just hatched from an egg. Which of the following stages *most likely* comes next in the life cycle of the bird?

- A. birth
- B. death
- C. growth
- D. reproduction

57. Under normal conditions, which of the following causes a zygote to form?

- A. Mitosis takes place.
- B. Meiosis takes place.
- C. Two gametes combine.
- D. Asexual reproduction occurs.

58. As humans grow, their bodies change.

Which of these statements explains how humans grow?

- A. Cells form a cell wall.
- B. Cells increase in size.
- C. Cells undergo cell division.
- D. Cells merge to become larger.

59. During sexual reproduction one sperm cell unites with one egg cell to produce a fertilized egg that develops into a new organism.

Which of the following statements *best* describes how an offspring receives genetic information from its parents?

- A. The offspring receives half of its genes from each parent.
- B. The offspring receives all the genes from each parent.
- C. The offspring receives more genes from the male parent than from the female parent.
- D. The offspring receives more genes from the female parent than from the male parent.

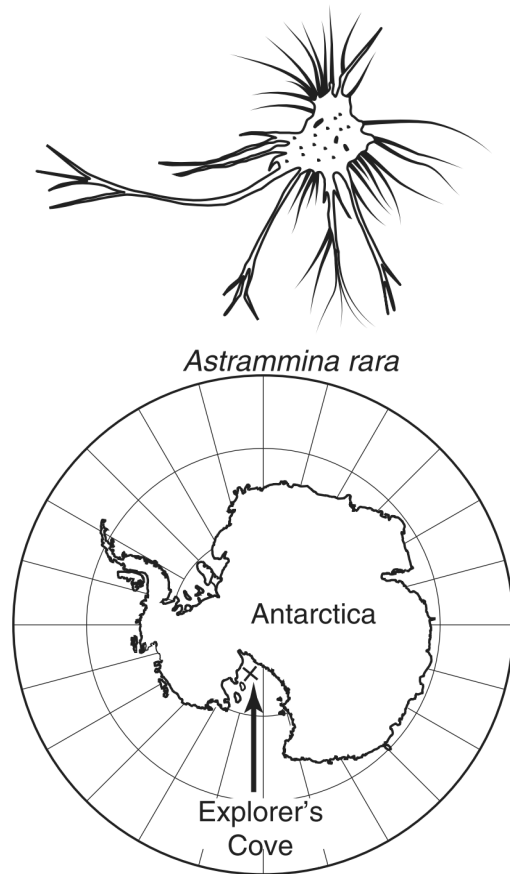
60. Roses produced asexually from cuttings are genetically identical to the parent. Roses grown from sexually produced seeds may look different from either parent.

Which statement is *best* supported by this information?

- A. Sexually produced plants are a new species.
- B. Sexual reproduction produces more variation in plants.
- C. Asexually produced plants are larger than sexually produced plants.
- D. Asexual reproduction helps plants adapt to different environments.

61. Use the information and diagrams below to answer the following question(s).

Astrammina rara is a unicellular organism that is several millimeters long. This organism lives on the ocean floor of Antarctica in an area called Explorer's Cove. *Astrammina rara* builds a shell by cementing grains of sand from the ocean floor together. The organism either absorbs nutrients from the water or eats other organisms on the ocean floor. The offspring of *Astrammina rara* have genes identical to the parent. Below is a diagram of an *Astrammina rara* and a map showing where the organism lives.



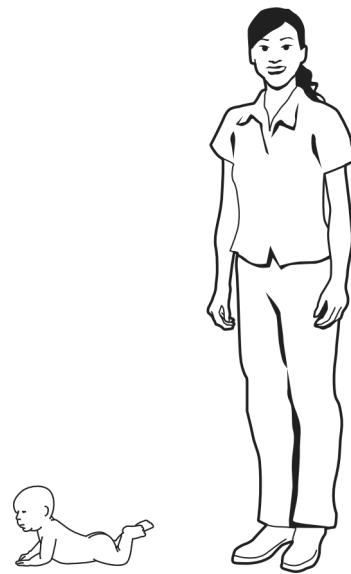
Asexual reproduction by *Astrammina rara*

- A. involves an egg and a sperm
- B. requires a male and a female
- C. reduces the variation in the offspring
- D. increases the variation in the offspring

62. Which statement *best* describes how genetic information is passed to the offspring of *Astrammina rara*?

- A. The genetic information comes from the egg.
- B. The genetic information comes from the sperm.
- C. All of the genetic information comes from one parent.
- D. Half of the genetic information comes from one parent.

63. A human baby and adult are pictured below.

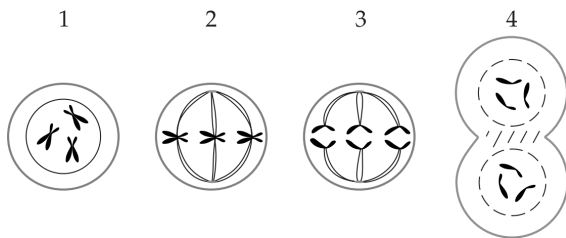


Which of the following processes enables the baby to become an adult?

- A. development of new genes
- B. genetic changes
- C. production of sex cells
- D. repeated cell divisions

64. Which of these processes is *most* important for the replacement of worn-out body cells?
- A. mitosis B. diffusion
C. meiosis D. absorption

65. The figure below shows a cell in four stages of a cellular process. Use the figure to answer the following question(s).



Which cellular process is shown in the figure?

- A. fertilization B. translation
C. osmosis D. meiosis
66. Which of these describes the purpose of this cellular process?
- A. to combine two daughter cells
B. to make a chain of identical amino acids
C. to produce an identical copy of a cell
D. to form daughter cells with half the number of chromosomes

67. An organism has 24 chromosomes in most of its cells. How many chromosomes are in the organism's egg cells?
- A. 6 B. 12 C. 24 D. 48

68. Which of these processes occurs during sexual reproduction but *not* during asexual reproduction?
- A. meiosis B. mitosis
C. binary fission D. genetic mutation

69. An organism has gametes that contain 18 chromosomes. How many chromosomes are in each of its body cells?
- A. 9 B. 18 C. 27 D. 36

70. Meiosis is the key process in the production of
- A. RNA B. gametes
C. body cells D. white blood cells

71. Each body cell in an earthworm contains 36 chromosomes. How many chromosomes are in each of its gametes?

- A. 18 B. 36 C. 54 D. 72

72. Use the information below to answer the following question(s).

A scientist is studying a group of related flowering plants. She set up a series of experiments to study relatedness, classification, and patterns of inheritance within this group of plants.

One of the plants that the scientist is studying has an extra copy of one chromosome in all its cells. This variation *most likely* occurred during

- A. meiosis B. protein synthesis
C. mitosis D. DNA synthesis

73. During cell replication, an error may result in a base pair substitution. Which of these terms describes the change in the base pair sequence?

- A. cloning B. meiosis
C. mutation D. translation

74. Which of these represents the number of chromosomes in cells before and after the process of meiosis?

- A. $n \rightarrow n$ B. $n \rightarrow 2n$
C. $2n \rightarrow n$ D. $2n \rightarrow 2n$

75. A scientist is trying to discover a new treatment to stop cancer cells from dividing. In the cancer cells, which of these processes will stop if the treatment is successful?

- A. mitosis
B. chemosynthesis
C. binary fission
D. genetic recombination

76. A sperm cell of a moth has 112 chromosomes. How many chromosomes are in the moth's wing cells?

- A. 66 B. 112 C. 224 D. 448

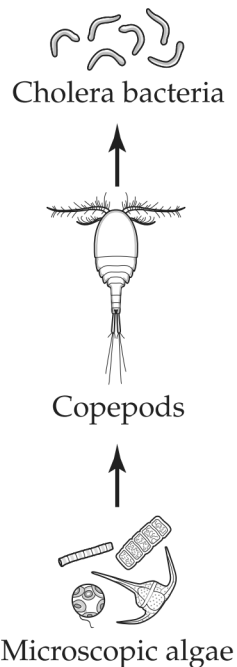
77. Use the information and the food chain below to answer the following question(s).

Cholera bacteria live inside copepods, tiny marine organisms. This type of microscopic bacteria harms the copepods by feeding off their internal tissues.

Both of these organisms are found in oceans throughout the world. Unfavorable temperatures or salt levels may cause cholera bacteria to become inactive. When inactive, they do not feed or reproduce. When conditions become favorable, they become active once again.

A cholera population may depend on the population of copepods in the surrounding water. A simple food chain showing this relationship is shown below.

MARINE FOOD CHAIN



Cholera bacteria perform binary fission to

- A. reproduce asexually
- B. digest food rapidly
- C. regulate temperature
- D. increase body size

78. What process produces male and female reproductive cells in plants?

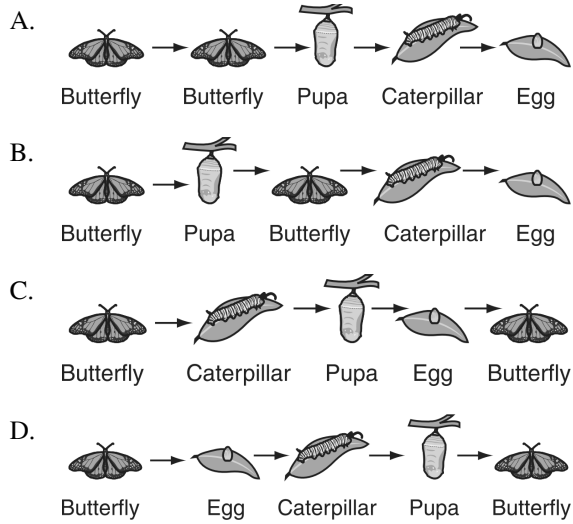
- A. mitosis
- B. meiosis
- C. replication
- D. fertilization

79. During sexual reproduction, a sperm cell fertilizes an egg cell to form a fertilized egg. The fertilized egg then develops into a new organism.

Which statement describes the primary advantage of sexual reproduction over asexual reproduction?

- A. Sexual reproduction produces identical offspring.
- B. Sexual reproduction results in less adaptable offspring.
- C. Sexual reproduction generates a large number of offspring.
- D. Sexual reproduction results in genetic variation in offspring.

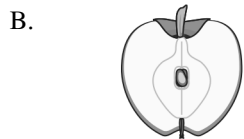
80. Which row shows the sequence for the life cycle of a butterfly?



81. In which of the following does all the genetic information come from just one parent?



Peas in a pod



Apple with seeds



Frog



Yeast cell with a bud

82. The picture below shows a maple seed.



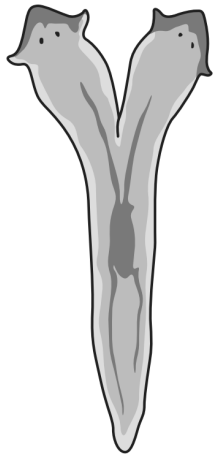
How will this type of seed *most likely* be spread?

- A. by the Sun B. by birds
C. by insects D. by the wind

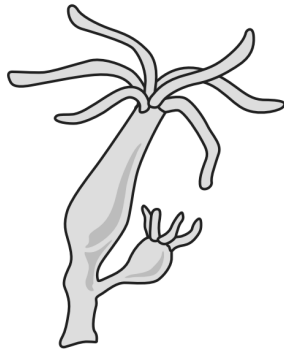
83. During which process does genetic material come from two parents?

- A. asexual reproduction
B. photosynthesis
C. respiration
D. sexual reproduction

84. The diagrams below show a planarian reproducing by splitting in two and a hydra reproducing by budding.



Planarian



Hydra

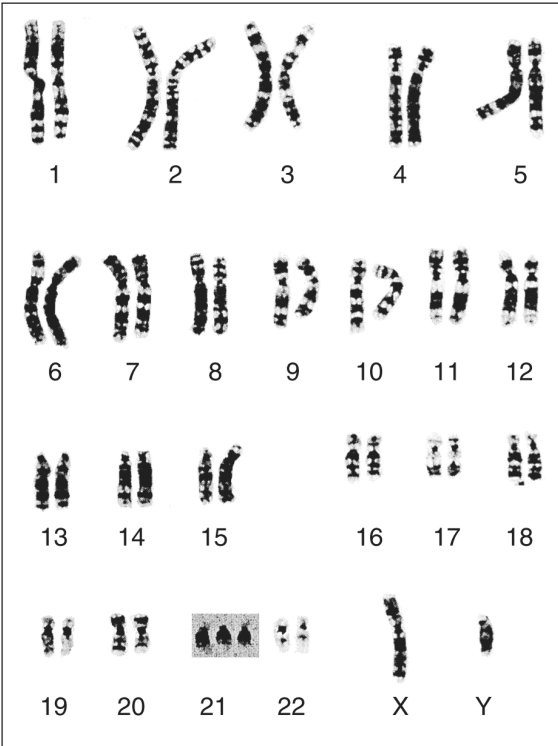
Which of the following do the new planarian and hydra have in common with the original planarian and hydra?

- A. The fertilization occurs externally.
 - B. The egg and sperm are united.
 - C. The offspring of each organism has similar but slightly different genes.
 - D. The offspring of each organism is identical to its parent.
85. A cell containing 28 chromosomes undergoes mitosis and cell division. How many chromosomes will each of the resulting daughter cells contain?
- A. 7 B. 14 C. 28 D. 56

86. Which statement *best* describes the importance of sexual reproduction?

- A. Sexual reproduction produces offspring that are identical.
- B. Sexual reproduction produces variation among offspring.
- C. Sexual reproduction provides for the regeneration of body parts in some species.
- D. Sexual reproduction occurs between individuals of the same species.

87. The picture below shows the chromosomes of a human.



What caused the chromosomal alteration in number 21?

- A. part of one chromosome attached to another chromosome (translocation)
- B. some of the genes on a chromosome were reversed (inversion)
- C. a duplicated chromosome failed to separate (nondisjunction)
- D. a part of a chromosome was lost (deletion)

88. Which process allows for an organism to increase the number of body cells during development?

- A. budding
- B. conjugation
- C. meiosis
- D. mitosis

89. Which statement *best* describes an advantage of asexual reproduction for a population of organisms?

- A. The population can increase in number more rapidly.
- B. The population can develop greater genetic diversity.
- C. The population can maintain the same number of organisms.
- D. The population can adapt more quickly to a changing environment.

90. How many daughter cells are formed in meiosis?

- A. 0
- B. 1
- C. 2
- D. 4

91. Two gametes containing 20 chromosomes fuse during fertilization. How many chromosomes will the zygote cell contain?

- A. 10
- B. 20
- C. 40
- D. 80

92. A cell with 24 chromosomes undergoes mitosis twice. How many chromosomes will each daughter cell have?

- A. 6 B. 12 C. 24 D. 48

93. What process produces offspring from only one parent organism?

- A. Fertilization
B. Germination
C. Sexual reproduction
D. Asexual reproduction

94. By what process are sex cells produced?

- A. Mitosis B. Fertilization
C. Meiosis D. Conjugation

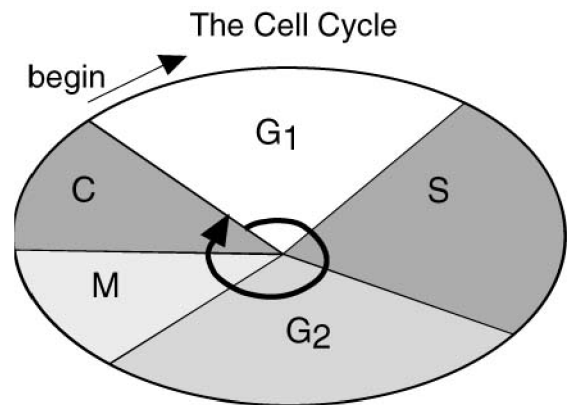
95. Which of the following is true of asexual reproduction?

- A. It requires seeds.
B. It requires flowers.
C. It requires only one parent.
D. It requires sperm and eggs.

96. The spider plant reproduces asexually. The runners, which are similar to roots, grow from the parent plant. Other plants grow from these runners. Which of the following statements is true about a plant that is asexual?

- A. The DNA of the new plant is a new unique strand of DNA.
B. The DNA of the new plant is a blend of the parent plant's DNA.
C. The DNA of the new plant is the same as the DNA of the parent plant.
D. The DNA of the new plant is different from the DNA of the parent plant.

97.



The stages of cell division called prophase, metaphase, anaphase, and telophase occur during which stage of the cell cycle shown in the diagram above?

- A. G_1 B. S C. M D. C

98. Which of the following processes is *most* responsible for getting genetic information to each cell in the body of an organism?

- A. Protein synthesis
- B. Mitosis
- C. Diffusion
- D. Respiration

99. The number of chromosomes in the egg of a potato plant is 24. The number of chromosomes in the cells of the potato root is—

- A. 12
- B. 24
- C. 36
- D. 48

100. Unlike mitosis, meiosis occurs only in—

- A. reproductive cells.
- B. muscle cells.
- C. connective tissue cells.
- D. nerve cells.

101. In order for humans to have a normal number of chromosomes, sex cells must be—

- A. haploid.
- B. diploid.
- C. triploid.
- D. tetraploid.

102. Chromosomes are most easily seen during cell division because the chromosomes—

- A. double in number.
- B. shorten and thicken.
- C. move and expand.
- D. match up with other chromosomes.

103. A cut on a frog's foot will repair itself using the process of—

- A. mitosis.
- B. meiosis.
- C. phagocytosis.
- D. pinocytosis.

104. A species with 12 chromosomes in each somatic cell will produce sex cells with—

- A. 3 chromosomes.
- B. 4 chromosomes.
- C. 6 chromosomes.
- D. 24 chromosomes.

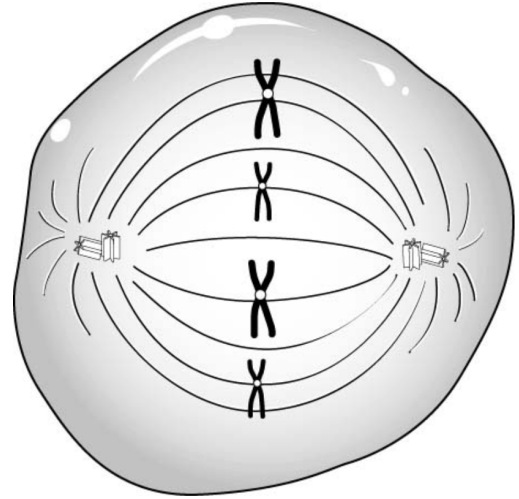
105. Compared to sexual reproduction, asexual reproduction results in a—

- A. greater variation in offspring.
- B. larger number of identical cells.
- C. longer life span of a cell.
- D. fewer number of cells dividing.

106. Meiosis is different from mitosis because meiosis produces—

- A. consistent genetic makeup of all gametes.
- B. larger daughter cells.
- C. two gametes for every original parent cell.
- D. cells with half the number of chromosomes.

107.



What phase of mitosis is represented by the diagram shown above?

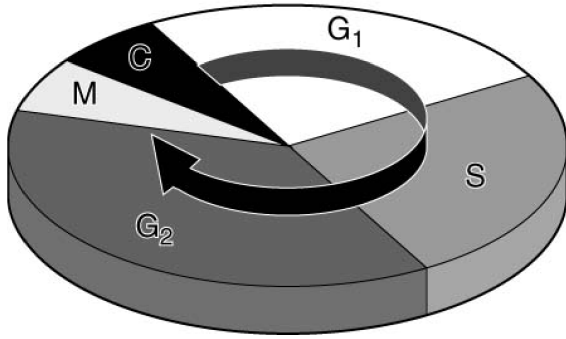
- A. Metaphase
- B. Prophase
- C. Telophase
- D. Interphase

108. Humans have 23 pairs of chromosomes. How many pairs are sex chromosomes?

- A. 1
- B. 2
- C. 3
- D. 4

109.

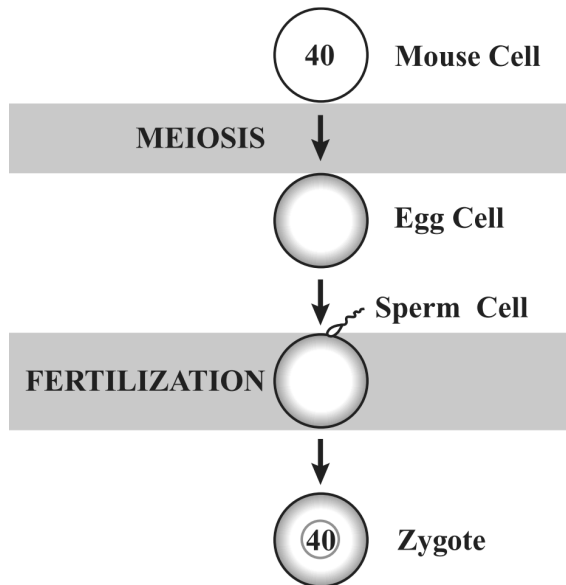
The Cell Cycle



G₁ Phase, S Phase, and G₂ Phase are all parts of—

- A. Interphase.
- B. Anaphase.
- C. Prophase.
- D. Telophase.

110. The diagram shows the results of meiosis and fertilization in mice.



After meiosis is complete, how many chromosomes will be in the egg cell?

- A. 10
- B. 20
- C. 40
- D. 80

111. Which statement describes the overall process of meiosis?

- A. A haploid cell produces 2 haploid cells.
- B. A diploid cell produces 2 diploid cells.
- C. A haploid cell produces 4 diploid cells.
- D. A diploid cell produces 4 haploid cells.

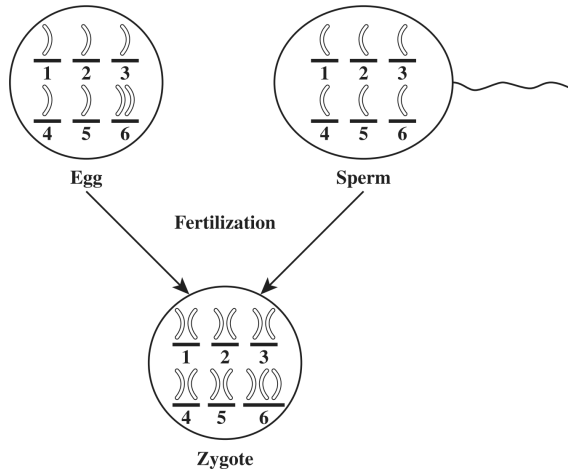
112. In which phase of mitosis does the chromatin become condensed into short, rod-like structures that can be seen easily with a microscope?

- A. Anaphase
- B. Metaphase
- C. Prophase
- D. Telophase

113. Which term refers to the sequence of events that cells go through as they grow and divide?

- A. Active transport
- B. Cell cycle
- C. Cellular respiration
- D. Protein synthesis

114. The common housefly contains 12 chromosomes. An egg cell, a sperm cell, and the resulting zygote from a cross between two houseflies are shown in the diagram below.



The chromosomal mutation in the zygote can be traced to which of the following?

- A. Chromosome 3 in the egg cell
 B. Chromosome 6 in the egg cell
 C. Chromosome 3 in the sperm cell
 D. Chromosome 6 in the sperm cell
115. Which phase of the cell cycle ensures that identical copies of the parent cell DNA are made for the daughter cells?

- A. Gap 1 (G1) B. Gap 2 (G2)
 C. Mitosis (M) D. Synthesis (S)

116. During which phase of mitosis do the sister chromatids separate and move toward opposite poles of the cell?

- A. Anaphase B. Metaphase
 C. Prophase D. Telophase

117. Before a cell goes through either mitosis or meiosis, which process must be carried out by the DNA in the nucleus?

- A. replication B. nondisjunction
 C. transcription D. translation

118. Sexual reproduction provides for what to occur?

- A. cloning B. budding
 C. genetic stability D. genetic variation

119. 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?

- A. mitosis B. meiosis
 C. spermatogenesis D. oogenesis

120. What is the *primary* cause of variation in the offspring of sexually reproducing organisms?

- A. cytoplasmic division
- B. environmental changes
- C. mutation
- D. recombination of alleles

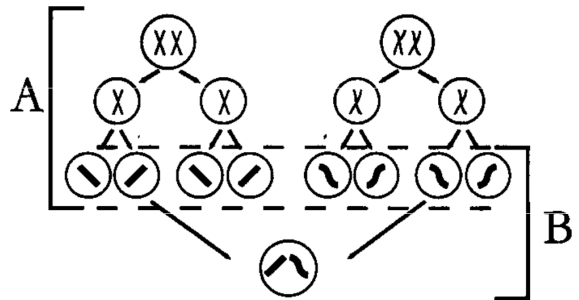
121. Which is responsible for most genotypic and phenotypic variation among humans?

- A. meiosis
- B. budding
- C. mitosis
- D. regeneration

122. Many factors can affect human fetal development. Which would have the *most damaging* effect on fetal development?

- A. increasing food intake
- B. decreasing exercise
- C. smoking cigarettes
- D. increasing exercise

123. Use the graphic below to answer the following question.



What process is represented by the bracketed section B shown above?

- A. cell duplication
- B. asexual reproduction
- C. sex cell formation
- D. egg fertilization

124. A sunflower and bee are shown.



What is the function of the sunflower's seeds?

- A. food for the bee
- B. food for the sunflower
- C. reproduction of the sunflower
- D. production of sunflower petals

Cellular Reproduction 8/12/2019

- | | | | |
|---------|---|---------|---|
| 1. | | 15. | |
| Answer: | B | Answer: | |
| Points: | 1 | Points: | 1 |
| 2. | | 16. | |
| Answer: | C | Answer: | |
| Points: | 1 | Points: | 1 |
| 3. | | 17. | |
| Answer: | C | Answer: | |
| Points: | 1 | Points: | 1 |
| 4. | | 18. | |
| Answer: | B | Answer: | |
| Points: | 1 | Points: | 1 |
| 5. | | 19. | |
| Answer: | B | Answer: | |
| Points: | 1 | Points: | 1 |
| 6. | | 20. | |
| Answer: | B | Answer: | B |
| Points: | 1 | Points: | 1 |
| 7. | | 21. | |
| Answer: | A | Answer: | A |
| Points: | 1 | Points: | 1 |
| 8. | | 22. | |
| Answer: | D | Answer: | D |
| Points: | 1 | Points: | 1 |
| 9. | | 23. | |
| Answer: | B | Answer: | B |
| Points: | 1 | Points: | 1 |
| 10. | | 24. | |
| Answer: | D | Answer: | B |
| Points: | 1 | Points: | 1 |
| 11. | | 25. | |
| Answer: | A | Answer: | C |
| Points: | 1 | Points: | 1 |
| 12. | | 26. | |
| Answer: | C | Answer: | A |
| Points: | 1 | Points: | 1 |
| 13. | | 27. | |
| Answer: | B | Answer: | A |
| Points: | 1 | Points: | 1 |
| 14. | | 28. | |
| Answer: | C | Answer: | D |
| Points: | 1 | Points: | 1 |
| | | 29. | |
| | | Answer: | A |
| | | Points: | 1 |

30.		46.	
Answer:	D	Answer:	D
Points:	1	Points:	1
31.		47.	
Answer:	B	Answer:	A
Points:	1	Points:	1
32.		48.	
Answer:	A	Answer:	C
Points:	1	Objective:	B.05A
33.		Points:	1
Answer:	D	49.	
Points:	1	Answer:	A
34.		Points:	1
Answer:	B	50.	
Points:	1	Answer:	A
35.		Points:	1
Answer:	B	51.	
Points:	1	Answer:	B
36.		Points:	1
Answer:	C	52.	
Points:	1	Answer:	B
37.		Points:	1
Answer:	D	53.	
Points:	1	Answer:	D
38.		Points:	1
Answer:	C	54.	
Points:	1	Answer:	C
39.		Points:	1
Answer:	C	55.	
Points:	1	Answer:	D
40.		Points:	1
Answer:	B	56.	
Points:	1	Answer:	C
41.		Points:	1
Answer:	B	57.	
Objective:	B.06G	Answer:	C
Points:	1	Points:	1
42.		58.	
Answer:	A	Answer:	C
Points:	1	Points:	1
43.		59.	
Answer:	D	Answer:	A
Points:	1	Points:	1
44.		60.	
Answer:	B	Answer:	B
Points:	1	Points:	1
45.		61.	
Answer:	C	Answer:	C
Points:	1	Points:	1

62.
Answer: C
Points: 1

63.
Answer: D
Points: 1

64.
Answer:
Points: 1

65.
Answer:
Points: 1

66.
Answer:
Points: 1

67.
Answer:
Points: 1

68.
Answer:
Points: 1

69.
Answer:
Points: 1

70.
Answer:
Points: 1

71.
Answer: A
Points: 1

72.
Answer: A
Points: 1

73.
Answer: C
Points: 1

74.
Answer: C
Points: 1

75.
Answer: A
Points: 1

76.
Answer: C
Points: 1

77.
Answer: A
Points: 1

78.
Answer: B
Points: 1

79.
Answer: D
Points: 1

80.
Answer: D
Points: 1

81.
Answer: D
Points: 1

82.
Answer: D
Points: 1

83.
Answer: D
Points: 1

84.
Answer: D
Points: 1

85.
Answer: C
Points: 1

86.
Answer: B
Points: 1

87.
Answer: C
Points: 1

88.
Answer: D
Points: 1

89.
Answer: A
Points: 1

90.
Answer: D
Points: 1

91.
Answer: C
Points: 1

92.
Answer: C
Points: 1

93.
Answer: D
Points: 1

94.
Answer: C
Points: 1

95.
Answer: C
Points: 1

96.
Answer: C
Points: 1

97.
Answer: C
Points: 1

98.
Answer: B
Points: 1

99.
Answer: D
Points: 1

100.
Answer: A
Points: 1

101.
Answer: A
Points: 1

102.
Answer: B
Points: 1

103.
Answer: A
Points: 1

104.
Answer: C
Points: 1

105.
Answer: B
Points: 1

106.
Answer: D
Points: 1

107.
Answer: A
Points: 1

108.
Answer: A
Points: 1

109.
Answer: A
Points: 1

110.
Answer: B
Points: 1

111.
Answer: D
Points: 1

112.
Answer: C
Points: 1

113.
Answer: B
Points: 1

114.
Answer: B
Points: 1

115.
Answer: D
Points: 1

116.
Answer: A
Points: 1

117.
Answer: A
Points: 1

118.
Answer: D
Points: 1

119.
Answer: A
Points: 1

120.
Answer: D
Points: 1

121.
Answer: A
Points: 1

122.
Answer: C
Points: 1

123.
Answer:
Points: 1

124.
Answer: C
Points: 1