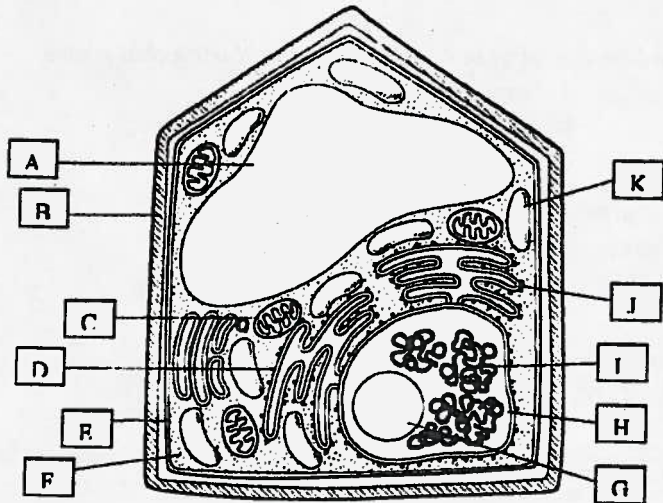


Key

Science 9 Biology Unit Review → answer key on website.

Matching

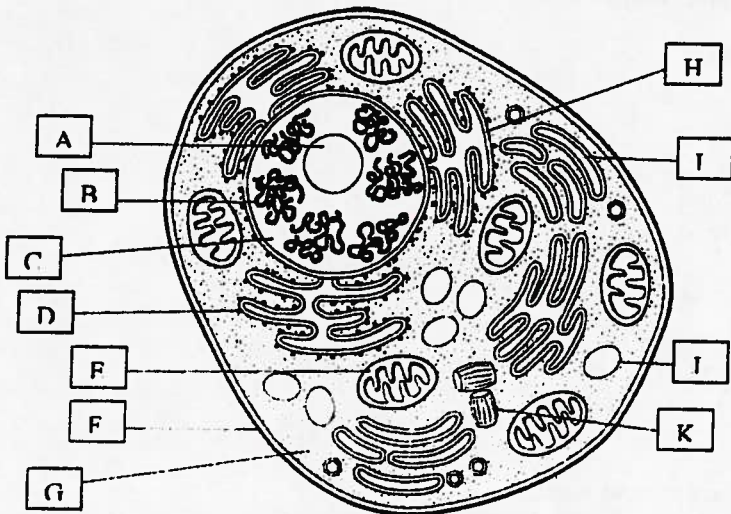


* Need to know which organelles are present in the nucleus

Match the above diagrams of cell organelles with the best description.

- A
 - C
 - K
 - H
 - B
 - E
 - G
 - F
1. vacuole
 2. mitochondria
 3. chloroplast
 4. nucleus ✖
 5. cell wall
 6. cell membrane
 7. nucleolus ✖
 8. cytoplasm

I. chromatin



- J
 - I
 - B
9. vacuole
 10. smooth endoplasmic reticulum
 11. chromosomes/DNA

- E 12. mitochondria
- F 13. cell membrane
- H 14. rough endoplasmic reticulum
- K 15. centrioles ~~A~~
- D 16. ribosome

Match the phase of the cell cycle with the best description of what happens during that phase.

- | | |
|---------------|----------------|
| a. interphase | d. anaphase |
| b. prophase | e. telophase |
| c. metaphase | f. cytokinesis |

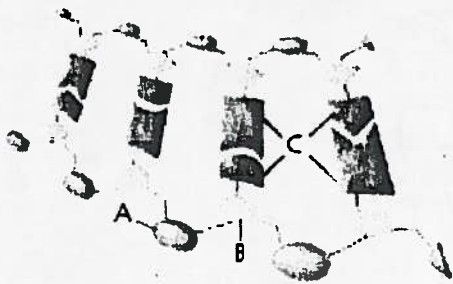
- B 17. nuclear membrane breaks down, sister chromatids are visible
- E 18. nuclear membrane forms, chromosomes get longer and thinner
- F 19. cell membrane pinches cytoplasm to divide cell
- A 20. cell is active, DNA is replicated
- C 21. sister chromatids line up along the middle of the cell
- D 22. chromosomes are pulled to opposite ends of the cell

There are several methods of asexual reproduction used by organisms. Match the description that best describes these methods of asexual reproduction.

- | | |
|-------------------|----------------------------|
| a. cloning | d. vegetative reproduction |
| b. binary fission | e. fragmentation |
| c. budding | f. spores |

- C 23. an offspring grows from the side of a parent organism
- B 24. two daughter cells of identical size are produced
- E 25. a piece of an animal can grow into a complete individual
- D 26. a piece of a plant can grow and develop into a complete organism
- A 27. a body cell nucleus from an adult cell replaces the nucleus of a fertilized egg
- F 28. thick-walled cells grow into an organism identical to the parent

Identify the parts of the DNA molecule, labelled A to C



- A 29. phosphate
- B 30. sugar
- C 31. base

Match each of these description to their correct words.

- | | |
|---|---------------------|
| a. provide energy for the cell | c. contain genes |
| b. location of most cell activity including absorbing, moving, and processing | d. produce proteins |

36. Cell division is responsible for repair. Cells around the cut divided to fill in the space.

37. Cells are inefficient when they are too big. It's too far to go from nucleus, through cytoplasm, to cell membrane. Cells are small so that they can carry out functions efficiently.

39. Chromosomes are made of DNA. A segment of DNA that codes for something is called a gene.

materials

- C 32. chromosomes
A 33. mitochondria
D 34. ribosomes
B 35. cytoplasm

Short Answer

36. At some point in your life, you have probably had a cut in your skin. The location of this injury may not be noticeable now. Explain this observation and identify the cell activity that was responsible for the repair.
37. You began your life as one cell and now you are made up of trillions of cells. Explain why the single cell did not just get bigger, making you a giant, single-celled organism?
38. It has been determined that most of the dirt you wash out of your clothes when you do laundry is really skin cells you have shed. If you shed skin cells at such a fast rate, why has your skin not worn off by now? *Always being replaced by cell division.*
39. Explain the relationship between DNA, genes, and chromosomes.
40. What is the role of the nucleolus in the production of proteins? *makes ribosomes*
41. (a) What is meant by the term *human genome*? *all the human genes together*
 (b) Where would you find the genome of an individual? *nucleus*
- ~~42.~~ List three different functions of proteins in your body. *omit*
43. Explain how mitosis can produce two cells with identical genetic information. *copies all the chromosome first*
44. Define the term *mutation*. *change to DNA*
45. Scientists are attempting to grow skin to help burn victims. Assume that skin cells can double in number every 30 min. If the scientists start with 100 cells, how many cells will they have after 4.0 h? Assume that all cells reproduce and no cells die. A chart is recommended for solving this problem. *25600*
46. Write a short paragraph explaining the importance of meiosis in sexual reproduction. *answers may vary*
47. How do stem cells differ from normal body cells? *stem cells can develop into anything. Normal body cells are different.*
- ~~48.~~ List the steps of protein production in the correct order. *omit*
49. What parts of your body undergo cell division more often than other parts? Explain your answer. *Ex skin cells need to be replaced more often.*
50. How are the daughter cells of a multicellular organism different from the daughter cells of a unicellular organism? *multicellular organism has differentiated cells that perform specific functions. Unicellular organisms: cell performs all functions.*
51. Describe what happens to the end products of mitosis and meiosis. *2 genetically identical diploid cells 4 genetically different haploid cells*
52. Compare sexual and asexual reproduction by completing the following chart.

Feature	Asexual reproduction	Sexual reproduction
Number of parents	1	2
Number of offspring	depends on type mitosis = 2 daughter cells	4 gametes produced
Variety of offspring	no variety	variety
Speed of reproduction	fast	slow

Timing	anytime	only for sexual repro.
--------	---------	------------------------

53. Indicate whether each statement is true or false. If you think that a statement is false, rewrite it to make it true.
- (a) DNA is composed of sugars, phosphates, and nitrogenous bases. **T**
 - (b) Humans have 23 chromosomes in each somatic cell. **F 46 chromosomes**
 - (c) Zygotes are diploid. **T**
 - (d) Chromosomes replicate during metaphase. **F replicate during interphase**
 - (e) Gametes are diploid. **F haploid**
 - (f) DNA and RNA are only found in the nucleus. **T**
 - (g) If the fertilized egg of a fruit fly has eight chromosomes then the cells of the fruit fly's wings have four chromosomes. **F all have 8**
 - (h) When plants such as potatoes reproduce by creating tubers, they reproduce without sex cells. **T**
 - (i) Cancer cells divide at the same rate as normal cells. **F divide faster**
 - (j) Human egg cells have half as many chromosomes as human sperm cells. **F same #**

54. Figure 3 compares mitosis and meiosis in a cell that contains 32 chromosomes.
- (a) How many chromosomes would be found in cell A? **32**
 - (b) How many chromosomes would be found in cell C? **32**
 - (c) How many chromosomes would be found in cell D? **16**
 - (d) Which cells would be haploid (or contain half the number of chromosomes as the parent cell)? **D, E**

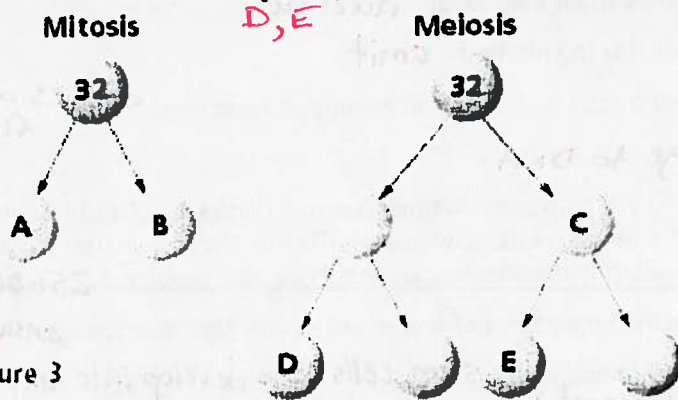
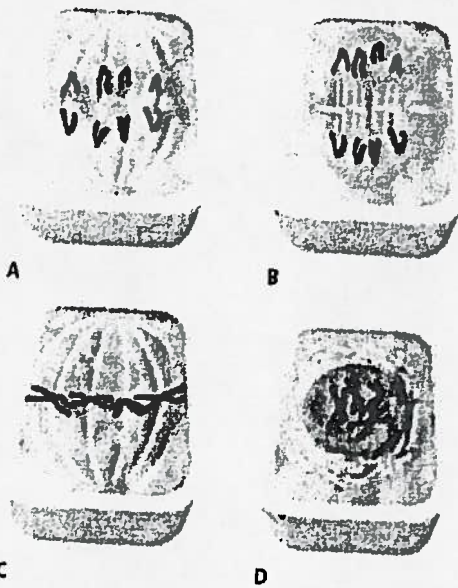


Figure 3

55. (a) Name the stages and put them in the correct order. **Mitosis : Prophase, Metaphase, Anaphase, Telophase, Cytokinesis, Interphase**
- (b) Does the illustration show plant or animal mitosis? Explain.
- (c) Identify the stages that have sister chromatids attached. **Prophase, metaphase**
- (d) Which stage of the cell cycle is missing? **interphase**

↳ Pictures are on next page



56. DNA codes for specific amino acids. Amino acids are the building blocks of protein

56. Describe how a cell can make a protein, starting with the DNA code.
- ~~57.~~ There are many differences between plant cells and animal cells. What are the specific differences between the process of mitosis in plants and the process of mitosis in animals cells?
- * 58. Mitosis and meiosis are similar in some ways, but quite different in other ways. Use a Venn diagram to help. *We covered this in first quiz.*
59. Discuss the advantages and disadvantages of sexual reproduction *→ advantage: variety in offspring*
60. Mutations in skin or liver cells are not as serious as mutations in ovary or testes cells. Explain this statement. *disadvantage: slow, need a mate*
61. What are mutations, and why are they important? *passed on to offspring*
62. Using your knowledge of gametes and chromosome numbers and types, explain why sexual reproduction can produce a variety of traits in individuals of the same species. *changes to DNA*
63. (a) What are cancer-causing agents called? *carcinogens*
 (b) Name three known causes of cancer. *uv light, tar in cigarettes, pesticides, etc.*
- ~~64.~~ (a) What special ability do the stem cells in an embryo have? *can develop into any type of cell!*
 (b) Where else are stem cells found?
65. Cloning of mammals is a scientific and technological achievement, but it raises many concerns. Did the discussion of reproductive cloning of mammals change your opinion about the pros and cons of using this technology? Explain why or why not. *Refer to your paragraphs.*
- ~~66.~~ Did the discussion about hiring surrogate mothers change your opinion about the use of surrogate mothers? Explain why or why not.

20. DNA is extracted
specific amino
acids, amino acids
are the building blocks
of protein

advantage
disadvantage
point on the offspring

Refer to our notes

light, air, cigarette, pesticide, etc.
like to you graphic