Genetics 1 Star Test

Name: _____ **Date:** _____

1. The accompanying data table summarizes the results of an investigation in which seeds from the same plant were grown under different conditions of temperature and relative humidity.

Temperature: 20°C Relative Humidity: 20%		Temperature: 31°C Relative Humidity: 95%	
Genes Present in Cells of Organism	Appearance of Organism	Genes Present in Cells of Organism	Appearance of Organism
AA	red	AA	white
Aa	red	Aa	white
aa	white	aa	white

Which conclusion can be drawn from the information in the data table?

A. Color in this species is determined by genes, only.

B. Many characteristics are not inherited.

C. Mutations occur only when plants are grown at low temperatures.

D. There is an interaction between environment and heredity.

2. The puppies shown in the photograph below are all from the same litter.

The differences seen within this group of puppies are most likely due to

A. overproduction and selective breeding

B. mutations and elimination of genes

C. evolution and asexual reproduction

D. sorting and recombination of genes

3. Which phrases best identify characteristics of asexual reproduction?

A. one parent, union of gametes, offspring similar to but not genetically identical to the parent

B. one parent, no union of gametes, offspring genetically identical to parents

C. two parents, union of gametes, offspring similar to but not genetically identical to parents

D. two parents, no union of gametes, offspring genetically identical to parents

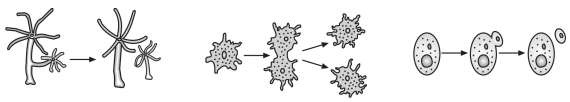
4. Which row in the chart below best describes asexual reproduction?

Row	Number of Parents	Comparison of Offspring to Parents
(1)	one	identical
(2)	one	different
(3)	two	identical
(4)	two	different

A. Row (1) B. Row (2)

C. Row (3) D. Row (4)

5. The diagrams below illustrate types of asexual reproduction.



Which statement correctly describes the offspring?

A. They vary genetically from the parent.

B. They are produced by the union of gametes.

C. They obtain nourishment from a placenta.

D. They result without the union of gametes.

6. Most of the hereditary information that determines the traits of an organism is located in

A. only those cells of an individual produced by meiosis

B. the nuclei of body cells of an individual

C. certain genes in the vacuoles of body cells

D. the numerous ribosomes in certain cells

7. Hereditary traits are transmitted from generation to generation by means of

A. specific sequences of bases in DNA in reproductive cells

B. proteins in body cells

C. carbohydrates in body cells

D. specific starches making up DNA in reproductive cells

8. The transfer of genes from parents to their offspring is known as

A. differentiation B. heredity

C. immunity D. evolution

9. Hereditary information is stored inside the

A. ribosomes, which have chromosomes that contain many genes

B. ribosomes, which have genes that contain many chromosomes

C. nucleus, which has chromosomes that contain many genes

D. nucleus, which has genes that contain many chromosomes

10. Most cells in the body of a fruit fly contain eight chromosomes. How many of these chromosomes were contributed by each parent of the fruit fly?

A. 8 B. 2 C. 16 D. 4

11. Which cell structure is correctly paired with its primary function?

A. ribosome–protein synthesis

B. mitochondrion–movement

C. vacuole–cell division

D. nucleus–storage of nutrients

12. A small amount of DNA was taken from a fossil of a mammoth found frozen in glacial ice. Genetic technology can be used to produce a large quantity of identical DNA from this mammoth's DNA. In this technology, the original DNA sample is used to

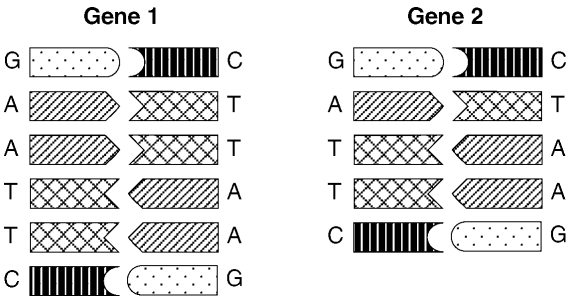
A. stimulate differentiation in other mammoth cells

B. provide fragments to replace certain human body chemicals

C. act as a template for repeated replication

D. trigger mitosis to obtain new base sequences

13. The accompanying diagrams represent portions of the genes that code for wing structure in two organisms of the same species. Gene 1 was taken from the cells of a female with normal wings, and gene 2 was taken from the cells of a female with abnormal wings.

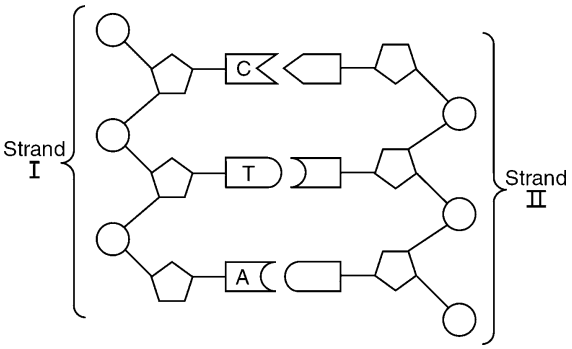


The abnormal wing structure was most likely due to

A. an insertion B. a substitution

C. a deletion D. normal replication

14. In the accompanying diagram, strands I and II represent portions of a DNA molecule. Strand II would normally include



A. AGC B. TCG C. TAC D. GAT

15. Which statement concerning proteins is *not* correct?

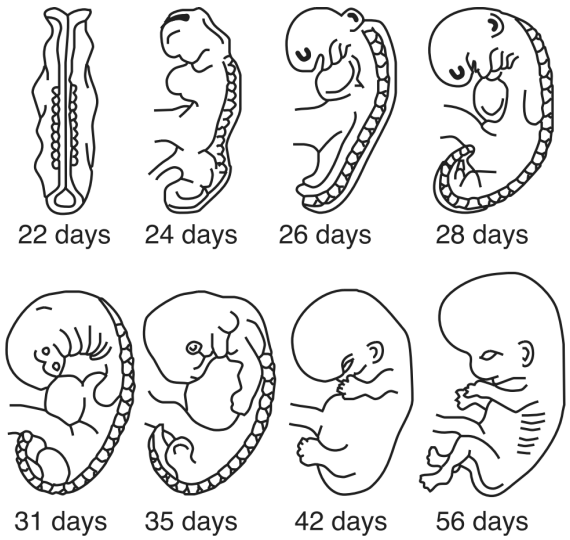
A. Proteins are long, usually folded, chains.

B. The shape of a protein molecule determines its function.

C. Proteins can be broken down and used for energy.

D. Proteins are bonded together, resulting in simple sugars.

16. The development of an embryo is represented in the diagram below.



These changes in the form of the embryo are a direct result of

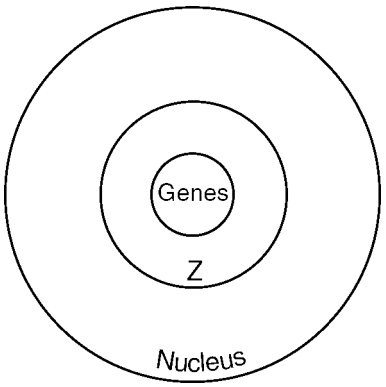
A. uncontrolled cell division and mutations

B. differentiation and growth

C. antibodies and antigens inherited from the father

D. meiosis and fertilization

17. The accompanying diagram represents the organization of genetic information within a cell nucleus.



The circle labeled *Z* most likely represents

A. amino acids B. chromosomes

C. vacuoles D. molecular bases

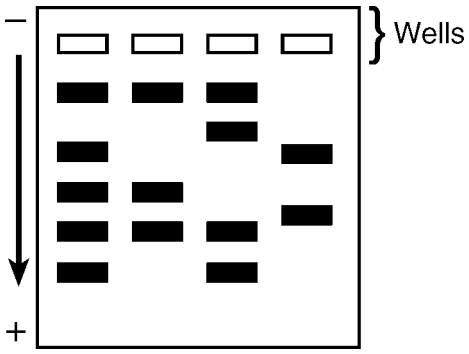
18. When DNA separates into two strands, the DNA would most likely be directly involved in

A. replication B. fertilization

C. differentiation D. evolution

19. Base your answer(s) to the following question(s) on the information and diagram below and on your knowledge of biology.

The four wells represented in the diagram were each injected with fragments that were prepared from DNA samples using identical techniques.



This laboratory procedure is known as

A. cloning

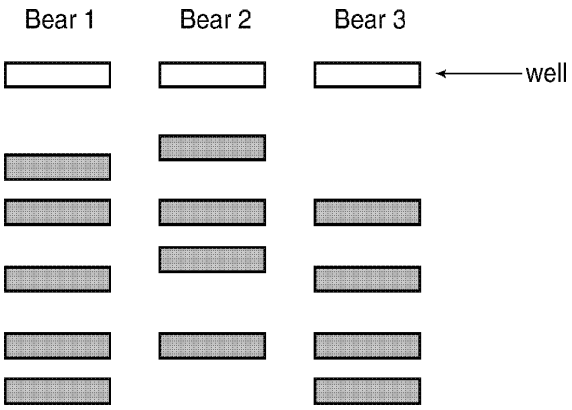
B. gel electrophoresis

C. chromatography

D. use of a dichotomous key

20. Base your answer(s) to the following question(s) on the information and diagram below and on your knowledge of biology.

The diagram below shows the results of a test that was done using DNA samples from three bears of different species. Each DNA sample was cut into fragments using a specific enzyme and placed in the wells as indicated below. The DNA fragments were then separated using gel electrophoresis.



Gel electrophoresis is used to separate DNA fragments on the basis of their

A. size

B. color

C. functions

D. chromosomes

21. Selective breeding is a technique that is used to

A. give all organisms a chance to reproduce

B. produce organisms from extinct species

C. produce offspring with certain desirable traits

D. keep farm crops free of all mutations

22. Selective breeding has been used for thousands of years to

A. develop bacteria that produce human insulin

B. clone desirable plant varieties

C. develop viruses that protect against diseases

D. produce new varieties of domestic animals

23. To produce large tomatoes that are resistant to cracking and splitting, some seed companies use the pollen from one variety of tomato plant to fertilize a different variety of tomato plant. This process is an example of

A. selective breeding B. DNA sequencing

C. direct harvesting D. cloning

24. When humans first domesticated dogs, there was relatively little diversity in the species. Today, there are many variations such as the German shepherd and the dalmatian. This increase in diversity is most closely associated with

A. cloning of selected body cells

B. selective breeding

C. mitotic cell division

D. environmental influences on inherited traits

25. One way to produce large numbers of genetically identical offspring is by

A. cloning

B. fertilization

C. changing genes by agents such as radiation or chemicals

D. inserting a DNA segment into a different DNA molecule

26. The headline "Improved Soybeans Produce Healthier Vegetable Oils" accompanies an article describing how a biotechnology company controls the types of lipids (fats) present in soybeans. The improved soybeans are most likely being developed by the process of

A. natural selection

B. asexual reproduction

C. genetic engineering

D. habitat modification

27. Some farmers currently grow genetically engineered crops. An argument *against* the use of this technology is that

A. it increases crop production

B. it produces insect-resistant plants

C. its long-term effects on humans are still being investigated

D. it always results in crops that do not taste good

28. New inheritable characteristics would be least likely to result from

A. mutations which occur in muscle cells and skin cells

B. mutations which occur in male gametes

C. mutations which occur in female gametes

D. the sorting and recombination of existing genes during meiosis and fertilization

29. A sudden change in the DNA of a chromosome can usually be passed on to future generations if the change occurs in a

A. skin cell

B. liver cell

C. sex cell

D. brain cell

30. A change in the base subunit sequence during DNA replication can result in

A. variation within an organism

B. rapid evolution of an organism

C. synthesis of antigens to protect the cell

D. recombination of genes within the cell

31. Although a liver cell and a muscle cell in a human developed from the same single cell, their appearance and functions are different. This is because the liver cell

A. contains different genes than the muscle cell

B. expresses different genes than the muscle cell

C. destroys the muscle cell genes it contains

D. lacks the genes found in muscle cells

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Genetics 1 Star Test 05/19/2014

1.
Answer: D

2.
Answer: D

3.
Answer: B

4.
Answer: A

5.
Answer: D

6.
Answer: B

7.
Answer: A

8.
Answer: B

9.
Answer: C

10.
Answer: D

11.
Answer: A

12.
Answer: C

13.
Answer: C

14.
Answer: D

15.
Answer: D

16.
Answer: B

17.
Answer: B

18.
Answer: A

19.
Answer: B

20.
Answer: A

21.
Answer: C

22.
Answer: D

23.
Answer: A

24.
Answer: B

25.
Answer: A

26.
Answer: C

27.
Answer: C

28.
Answer: A

29.
Answer: C

30.
Answer: A

31.
Answer: B