

VIRGINIA STANDARDS OF LEARNING

Spring 2005 Released Test

**GRADE 8
SCIENCE**

CORE 1

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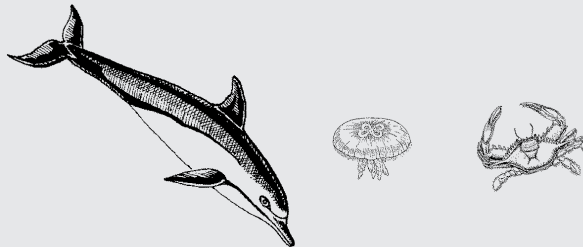
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Science

DIRECTIONS

Read each question carefully and choose the best answer. Then mark the space in the answer booklet for the answer you have chosen.

SAMPLE



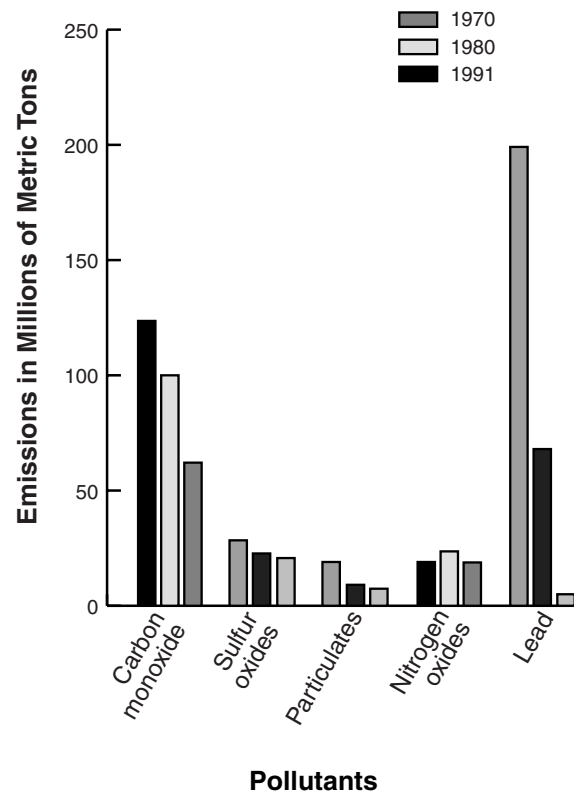
These animals are grouped together because all of them —

- A live in the water
- B are fish
- C are warm-blooded
- D lay eggs

- 1 Venus, the moon, Mars, and the sun are all visible in our sky. All but one of these reflect light from another source. Which of the following produces its own light?

- A Venus
- B The moon
- C Mars
- D The sun

2 Emissions of Air Pollutants, 1970 - 1991



According to the graph, which air pollutant decreased the *most* from 1970 to 1991?

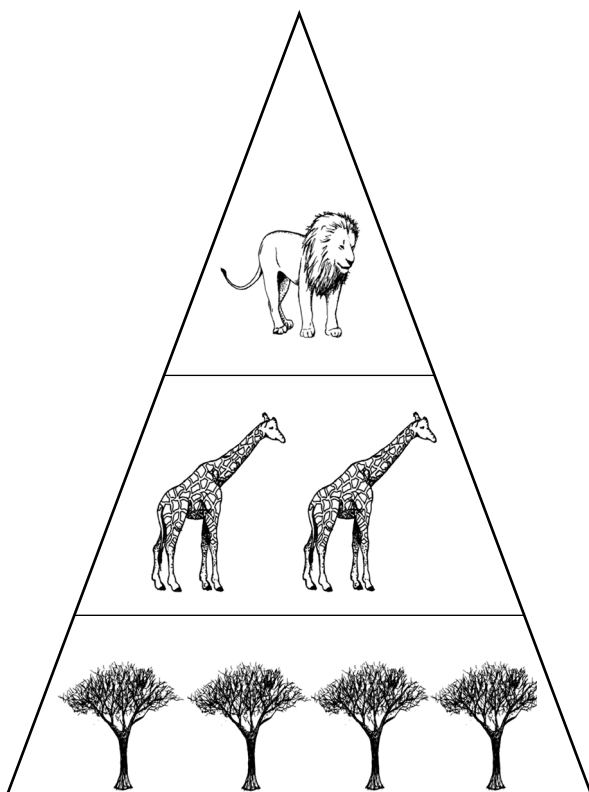
- F Carbon monoxide
- G Sulfur oxides
- H Particulates
- J Lead

- 3 Which of the following could *best* be used to demonstrate energy being transformed from electricity to heat?

- A A magnifying glass
- B A triple beam balance
- C A toaster
- D A gas oven

4

Energy Pyramid



Which of these *best* describes a relationship shown by this African energy pyramid?

- F The lion is a predator of the giraffes.
- G The lion is the prey of the giraffes.
- H Giraffes are the prey of the trees.
- J Giraffes are predators of the lion.

5 Insulation materials reduce heat loss because they —

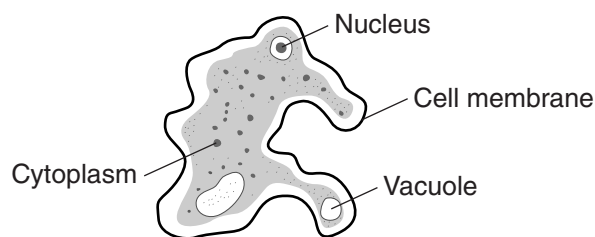
- A are poor conductors
- B block out the sun
- C reduce evaporation
- D promote convection

6 Which of the following classification groups contains organisms that have the *most* characteristics in common?

- F Kingdom
- G Phylum
- H Class
- J Species

7

Single-Celled Organism

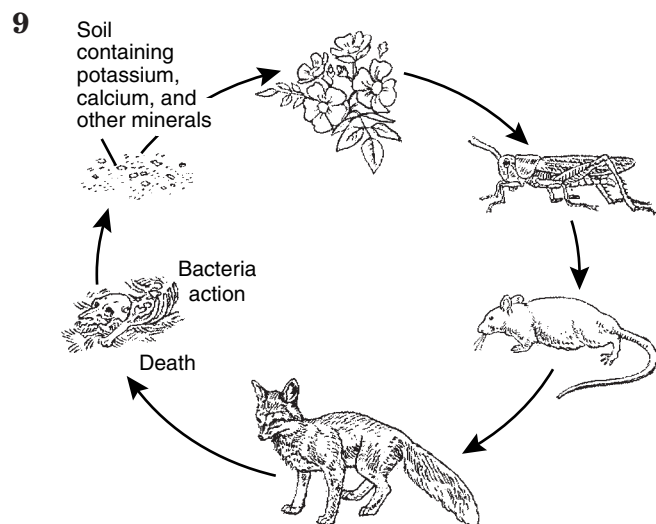


In this diagram of a single-celled organism, which organelle functions as a place to store extra water?

- A Cell membrane
- B Vacuole
- C Cytoplasm
- D Nucleus

8 Which process is a physical change?

- F Rusting iron
- G Burning coal
- H Tarnishing silver
- J Melting ice



Which concept is best illustrated by this diagram?

- A The exchange of CO_2 and O_2 in an ecosystem
- B The effect of limiting factors in a biome
- C Cycling of nutrients in a community
- D Environmental pressures on a population

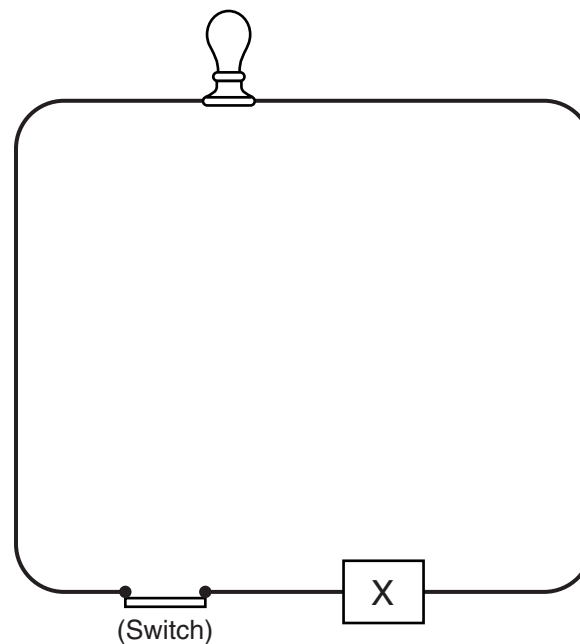
10 Water stored behind a dam is an example of what type of energy?

- F Kinetic
- G Potential
- H Solar
- J Chemical

11 What process makes food for plants?

- A Reproduction
- B Photosynthesis
- C Respiration
- D Condensation

12



In the diagram, what essential part of an electric circuit is missing at position X?

- F Load
- G On/off switch
- H Wires
- J Source of electric current

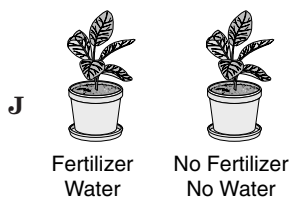
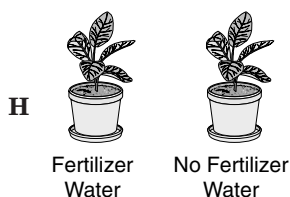
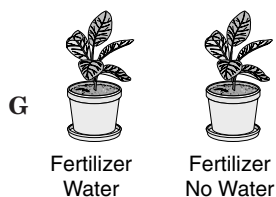
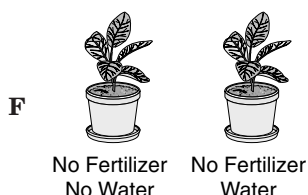
13 Which of the following has the *least* effect on lake water temperature?

- A The depth of the water
- B The angle of incoming sun rays
- C The number of fish in the lake
- D The lake's surface area

14

Hypothesis: The addition of a fertilizer to soil will increase plant growth.

Which of these experimental designs would best test this hypothesis?



15

Gestation Period in Some Domesticated Mammals

Mammal	Average Life Span (years)	Gestation Period (days)
Dog	16	61
Cat	15	63
Horse	27	330
Cow	18	284
Sheep	13	154

Which animal has a life span closest to that of sheep?

- A Dog
- B Cat
- C Horse
- D Cow

16 When a base is mixed with an acidic solution, neutralization occurs because the —

- F base reaches absolute zero
- G acid evaporates
- H base chemically reacts with the acid
- J mass of the solution increases

17 Fossil fuels such as gas, oil, and coal have what kind of energy?

- A Mechanical energy
- B Chemical energy
- C Electrical energy
- D Nuclear energy

18

**Tellin Family of Seashells
(Bivalves)**

	Size	Color	Hinge Type	Location	Water Temp.
Bodega tellin	to 2 inches	Creamy white	Weak	Coast	Warm
Salman tellin	0.5 inches	Pink	Weak	Coast	Warm
Speckled tellin	2.5-3.5 inches	Yellow and white	Weak	Coast	Warm
Rose petal tellin	1.5 inches	Lavender	Weak	Coast	Warm

From the data given in this table, which characteristics help classify the seashells as belonging to the Tellin family?

- F Color, size, and hinge type
- G Color, size, and water temperature
- H Hinge type, location, and water temperature
- J Size, hinge type, and location

19 DNA is essential to living organisms because it —

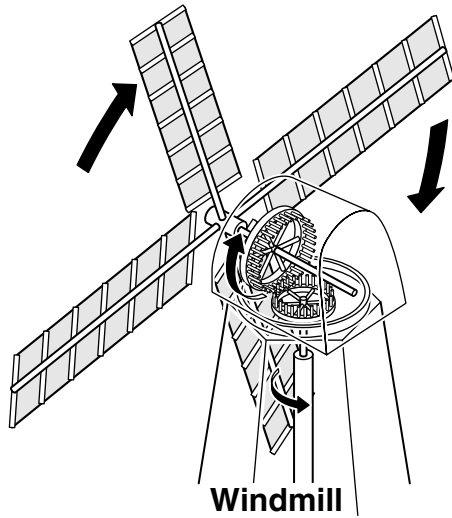
- A carries the genetic code
- B is a spiral helix
- C can prevent diseases
- D can break apart

20 After fishing in the ocean, a student left his fishing gear in the sun to dry. Later, he noticed that small white crystals had formed on the rod, reel, and fishing line. Which of these is the *best* explanation of what occurred?

- F The water evaporated from the fishing gear, and sand was attracted to it.
- G The fish that were caught left scales on the fishing gear.
- H The salt in the ocean water reacted with the fishing gear and caused it to rust.
- J The water evaporated from the fishing gear, and salt from the ocean was left behind.

21 Which of these shows the correct sequence of development?

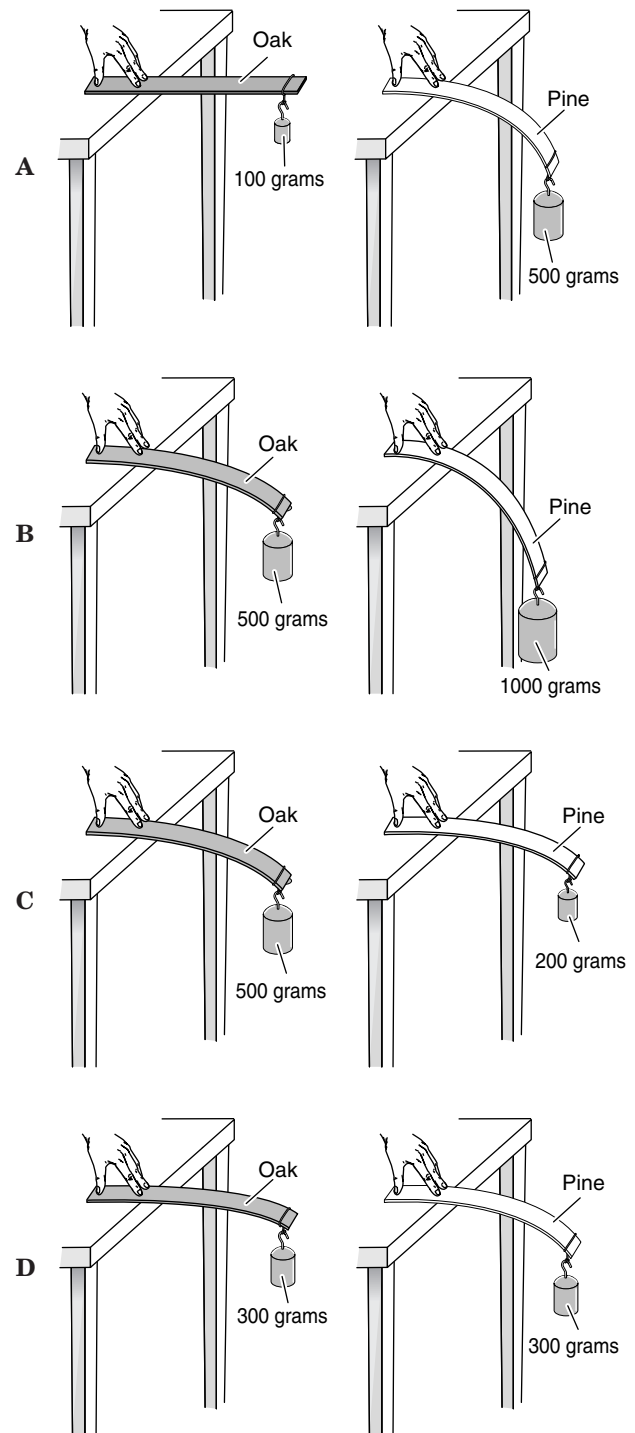
- A Organs → cells → tissues → systems
- B Cells → tissues → organs → systems
- C Systems → tissues → cells → organs
- D Tissues → cells → systems → organs



What type of energy does the windmill use to do work?

- F** Mechanical
- G** Nuclear
- H** Chemical
- J** Electrical

23 Which of these would be the best way to prove that a pine stick is more flexible than an oak stick?



24 Because zinc can combine with other substances but cannot be changed into a simpler substance by an ordinary chemical process, zinc is classified as —

- F a compound
- G a mixture
- H an element
- J an acid

25 Astronomers view objects in space through scientific instruments known as —

- A microscopes
- B hygrometers
- C telescopes
- D barometers

26 Which of the following is a true statement about the magnetic field between two magnets?

- F The south pole of one magnet is attracted to the south pole of the other magnet.
- G The south pole of one magnet is attracted to the north pole of the other magnet.
- H The north pole of one magnet is attracted to the north pole of the other magnet.
- J The south pole of one magnet is attracted to both poles of the other magnet.

27 What *most likely* happened to species that are found in the fossil record but have no living members?

- A They had offspring of a different species.
- B They mutated to other species.
- C They became extinct.
- D They never really existed.

28

Planet	Earth	Jupiter	Neptune	Saturn
Acceleration due to Gravity (m/s ²)	10	26	14	12

According to the chart, on which planet would a ball fall the fastest?

- F Earth
- G Jupiter
- H Neptune
- J Saturn

29 In the chemical formula for ammonia, NH₃, what does the subscript 3 represent?

- A The number of nitrogen and hydrogen atoms in each molecule of ammonia
- B The number of hydrogen atoms in each molecule of ammonia
- C The number of ammonia molecules that will bond together
- D The number of nitrogen atoms in each molecule of ammonia

30 Which of these is a result of burning fossil fuels?

- F Acid rain
- G Clean water
- H Hydroelectric energy
- J Solar energy

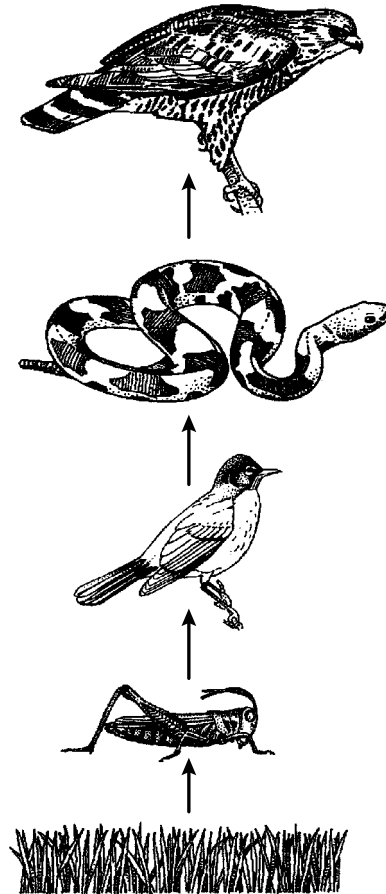
31 Which of the following causes the Sun to appear to set?

- A The revolution of the Sun
- B The rotation of the Earth
- C The revolution of the Earth
- D The rotation of the Sun

32 An electric light bulb is hot to the touch because —

- F current passing through it produces heat
- G its magnetic field produces a large amount of heat
- H evaporation causes an object to heat up
- J its chemical reactions produce heat

33



In a food chain, the numbers of each type of population are usually in a relatively stable combination. A diagram of a food chain is shown above. If humans interfered by spraying an insecticide to kill the insects, what would be the next thing that would happen?

- A The number of hawks would increase.
- B The number of songbirds would decrease.
- C The number of grass plants would decrease.
- D The number of snakes would increase.

34 Which instrument would *most* accurately and precisely determine the mass of a toy car?

- F An electronic light meter
- G A spring scale
- H A triple-beam balance
- J A graduated cylinder

35 Organisms that absorb nutrients from dead plants and animals are called —

- A carnivores
- B decomposers
- C herbivores
- D producers

36

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C
6

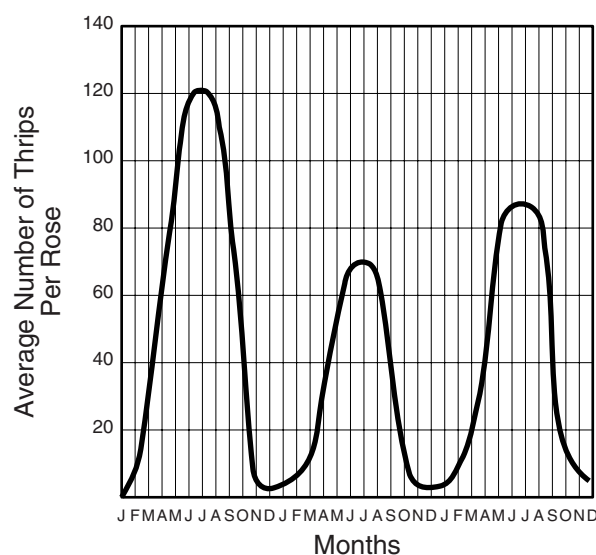
The diagram above shows a block from the periodic table. The number six represents the —

- F atomic mass of the element carbon
- G atomic number of the element carbon
- H number of neutrons in the element carbon
- J number of valence electrons in the element carbon

37 Each student in a science class of 25 conducts the same experiment. One student gathers all the data from her classmates and summarizes the results of the experiment for the class. She compares the data she personally recorded with the class data. Which of these might indicate to her that her results are valid?

- A Three other classes performed the same experiment.
- B The same experiment was repeated two years in a row.
- C Many other students recorded data similar to hers.
- D Another student in her class reached a different conclusion.

38



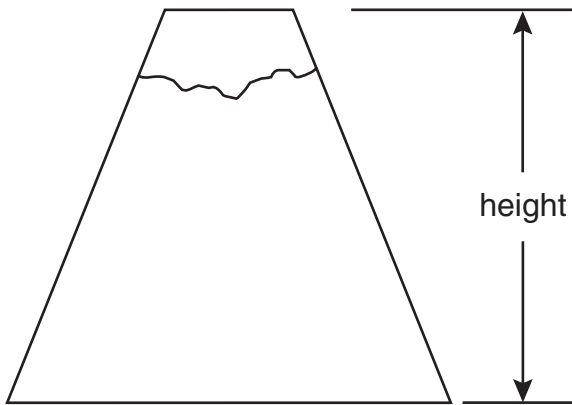
Thrips are tiny insects that can easily be seen on roses. The thrip population changes shown in the graph above are probably caused by —

- F increases in human population
- G a major climatic change
- H seasonal changes
- J increased use of insecticides

39 A mixture of iron filings and sulfur can easily be separated by —

- A placing the mixture in water
- B performing a chemical reaction
- C heating the mixture
- D using a magnet

40



A student designs and builds a 1:1000 scale model of the Mt. Fuji volcano in Japan. Since Mt. Fuji is about 3,800 m high, what is the height of his scale model?

- F 0.38 m
- G 3.8 m
- H 380 m
- J 3,800 m

41 Characteristics of Samples of Matter

Sample	Luster	Malleability/ Ductility	Electrical Conductivity
1	None	No	Insulator
2	High	No	Semi-conductor
3	High	Yes	Conductor
4	Low	No	Insulator

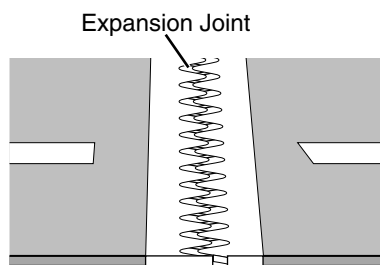
According to the data in the table, which sample of matter is *most likely* a metal?

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

42 When plants undergo photosynthesis, they produce —

- F carbon dioxide
- G oxygen
- H hydrogen
- J nitrogen

43

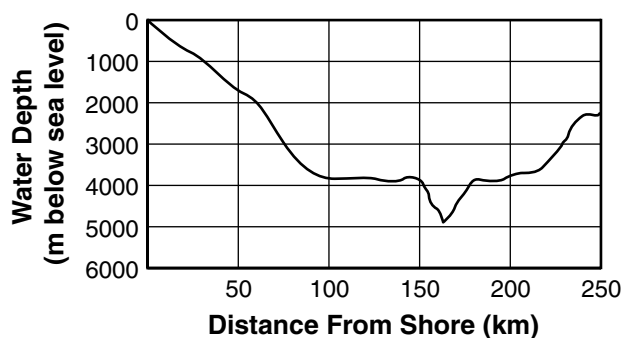


Expansion joints such as these are put on bridges because the concrete expands and contracts. This happens when —

- A chemicals get on the concrete
- B the temperature changes
- C the amount of light changes
- D the concrete gets wet

44

Echo-Sounding Ocean Profile Chart



How far offshore is the *deepest* point of the ocean on this graph?

- F 0 m
- G 5000 m
- H 160 km
- J 240 km

45 A burning candle is in the process of transforming —

- A heat energy into chemical energy
- B chemical energy into light and heat
- C chemical energy into mechanical energy
- D chemical energy into nuclear energy

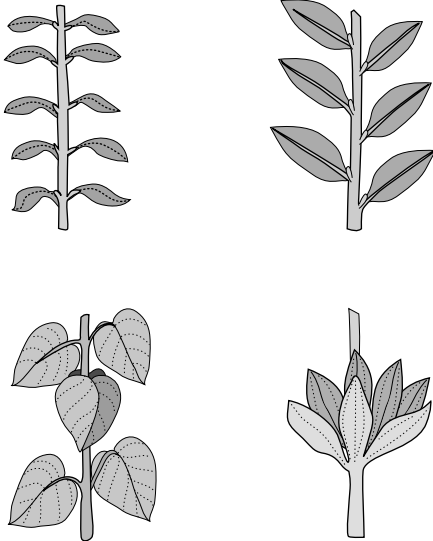
46 Mendel proposed that traits observed in pea plants resulted from a combination of “factors” inherited from each parent. His description of these “factors” can be considered the first scientific definition of the role of —

- F ribosomes
- G meiosis
- H genes
- J cell nuclei

47 Which of the organisms in a forest ecosystem is an example of a producer?

- A Squirrels
- B Oak trees
- C Black bears
- D Bacteria

48



Botanists often use leaves to identify plants. Which trait of the leaves shown would be *most* useful in identifying the plants they came from?

- F Color of the leaf
- G Function of the leaf
- H Arrangement of leaves on a stem
- J Presence or absence of veins

49 A tapeworm lives in human intestines, absorbing the nutrients that would normally be absorbed by the person. This eventually causes the person health problems. The relationship between the tapeworm and the human is —

- A parasite/host
- B predator/prey
- C herbivore/omnivore
- D consumer/producer

50 Of the states of matter, gas is the *only* state that —

- F is fluid
- G has mass
- H is highly compressible
- J has a definite shape

Answer Key

Test Sequence	Correct Answer	Reporting Category	Reporting Category Description
1	D	019	Earth and Space Systems
2	J	015	Scientific Investigation
3	C	016	Force, Motion, Energy, and Matter
4	F	018	Ecosystems
5	A	016	Force, Motion, Energy, and Matter
6	J	017	Life Systems
7	B	017	Life Systems
8	J	016	Force, Motion, Energy, and Matter
9	C	018	Ecosystems
10	G	016	Force, Motion, Energy, and Matter
11	B	017	Life Systems
12	J	016	Force, Motion, Energy, and Matter
13	C	018	Ecosystems
14	H	015	Scientific Investigation
15	B	015	Scientific Investigation
16	H	016	Force, Motion, Energy, and Matter
17	B	016	Force, Motion, Energy, and Matter
18	H	015	Scientific Investigation
19	A	017	Life Systems
20	J	015	Scientific Investigation
21	B	017	Life Systems
22	F	016	Force, Motion, Energy, and Matter
23	D	015	Scientific Investigation
24	H	016	Force, Motion, Energy, and Matter
25	C	019	Earth and Space Systems
26	G	016	Force, Motion, Energy, and Matter
27	C	019	Earth and Space Systems
28	G	019	Earth and Space Systems
29	B	016	Force, Motion, Energy, and Matter
30	F	019	Earth and Space Systems
31	B	019	Earth and Space Systems
32	F	016	Force, Motion, Energy, and Matter
33	B	018	Ecosystems
34	H	015	Scientific Investigation
35	B	018	Ecosystems
36	G	016	Force, Motion, Energy, and Matter
37	C	015	Scientific Investigation
38	H	018	Ecosystems
39	D	016	Force, Motion, Energy, and Matter
40	G	015	Scientific Investigation
41	C	016	Force, Motion, Energy, and Matter
42	G	017	Life Systems
43	B	016	Force, Motion, Energy, and Matter
44	H	015	Scientific Investigation
45	B	016	Force, Motion, Energy, and Matter
46	H	016	Force, Motion, Energy, and Matter
47	B	017	Life Systems
48	H	015	Scientific Investigation
49	A	018	Ecosystems
50	H	016	Force, Motion, Energy, and Matter