

Exam not valid for Paper Pencil Test Sessions

1 **For scientific data to be considered accurate and reliable, most scientific experiments should be —**

- A repeated no more than 2 times
- B conducted as many times as possible
- C conducted 3 times
- D conducted only 1 time

2

Brand of Tires Tested

Brand of Tire	Trial 1 Time (sec)	Trial 2 Time (sec)	Trial 3 Time (sec)	Average Time (sec)
Brand A	26	25	25	25.3
Brand B	24	23	23	23.3
Brand C	28	27	25	26.7
Brand D	33	31	32	32.0

Juan wanted to see if different brands of tires would make his model car go faster. Juan correctly set up an experiment to test 4 different brands of tires on his model car. He recorded his data in the data table.

How many times did Juan conduct the experiment using Brand C tires?

- A Two
- B Four
- C Three
- D One

3

South African Animal	Approximate Population
African Buffalo	4,200
African Elephant	3,800
African Leopard	360
African Lion	136
African Zebra	5,600

Approximately, how many third-order consumers were found in this South African population count?

- A 14,096
- B 360
- C 496
- D 13,600

4

The Effect of Water Temperature on the Breathing Rates of Goldfish

Trial	Water Temperature				
	26° C	20° C	14° C	8° C	2° C
1	101	80	52	29	3
2	98	74	54	30	1
3	100	79	53	29	2
4	104	79	51	27	5

In which water temperature did the goldfish have an average breathing rate of 28.75?

- A 2° C
- B 8° C
- C 14° C
- D 20° C

5

Brand of Tires Tested

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Brand A	26	25	25	25.3
Brand B	24	23	23	23.3
Brand C	28	27	25	26.7
Brand D	33	31	32	32.0

Which brand of tires appears to make Juan's model car go the fastest?

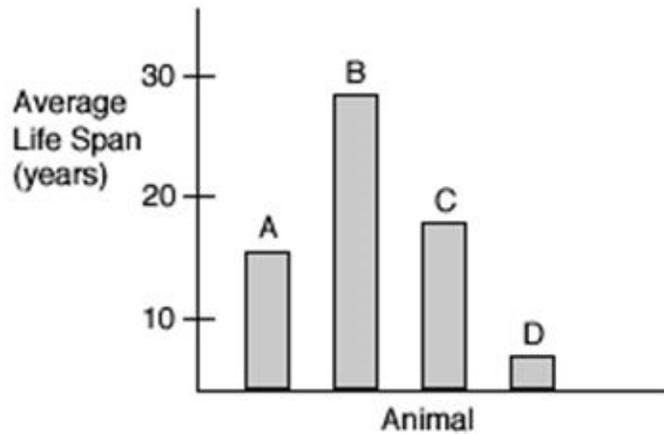
- A Brand C
- B Brand D
- C Brand A
- D Brand B

6 The quality of air is monitored by the government to determine whether a city needs to take steps to control air pollution. To best measure air quality, the air should be tested—

- A several times a day in all kinds of weather
- B once a day during rush hour when the most cars are on the road
- C at night when the air is probably less polluted
- D once a year on a day with very little vehicle traffic

7

	Dog	Cow	Mouse	Horse
Average Life Span (years)	16	18	4	27
Resting Heart Rate (beats/minute)	90-100	45-60	4-48	48
Gestation (days)	61	284	21	330
Number of Blood Groups	7	12	4	9



Which point of the graph represents the average life span of the cow?

- A A
- B B
- C C
- D D

8 A graduated cylinder contains exactly 40 mL of water. A rock was dropped into the cylinder of water. The water level rose to 52 ml. What is the volume of the rock?

- A 40 ml
- B 92 ml
- C 52 ml
- D 12 ml

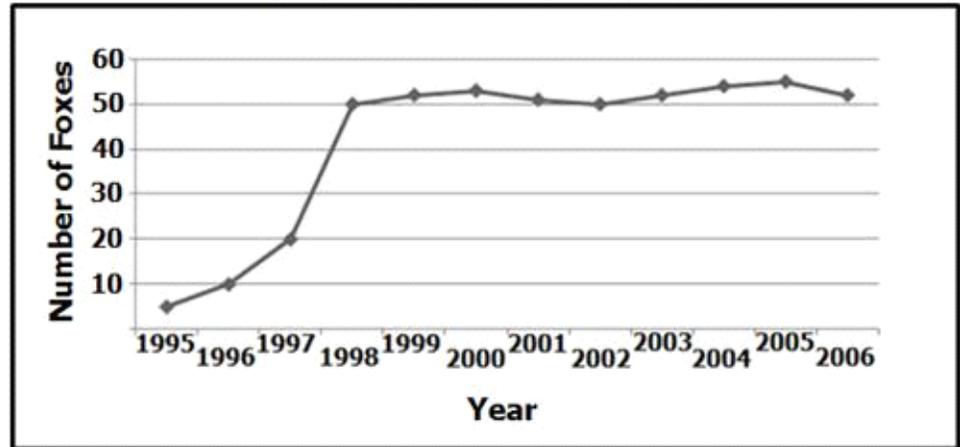
9 When a scientist measures the amount of space an object takes up, the scientist is measuring —

- A temperature
- B volume
- C length
- D mass

- 10 **The metric units of kilometer, meter, and centimeter would be used to measure —**
- A density
 - B mass
 - C volume
 - D length
- 11 **Elin is conducting a scientific investigation in which she measures a certain type of plant's growth in response to different amounts of fertilizer. What is the independent variable?**
- A Temperature of the fertilizer
 - B Plant growth
 - C Amount of fertilizer
 - D Type of plant
- 12 **In an experiment, the factor being tested or changed on purpose is called the —**
- A dependent variable
 - B experimental error
 - C constant
 - D independent variable
- 13 **James is conducting an experiment to test the effect of insecticides on frogs. What is the control group in his experiment?**
- A The frogs that were exposed to 30 ml of insecticide.
 - B The frogs that were not exposed to the insecticides.
 - C The frogs that did not survive the experiment.
 - D The frogs that were exposed to 15 ml of insecticide.
- 14 **Alicia is testing the effectiveness of different brands of antibacterial hand sanitizers. What is the independent variable in Alicia's experiment?**
- A The amount of time the sanitizer is left on the hands
 - B The time of day the experiment is conducted
 - C The amount of hand sanitizer used
 - D The different brands of hand sanitizers

15

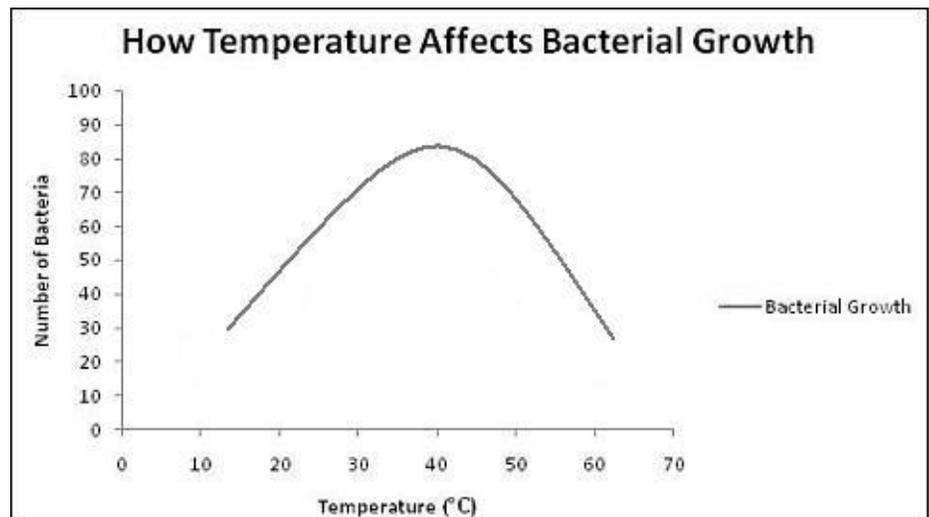
**Fox Population in Hungry
Mother State Park, 1995-2006**



What happened to the fox population after 1998?

- A It remained fairly stable.
- B It was the same as in 1997.
- C It decreased dramatically.
- D It increased dramatically.

16

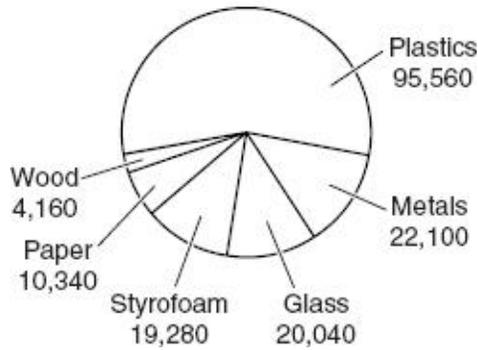


What happens to bacteria growth after 40°C ?

- A Growth increases
- B Growth increases, then decreases
- C Growth decreases
- D Growth does not change

17

Items Collected In a Beach Cleanup



This chart represents the type and number of items collected in a beach cleanup. Based on the above chart, what percentage of the total items collected from the beaches was plastic?

- A 70%
- B 46%
- C 49%
- D 56%

18

Student Height	Student Weight
5'4"	132
5'6"	145
5'7"	152
5'9"	160
5'11"	178

What is the best conclusion based on this data table?

- A There are no general trends between height and weight in this data.
- B A decrease in height is an increase in weight.
- C An increase in height is a decrease in weight.
- D An increase in height is an increase in weight.

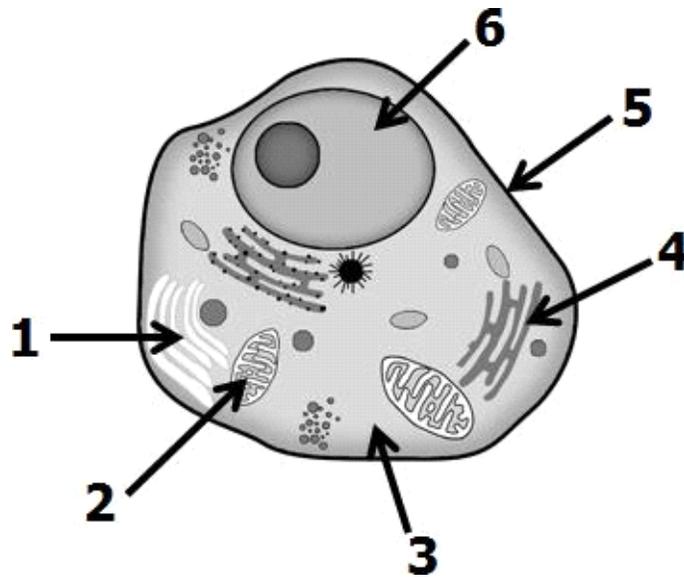
19 The tropical rain forest has an average daytime temperature of 34°C. The tundra has an average summer temperature of 12°C. The tropical rain forest receives an average yearly rainfall of 400 cm while the tundra receives 42 cm per year. Which of the following conclusions would be most valid considering this data?

- A Both the tropical rain forest and the tundra can be found in polar regions of the planet.
- B The same species of organisms could easily be found in each of these biomes.
- C Both the tropical rain forest and the tundra can be found near the equator.
- D The variety and types of organisms found in each of the biomes would differ significantly.

Fast Swimmers	
Fish	Speed (miles per hour)
Sailfish	60
Yellowfin Tuna	46
Bluefin Tuna	43
Flying Fish	40
Dolphin	37
Trout	15

Lucy conducted an experiment to measure the speed of fast swimming fish. After recording her data, Lucy concluded that trout should not be classified as a fast swimming fish. What evidence does Lucy have to best support her conclusion?

- A The trout swam 15 mph which is at least 22 mph less than all other fast swimming fish.
- B The trout swam 15 mph while all other fish swam a total of 226 mph.
- C The trout swam 15 mph and the sailfish swam 60 mph.
- D The trout swam 15 mph and the bluefin tuna swam 43 mph.



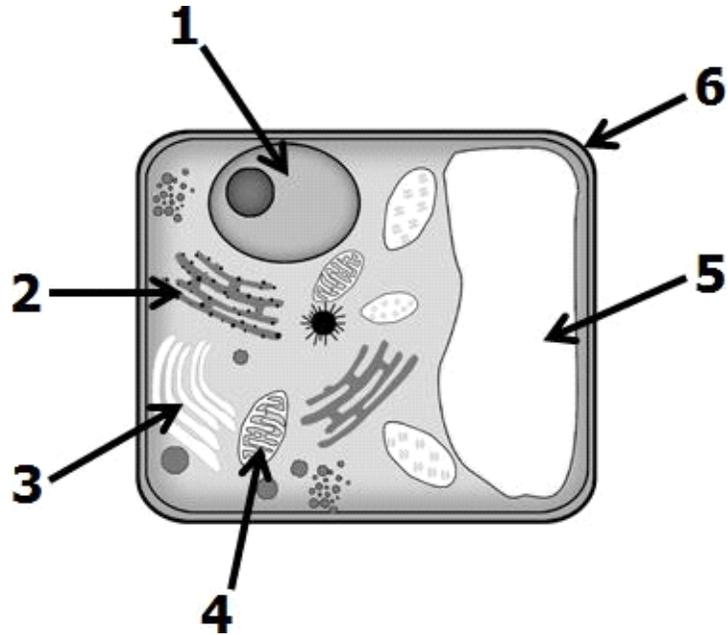
What is the function the organelle labeled number 2?

- A To produce energy
- B To absorb sunlight
- C To store substances
- D To direct cell activities

22 **What cell structure controls all life processes for the cell?**

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

23



The endoplasmic reticulum is often covered with ribosomes. Which structure is the endoplasmic reticulum?

- A Structure 7
- B Structure 3
- C Structure 8
- D Structure 2

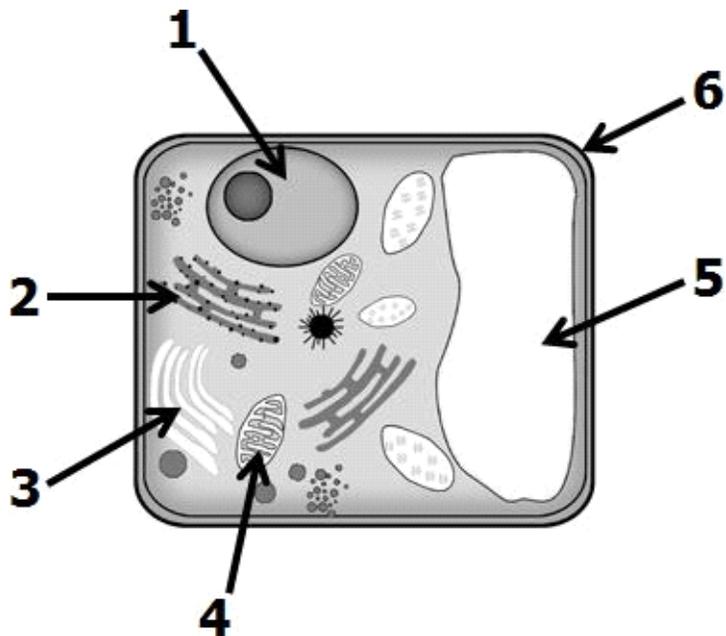
24 **Which organelle is a network of passageways that carries materials from one part of the cell to another?**

- A Endoplasmic Reticulum
- B Vacuole
- C Mitochondria
- D Cell Membrane

- 25 **Plant cells have a hard, rigid outer covering made of cellulose. Fungi cells also have a hard outer covering, but it is made of a substance called chitin. In plants and fungi, cellulose and chitin make up the—**
- A cell membranes.
 - B endoplasmic reticulum.
 - C nuclear membranes.
 - D cell walls.

- 26 **A plant's green color is due to the presence of which organelle?**
- A Chloroplast
 - B Vacuole
 - C Mitochondrion
 - D Nucleus

27



In the plant cell pictured above, what is the function of Structure 6?

- A To direct cell activities
- B To store substances
- C To control what enters and leaves the cell
- D To protect and support the cell

CELL	CELL WALL	CELL MEMBRANE	NUCLEUS	CHLOROPLAST	CYTOPLASM
A	Yes	Yes	Yes	Yes	Yes
B	Yes	Yes	Yes	No	Yes
C	No	Yes	Yes	No	Yes
D	Yes	Yes	No	No	Yes

Which cell is most likely an animal cell?

- A Cell B
- B Cell D
- C Cell C
- D Cell A

29 Which statement is correct?

- A Animal cells have much larger vacuoles than plant cells.
- B Plant cells and animal cells contain all of the same organelles.
- C Plant cells have a cell wall but animal cells do not.
- D Animal cells have chloroplasts and plant cells do not.

30 Which activity occurs in a plant cell but NOT in an animal cell?

- A Materials are transported from one part of the cell to another part of the cell.
- B Food is produced using light energy.
- C Waste molecules are stored in vacuoles.
- D Energy is released after food molecules are broken down.

31 Which statement was NOT included in the cell theory?

- A Each cells contains a cell membrane, cytoplasm, nucleus, mitochondrion, and endoplasmic reticulum.
- B Cells are the smallest structure of living things that can perform the functions necessary for life.
- C Living cells come only from other living cells.
- D All living things are composed of cells.

32 Which scientists helped contribute to the development of the cell theory?

- A Schleiden, Schwann, and Virchow
- B Virchow, Watson, and Crick
- C Hooke, Darwin, and Schwann
- D Schleiden, Pasteur, and Watson

33 **The first observation of cells by Robert Hooke was seen in which organic matter?**

- A Bacteria
- B Fruit fly
- C Oak leaf
- D Cork

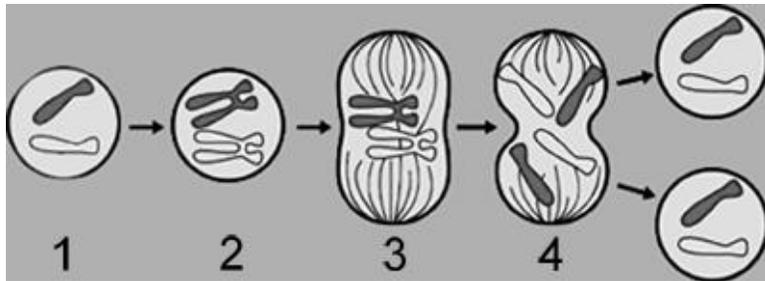
34

Title?
All living things are composed of cells.
Cells are the smallest structure of living things that can perform the functions necessary for life.
Living cells come only from other living cells.

What should the chart be titled?

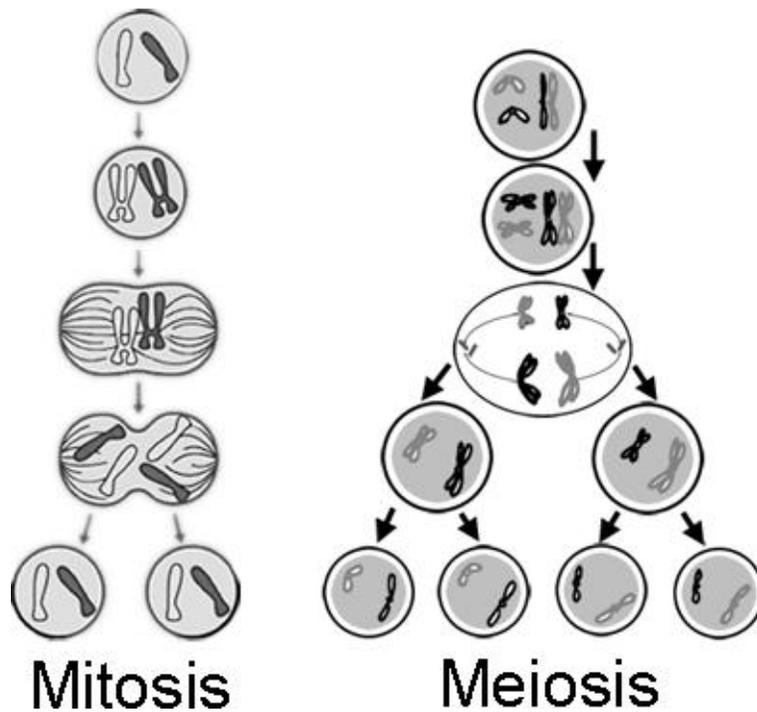
- A First Theory of Atoms
- B Tenets of Cell Theory
- C Beginning Theory of Organelles
- D Major Living Things Theory

35



What part of the cell cycle is represented by the picture labeled as steps 2-4?

- A Interphase
- B Mitosis
- C Metaphase
- D Cytokinesis



What is one major difference between mitosis and meiosis?

- A In mitosis, twice as many daughter cells are formed.
- B Meiosis only involves body cells and mitosis only involves sex cells.
- C In mitosis, the daughter cells are identical to the mother cell and in meiosis, the daughter cells are not.
- D Mitosis has many more steps than meiosis.

37 Which cell division is necessary to produce sperm and egg cells?

- A Asexual reproduction
- B Meiosis
- C Mitosis
- D Sexual reproduction

38 Meiosis produces —

- A body cells with 1/2 the number of chromosomes as the parent cell
- B regular body cells
- C sex cells with 1/2 the number of chromosomes as the parent cell
- D mutations within the cell's DNA

39 The purpose of the cell cycle is to —

- A allow the cell to absorb oxygen
- B produce a cell that has 1/3 the number of chromosomes as the parent cell
- C produce two new daughter cells that have the same number of chromosomes as the parent cell
- D produce a cell that will mutate as it grows

- 40 **A dog has 78 chromosomes in each of its body cells. After meiosis, how many chromosomes are in each of the sex cells?**
- A 78
 - B 156
 - C 39
 - D 40
- 41 **In a eukaryotic cell, where would the DNA be found?**
- A Inside the nucleus
 - B Only in the ribosomes
 - C Inside the chloroplasts
 - D Floating freely in the cytoplasm
- 42 **About 80% of a cell is made of this compound—**
- A Carbon dioxide
 - B DNA
 - C Water
 - D Protein
- 43 **Your brain is made up of different types of tissues that are working right now to take this quiz. Which term BEST describes how the brain is classified?**



- A System
- B Cell
- C Organ
- D Colony

44 Directions: Click and drag the text to the correct box.

Order the following structures from smallest to largest.



45
$$\text{C}_6\text{H}_{12}\text{O}_6 + 6\text{O}_2 \rightarrow 6\text{CO}_2 + 6\text{H}_2\text{O} + \text{energy}$$

What raw materials are required for this process to occur?

- A Chlorophyll and sugar
- B Glucose and oxygen
- C Sunlight and chlorophyll
- D Carbon dioxide and water

46 **Which of the following is NOT a life process performed by cells?**

- A Diffusion
- B Respiration
- C Osmosis
- D Hydrolysis

47 **All living things perform respiration. Aerobic respiration requires which gas?**

- A Carbon dioxide
- B Oxygen
- C Hydrogen
- D Unleaded

48 **When energy is required to move certain molecules across the cell membrane it is called —**

- A photosynthesis
- B active transport
- C metabolism
- D passive transport

49 **The diffusion of water across the cell membrane is called —**

- A anaerobic respiration
- B meiosis
- C transpiration
- D osmosis

50



What process does the this equation represent?

- A Digestion
- B Respiration
- C Meiosis
- D Photosynthesis

51 **Which gas do animals need to carry out life processes?**

- A Carbon monoxide
- B Carbon dioxide
- C Helium
- D Oxygen