

CONTESTANT ID #: _____

GRADE LEVEL : _____

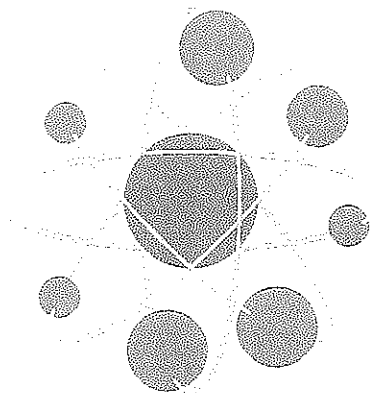
*Place Contestant ID label here BEFORE
Contest Begins*



Science

District Contest

Grades 6-8



2023

FINAL SCORE: _____

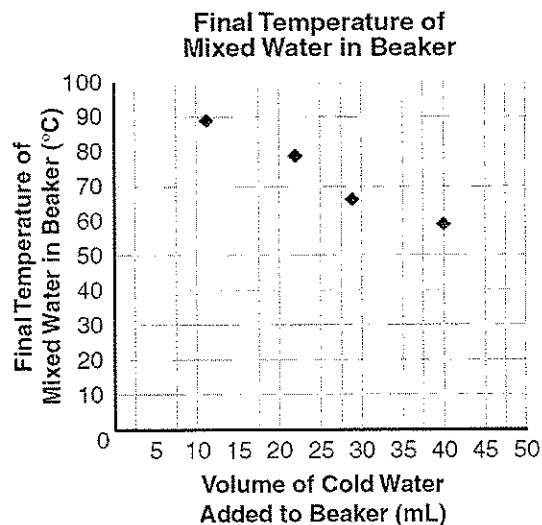
(Please do not open test until the signal is given to begin.)

2023 PSIA District Science Contest

- (1) Which action will result in a product with new chemical properties?
A) cutting wood
B) breaking a mirror
C) popping popcorn
D) bending plastic
E) shredding a newspaper
- (2) Which of the following systems breaks food into nutrients that can be used by the body?
A) reproductive
B) circulatory
C) cognitive
D) digestive
E) respiratory
- (3) Which of the following could be normally considered to be an omnivore?
A) bear
B) owl
C) fox
D) deer
E) cow
- (4) Where is **most** of Earth's water located?
A) lakes
B) glaciers
C) behind dams
D) rivers
E) oceans
- (5) Above a continent, a warm air mass slowly passes over a cold air mass. As the warm air begins to cool, clouds form. What will **most likely** happen next?
A) Hail will form.
B) Rain will fall.
C) Lightning will strike.
D) Tornadoes will form.
E) Hurricanes will form.
- (6) Which location on Earth receives the most direct sunlight?
A) the mountains
B) the deserts
C) the equator
D) the South Pole
E) the rivers
- (7) Our Sun is mostly made up of
A) phosphorus.
B) nitrogen.
C) hydrogen.
D) uranium.
E) oxygen.
- (8) A jar and three ice cubes weigh 30 g. What do the jar and the water weigh after the ice cubes melt?
A) 0 g
B) 10 g
C) 30 g
D) 60 g
E) 90 g
- (9) Mountain lions in Texas need 25 square miles to hunt for food. New housing developments are being built where the mountain lions live. How will this change **most likely** affect the mountain lions?
A) The mountain lions will hide in caves.
B) The mountain lions will learn to eat plants.
C) The mountain lions will decrease in number.
D) The mountain lions will become friendly with humans.
E) The mountain lions will get enough food in a smaller area.
- (10) A science museum wants to demonstrate some processes of Earth's tectonic plates. Wooden blocks will be used to represent the tectonic plates. Which of the following demonstrations would **best** show how Earth's tectonic plates interact with the layer directly beneath the plates?
A) gluing the blocks onto solid rock
B) gluing the blocks under solid rock
C) burying the blocks in a bed of dry sand
D) sliding the blocks along the top of warm solid metal
E) floating the blocks on a slowly moving pool of thick mud
- (11) Index fossils help scientists estimate the age of a rock because index fossil species only existed for a relatively short time. What happened to the species that are now used as index fossils?
A) They became extinct.
B) They changed their diets.
C) They became zoo attractions.
D) They hid in marine sediments.
E) They migrated to new environments.

- (12) In 2022, Space Exploration Technologies built and tested a rocket designed to carry people to the Moon and Mars. Where was this done?
- A) Austin, Texas
 - B) Wallops, Virginia
 - C) Boca Chica, Texas
 - D) Hawthorne, California
 - E) Cape Canaveral, Florida

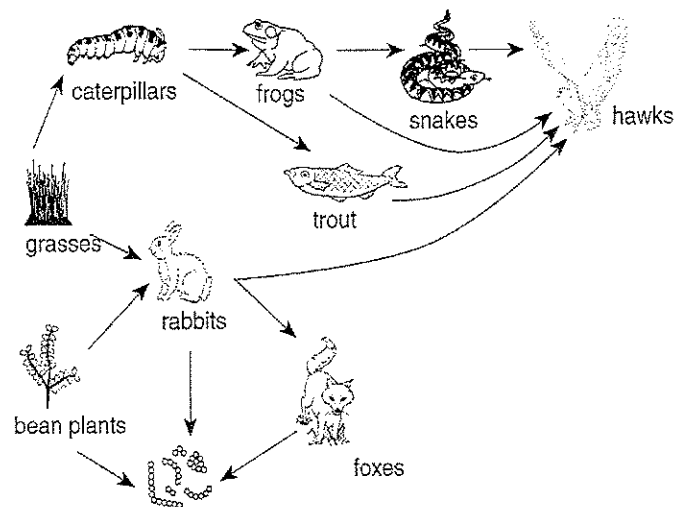
- (13) A group of students had four beakers, each holding 100 mL of boiling water. The students added different volumes of cold water to each beaker and measured the final temperature of the water. The graph of their data is shown below. Based on the graph, what is the **best** estimate of the final temperature after 50 mL of cold water is added to 100 mL of boiling water?



- A) 20°C
 - B) 30°C
 - C) 40°C
 - D) 50°C
 - E) 65°C
- (14) Wesley throws a baseball straight up. Which of the following remains constant as the ball travels upward?
- A) its velocity
 - B) its kinetic energy
 - C) its potential energy
 - D) its position in space
 - E) its total momentum

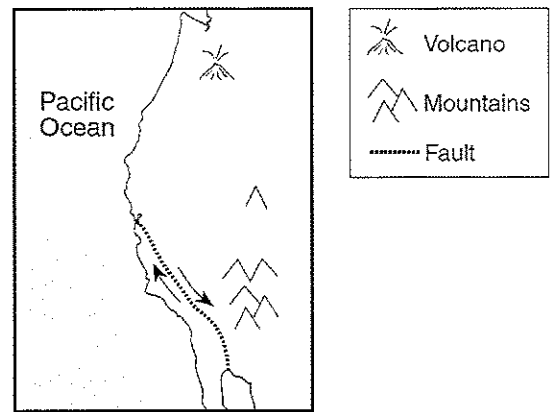
- (15) Kenzie predicts that gold (Au) has a higher density than lead (Pb). She places a sample of each element on a balance scale. Which variable does she need to control to test her hypothesis?
- A) the shape of the samples
 - B) the length of the samples
 - C) the volume of the samples
 - D) the temperature of the samples
 - E) the time that the samples are weighed

- (16) The diagram below shows many organisms in a food web. One type of organism in this web that represents a producer is



- A) grasses.
 - B) snakes.
 - C) hawks.
 - D) rabbits.
 - E) trout.
- (17) The fur of a snowshoe rabbit changes to white during the winter. This change is an example of
- A) adaptation.
 - B) redundancy.
 - C) metabolism.
 - D) metamorphosis.
 - E) competition.
- (18) Water vapor changes to liquid water during which process?
- A) electrification
 - B) condensation
 - C) evaporation
 - D) dissolution
 - E) melting

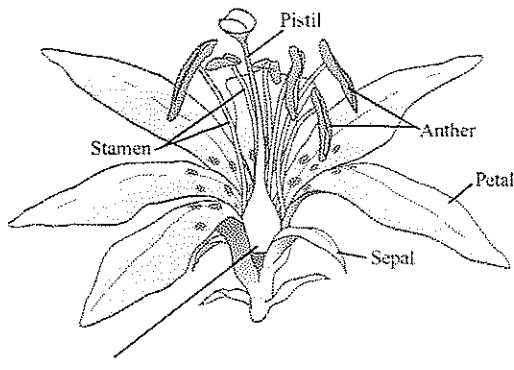
- (19) In the past, Native American Indians buried dead fish along with corn seeds. This technique was used because the decomposing dead fish would
- release oxygen for use by the corn plant.
 - provide nutrients for the growing corn plant.
 - supply all the water needed by the corn plant.
 - eliminate the need for weeding around the corn plant.
 - supply all the phosphorus needed by the corn plant.
- (20) Competition is most likely to occur between which two organisms?
- owls and bacteria
 - deer and butterflies
 - goldfish and rabbits
 - snakes and kangaroos
 - grass and strawberry plants
- (21) Guinea pigs have a gene that codes for brown or black fur. The allele for black fur (B) is dominant over the allele for brown fur (b). Which combination of parental genotypes could produce offspring with black fur as well as offspring with brown fur?
- $BB \times BB$
 - $Bb \times Bb$
 - $bb \times bb$
 - $BB \times bb$
 - $B \times b$
- (22) Which cell parts are found in pairs and move towards the opposite ends of the nucleus during cell division?
- Golgi bodies
 - centrioles
 - ribosomes
 - vacuoles
 - pistil
- (23) The Earth is warmed by solar energy. How is this energy transferred from the sun to the Earth?
- conduction
 - ultrasonic
 - fusion
 - radiation
 - convection
- (24) In which biome would you find the most variety of life?
- Tundra
 - Desert
 - Grassland
 - Rain Forest
 - Savanna
- (25) Igneous rock was found near a campground. Which processes caused these rocks to form?
- Heat and pressure
 - Eruption and flow of lava
 - Weathering and deposition
 - Compaction and cementation
 - Polar vortex
- (26) The map below shows some geologic features located near the west coast of the United States. The arrows on either side of the fault represent



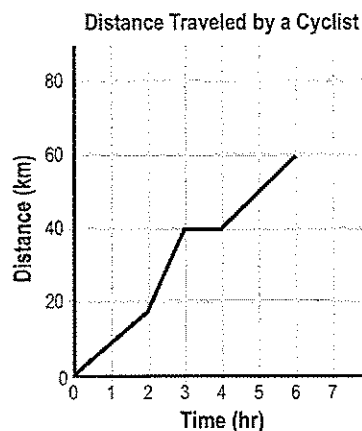
- rock formations.
- volcanic eruptions.
- the relative movement of air masses.
- the relative movement of tectonic plates.
- the relative movement of oil in pipelines.

- (27) As the temperature inside the glass jar increases, which of the following describes the effect on molecules in the jar?
- The molecules combine.
 - The molecules move faster.
 - The molecules move slower.
 - The molecules become larger.
 - The molecules become smaller.

- (28) The diagram below shows a flower with labels pointing to different structures. One structure has been left unlabeled. What is the function of the unlabeled structure on this flower diagram?

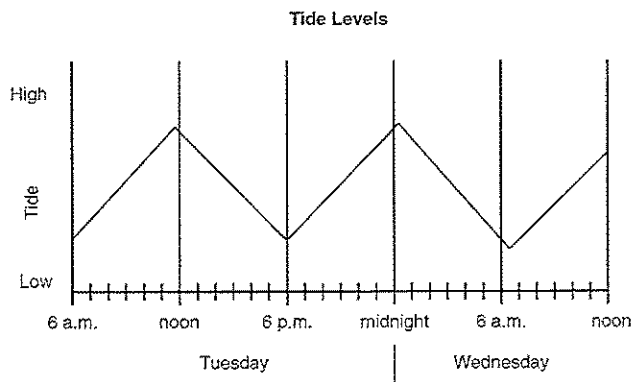


- A) Attracts pollinators.
 B) Receives sperm cells.
 C) Regulate ovum temperature.
 D) Produces food for the plant.
 E) Protects the bud before blooming.
- (29) What layer of Earth's interior contains over 60% of the Earth's mass and is composed of iron- and magnesium-rich silicates?
 A) mantle
 B) crust
 C) inner core
 D) outer core
 E) lithosphere
- (30) A mass of 12 Kg moving with a speed of 4 m/s has how much kinetic energy?
 A) 96 Joules
 B) 48 Joules
 C) 192 Joules
 D) 288 Joules
 E) 576 Joules
- (31) Which of the following is a vector unit?
 A) kilogram
 B) Watt
 C) Newtons west
 D) Joule
 E) degree Celsius
- (32) The longest river lying only in Texas is
 A) the Rio Grande.
 B) the Brazos.
 C) the Colorado.
 D) the Guadalupe.
 E) the Trinity.
- (33) The best evidence for the model of Earth's interior comes from the study of
 A) paleomagnetism.
 B) glaciology.
 C) astrology.
 D) seismology.
 E) paleontology.
- (34) What is the most common term for the symbiotic relationship where one organism benefits and the other is harmed?
 A) commensalism
 B) mutualism
 C) friendship
 D) parasitism
 E) antagonism
- (35) Which of the following is **true** of the Richter Scale?
 A) It is based on a scale of 0 to 14.
 B) It is based on a logarithmic scale.
 C) Values are always given in whole numbers.
 D) Is a scale used to measure the strength of tornadoes.
 E) An earthquake measuring 5 has 50-times more energy than an earthquake measuring 4.
- (36) Most blizzards that strike the continental United States most directly originated in which of the following locations?
 A) in the North Sea
 B) at the North Pole
 C) the Gulf of Alaska
 D) the Gulf of Mexico
 E) along the Gulf Stream
- (37) The graph below shows the distance traveled by a cyclist on a six-hour trip. During which hours was the cyclist's speed the greatest?



- A) between 0 & 2
 B) between 2 & 3
 C) between 3 & 4
 D) between 5 & 6
 E) between 4 & 6
- (38) Which energy resource is renewable?
 A) coal
 B) natural gas
 C) fuel oil
 D) uranium
 E) wind

- (39) The graph below shows tide levels for two days at Port Isabel. Approximately how many hours are between the high tide on Tuesday and the first high tide on Wednesday?



- A) 6 hours
B) 8 hours
C) 9 hours
D) 12 hours
E) 18 hours
- (40) Which three systems of the human body function together to move and control body parts?
A) nervous, skeletal, and muscular
B) muscular, endocrine, and excretory
C) nervous, endocrine, and respiratory
D) digestive, excretory, and reproductive
E) circulatory, endocrine, and respiratory
- (41) Populations living in one place form a
A) family.
B) system.
C) species.
D) community.
E) habitat.
- (42) Naturally occurring variations within a species are mainly the result of mutations and
A) speciation.
B) metabolism.
C) camouflage.
D) sexual reproduction.
E) dynamic equilibrium.
- (43) Cancer is best described as
A) normal cell division.
B) abnormal cell division.
C) the merging of sex cells.
D) tissue that stops growing.
E) a type of genetic engineering.
- (44) Which material is primarily a mixture of weathered rock and organic matter?
A) mud
B) minerals
C) sea shells
D) ocean water
E) soil
- (45) The diagram below shows a life process taking place within a cell. Which life process is shown?
-
- A) flatulating
B) reproduction
C) respiration
D) locomotion
E) digestion
- (46) Andy pushes on a tree with 48 Newtons. How much force does the tree push back on Andy?
A) 0 Newtons
B) 24 Newtons
C) 48 Newtons
D) 96 Newtons
E) 192 Newtons
- (47) What is smallest living functional unit of a horned toad?
A) atoms
B) molecules
C) organs
D) cells
E) tissues
- (48) A car takes 120 feet to come to a complete stop while traveling 40 mph. How far does it take to stop while traveling at 20 mph?
A) 120 feet
B) 60 feet
C) 40 feet
D) 30 feet
E) 20 feet
- (49) Where is water most likely to become contaminated?
A) by a dam
B) in the forest
C) in a glacier
D) in the ocean bottom
E) by a cow farm
- (50) Energy from the Sun is distributed around the Earth by
A) tectonic plates.
B) solar flares.
C) radiation & convection.
D) subduction zones.
E) solar panels.



Science 6-8

District Contest

Contestant Answer Sheet

GRADERS: Write scores and initial.

Score 1: _____

Score 3: _____

Score 2: _____

FINAL: _____

Contestant ID: _____ Grade Level: _____

INSTRUCTIONS: Place the PRINTED CAPITAL letter of each answer choice (A, B, C, D, or E) in the blank corresponding to the test item number. SCORING: +5 for each correct answer; -2 for each incorrect answer; no deduction for skipped or unanswered items. Visible erasures and mark-outs constitute a 2-point deduction ONLY if a correct answer is not written in the answer space.

- | | | |
|-----------|-----------|-----------|
| 1. _____ | 18. _____ | 35. _____ |
| 2. _____ | 19. _____ | 36. _____ |
| 3. _____ | 20. _____ | 37. _____ |
| 4. _____ | 21. _____ | 38. _____ |
| 5. _____ | 22. _____ | 39. _____ |
| 6. _____ | 23. _____ | 40. _____ |
| 7. _____ | 24. _____ | 41. _____ |
| 8. _____ | 25. _____ | 42. _____ |
| 9. _____ | 26. _____ | 43. _____ |
| 10. _____ | 27. _____ | 44. _____ |
| 11. _____ | 28. _____ | 45. _____ |
| 12. _____ | 29. _____ | 46. _____ |
| 13. _____ | 30. _____ | 47. _____ |
| 14. _____ | 31. _____ | 48. _____ |
| 15. _____ | 32. _____ | 49. _____ |
| 16. _____ | 33. _____ | 50. _____ |
| 17. _____ | 34. _____ | |



Science 6-8

District 2023

ANSWER KEY

REMINDERS: PRINTED CAPITAL letters only. SCORING: +5 for each correct answer; -2 for each incorrect answer; no deduction for skipped or unanswered items. Visible erasures and mark-outs constitute a 2-point deduction ONLY if a correct answer is not written in the answer space.

- | | | |
|-------|-------|-------|
| 1. C | 18. B | 35. B |
| 2. D | 19. B | 36. C |
| 3. A | 20. E | 37. B |
| 4. E | 21. B | 38. E |
| 5. B | 22. B | 39. D |
| 6. C | 23. D | 40. A |
| 7. C | 24. D | 41. D |
| 8. C | 25. B | 42. D |
| 9. C | 26. D | 43. B |
| 10. E | 27. B | 44. E |
| 11. A | 28. B | 45. C |
| 12. C | 29. A | 46. C |
| 13. D | 30. A | 47. D |
| 14. E | 31. C | 48. D |
| 15. C | 32. C | 49. E |
| 16. A | 33. D | 50. C |
| 17. A | 34. D | |