

TMSCA MIDDLE SCHOOL SCIENCE TEST #1 © OCTOBER 19, 2019

GENERAL DIRECTIONS

1. About this test:
 - A. You will be given 40 minutes to take this test.
 - B. There are 50 problems on this test.
2. All answers must be written on the answer sheet/Scantron form/Chatsworth card provided. If you are using an answer sheet be sure to use **BLOCK CAPITAL LETTERS**. Clean erasures are necessary for accurate grading.
3. If using a Scantron answer form, be sure to correctly denote the number of problems not attempted.
4. You may write anywhere on the test itself. You must write only answers on the answer sheet.
5. You may use additional scratch paper provided by the contest director.
6. All problems have **ONE** and **ONLY ONE** correct [BEST] answer. There is a penalty for all incorrect answers.
7. On the back of this page is a copy of the periodic table of the elements as well as a list of some potentially useful information in answering the questions.
8. A simple scientific calculator with the following formulas is sufficient for the science contest: +, -, %, ^, log x, e^x, ln x, y^x, sin x, sin^{-x}, cos x, cos^{-x}, tan x, tan^{-x}, with scientific notation and degree/radian capability.
The calculator must be silent, hand-held and battery operated. The calculator cannot be a computer or cannot have built-in or stored functionality that provides scientific information and cannot have communication capability. If the calculator has memory, it must be cleared. Each student may bring one spare calculator. **NO GRAPHING CALCULATORS ARE PERMITTED.**
9. All answers within $\pm 5\%$ will be considered correct.
10. All problems answered correctly are worth **FIVE** points. **TWO** points will be deducted for all problems answered incorrectly. No points will be added or subtracted for problems not answered.
11. In case of ties, percent accuracy will be used as a tie breaker.

[illegible]

Specific heat of water = $4.18 \text{ J/g} \cdot ^\circ\text{C}$

2019-2020 TMSCA Middle School Science Test #1

1. The abnormal rise of water caused by a storm's winds is called what?

A. wind shear
B. hurricane
C. water spout
D. storm surge



2. What provides the energy to drive the hydrological cycle?

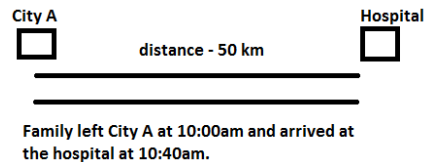
A. the ocean B. the Earth C. water D. the sun

3. A seismometer is used to detect earthquakes. This tool is paired with what two other important items to create a seismograph?

A. rope and printer
B. recording device and timer
C. protractor and compass
D. balance and meter stick

4. Jones family made it to the hospital after Grandpa Jones fell off the ladder at their home in City A. What was their approximate average speed?

A. 60 km/h
B. 76 km/h
C. 30 km/h
D. 1.25 km/h



5. Scientists believe the earliest fossils known and found on Earth are what?

A. stromatolites B. trilobites C. both A and B D. coprolites

6. The SI unit for measuring force is noted by which of these symbols?

A. N B. C C. F D. T

7. Alfred Wegener suggested that a single supercontinent existed in Earth's past. When did he believe that this supercontinent began to break apart in to smaller landmasses?

A. early Paleozoic B. end of Cenozoic C. early Proterozoic D. early Mesozoic

8. In Planck's constant of the SI units, what does the "J" and "s" stand for?

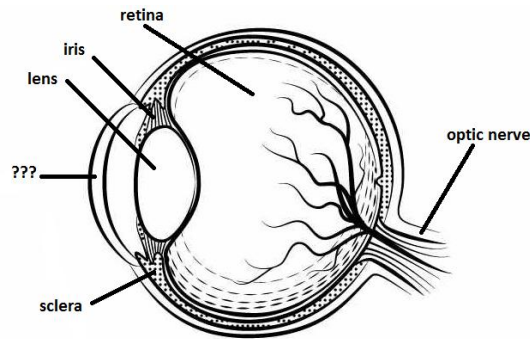
A. J – Jeroboam s - sabin
B. J - Jenner s - science
C. J - Jayhe s - samsil
D. J – Joules s - seconds

9. Clues: English scientist, wrote the book, *Micrographia* 1665, discovered and named "cells" Who is this person?

A. Mendel B. Newton C. Hooke D. Leuwenhoek

10. James and his grandpa were exploring in the woods. They came across a place with acorns scattered all across the ground. James looked up and saw a big tree. Most likely the tree was what?

A. apple B. walnut C. oak D. maple



11. “???” is pointing to what part of the eye?

A. cornea B. pupil C. macula D. aqueous humor

12. One behavior that turtles participate in to help them control their body temperature is called what?

A. wiggling their front flippers
B. competition
C. resting on bottom of pond
D. basking



13. El Niño is a weather pattern that occurs in what ocean?

A. Indian B. Atlantic C. Pacific D. Arctic

14. Which human body systems help with transporting oxygen and carbon dioxide?

A. Digestive and Endocrine
B. Integumentary and Skeletal
C. Circulatory and Respiratory
D. Endocrine and Digestive

15. Astronaut Chris Hadfield wrote about EVA in his book about experiences in space. What is EVA?

A. his Aunt
B. Energy Economical Association
C. Ergophobia Vaccine Application
D. Extravehicular Activity

16. Which out of the statements below is incorrect?
- A. When water evaporates, it changes from a liquid to a gas.
 - B. When water condenses, it changes from a gas to a liquid.
 - C. When water precipitates, it changes from a liquid to a solid.
 - D. When water transpires, it changes from a liquid to a gas
17. Clues: born in England, early interest in meteorology, proposed that all substances were made of atoms in early 1800's Who is this person?
- A. John Dalton
 - B. Ernest Rutherford
 - C. J.J. Thomson
 - D. Niels Bohr
18. Choose the statement below that is considered true by scientists.
- A. Turtles are strictly herbivores.
 - B. Turtle shells are really modified ribs.
 - C. Turtles are endotherms.
 - D. Turtles lay a tiny clutch of eggs.
19. The lab team was working on classifying several unknown substances into metals, nonmetals, and metalloids by using their physical properties. They made a chart with a checklist to organize their investigation.

Substance	Shiny?	Solid?	Conductor of heat and electricity?	Ductile?	Malleable?
A1		✓			
A2	✓	✓	✓	✓	✓
A3					
A4	✓	✓	✓, depending		
A5					

- Out of these substances, which statement below would most likely be false?
- A. A2 is most likely not a metal.
 - B. A5 is definitely not a metal
 - C. A4 may be a metalloid
 - D. A3 and A5 are probably nonmetals
20. Research has shown that a plant contains what hormone that is extensively involved in stem and root growth?
- A. abscisic acid
 - B. ethylene
 - C. indole acetic acid
 - D. testosterone

21. Which of these are physical properties used to identify minerals?
A. density B. flammability C. reactivity with an acid D. Both A and B

22. Group 2A on the Periodic Table is made up of elements called what?
A. alkaline Earth metals
B. noble gases
C. halogens
D. alkali metals

23. Cattle can be observed with a large white bird, the cattle egret, hanging out nearby. Most of the time, these organisms have a symbiotic relationship in which both benefit. Which type of relationship would this be?

- A. There is no relationship.
B. It is an example of commensalism.
C. It is a parasitic relationship.
D. It is a mutualistic relationship.



24. Clues: astronaut, died tragically in Apollo I fire, first American to walk in space
Who is this person?
A. Ed White
B. Roger Chaffee
C. Neil Armstrong
D. Gus Grissom

25. Which of the following statements is false when discussing chemical equations?
A. The products are the substances that result from the change.
B. The reactants are the substances that undergo the change.
C. This symbol \rightarrow stands for “yields”.
D. Each symbol must have a coefficient.

26. This chart shows diseases caused by fungi in humans. Which is most likely obtained by direct contact, not by breathing in spores?

- A. Blastomycosis
B. Coccidioidomycosis
C. Tinea pedis
D. Aspergillosis

Fungal Diseases
Blastomycosis
Coccidioidomycosis
Tinea pedis
Aspergillosis

27. What science lab tool would be used to measure liquid in milliliters?
A. cup marked in ounces
B. ruler
C. balance scale
D. graduated cylinder

28. Which of the following human health hazards are spread by rodents?

- A. Zika virus B. Ebola virus C. Hantavirus D. Lyme disease

29. “Horsepower” is a term developed by James Watt to describe how a horse worked compared to his steam engines.

information chart, what would have in Watts?

- A. 325 W
B. 436 W
C. 450,242 W
D. 242,450 W

Automobile	Horsepower	Watts
Automobile #1	420	?
Automobile #2	270	?
Automobile #3	325	?
Automobile #4	250	?

Using the useful
Automobile #3

30. Why do water pipes sometimes break when the temperature outside is below freezing?

- A. when water is cooled to 4 degrees C and below, it will expand which can break the pipes
B. when water freezes, it will contract which can break the pipes
C. when water is cooled to 4 degrees Celsius and below, it chemically changes
D. frozen water pipes only break because of cracks or faulty pipes

31. What is passed down unchanged from generation to generation and is inherited only from the human’s mother?

- A. eye color B. mitochondrial DNA C. ability to taste PTC D. the height gene

32. Clues: a scientist, makes predictions, studies the atmosphere and its current conditions
What type of scientist is this person?

- A. climatologist B. botanist C. meteorologist D. seismologist

33. Solar winds from the sun can cause disturbances in which of the following?

- A. tides and ocean waves
B. Earth air currents including the jet stream
C. earthquakes, tsunamis, hurricanes, volcanos
D. satellites, spacecraft, and the Earth’s electric-power grid

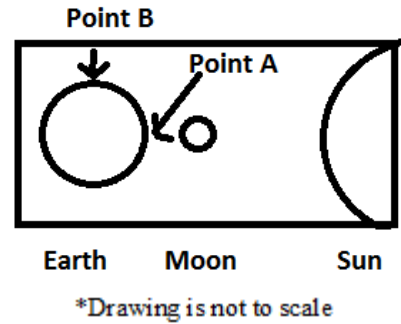
34. Which of the following is in order from shortest to longest distance?

- A. kilometer, mile, 5,400 feet
B. mile, kilometer, 5,400 feet
C. 5,400 feet, mile, kilometer
D. mile, 5,400 feet, kilometer

35. Which of these do NOT belong in the Eukarya Domain?

- A. Amoebas B. Yeasts C. Ferns D. Spirochetes

36. When the gravitational pull of the sun and the moon are combined, there are extreme high and low tides. In this diagram, which of these tides would occur at point A and point B?



- A. Point A – high Point B - low
B. Point A – low Point B - high
C. Point A and B would have the same high tides.
D. Point A and B would have the same low tides.
37. In chemistry, “redox” is short for what?
A. reduction-oxidation reaction
B. Raoult’s law
C. red-oxidation element
D. redundant oxygen
38. Clues: plant type, produces seeds enclosed in an ovary, flowering plant What type of plant is this?
A. gymnosperm B. angiosperm C. bryophytes D. pteridophytes
39. Jason and Jack were working on Science Fair Projects. Jason was measuring the dissolved oxygen levels at several local water locations. Jack was observing the color of soils in locations around his state. Both made tables of their data collection. What type of data was collected in each project?
A. Jason – qualitative Jack – quantitative
B. Jason and Jack – both quantitative
C. Jason – quantitative Jack – qualitative
D. Jason and Jack – both qualitative
40. Cirrus clouds look like which of the following?
A. wispy, thin curls
B. thin, flat sheets
C. a UFO (flying saucer)
D. puffy with flat bottoms
41. Which part of the eye shown above controls the diameter of the pupil and helps to define the color of the eye?
A. retina B. iris C. cornea D. sclera
42. Scientists measure the population of Monarch butterflies overwintering in Mexico by the number of hectares of clustering butterflies. What is a hectare?
A. a unit equal to 10,000 m²
B. a unit equal to 50 square miles
C. a unit equal to 100 square acres
D. none of the above

43. If you were to take an eyedropper and place drops of water on a piece of wax paper in close proximity of each other, the drops will join together because of what property of water?
- A. cohesion
 - B. electromagnetic property
 - C. high specific heat
 - D. able to change into all 3 states of matter
44. Complete this analogy: Tyrannosaurus Rex is to Late Cretaceous as Stegosaurus is to what?
- A. Late Jurassic
 - B. Early Triassic
 - C. Quaternary
 - D. Paleogene
45. Which part of the eye is a tough, protective membrane in which the outer part is called the “white of the eye”?
- A. retina
 - B. iris
 - C. cornea
 - D. sclera
46. On the last strike of the 5th inning, the pitcher threw a “curve” ball and the crowd cheered! What science concept helps to explain how the pitcher adding a spin to the baseball was able to cause the ball to curve as it was thrown?
- A. the magnus effect
 - B. the Babe Ruth effect
 - C. gravitational curving
 - D. drag
47. Gold is to “Au” as Silver is to what?
- A. Fe
 - B. Ag
 - C. Sn
 - D. Sl
48. Diethyltoluamide is commonly found in insect repellants. What abbreviation is used for this chemical?
- A. DDT
 - B. DEET
 - C. DTL
 - D. DIE
49. Which of the following would not be considered just fungus?
- A. yeast
 - B. lichens
 - C. mushroom
 - D. toadstool
50. The metric system was developed in what country around 1790’s?
- A. England
 - B. France
 - C. Spain
 - D. Russia

2019 - 2020 TMSCA Middle School Science Test #1 - Key

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