ROUND 6

TOSS-UP

1) LIFE SCIENCE  Multiple Choice  Which of the following is the MOST common manner for transmission of beef tapeworms to humans:

W) drinking contaminated water
X) swimming in contaminated water
Y) eating uncooked beef
Z) stepping in cow manure

ANSWER: Y) EATING UNCOOKED BEEF

BONUS

1) LIFE SCIENCE  Multiple Choice  Which of the following is a segmented worm:

W) hook worm
X) earthworm
Y) round worm
Z) nematode

ANSWER: X) EARTHWORM

TOSS-UP

2) PHYSICAL SCIENCE  Short Answer  Specific gravity compares the density of various substances to that of what reference substance?

ANSWER: WATER

BONUS

2) PHYSICAL SCIENCE  Multiple Choice  Which of the following is the BEST example of a chemical reaction:

W) an acid is added to a clear solution in a test tube and a white substance appears and falls to the bottom of the test tube
X) milk is added to water and the water turns a milky color
Y) molten metal hardens upon cooling
Z) salt is dissolved in water

ANSWER: W) AN ACID IS ADDED TO A CLEAR SOLUTION IN A TEST TUBE AND A WHITE SUBSTANCE APPEARS AND FALLS TO THE BOTTOM OF THE TEST TUBE
3) EARTH SCIENCE  *Short Answer*  What is the name for the internal ring within a hurricane where the most intense squalls occur?

**ANSWER:** EYEWALL

**BONUS**

3) EARTH SCIENCE  *Multiple Choice*  As the eyewall of hurricane Katrina approached Louisiana, on which of the following sides of the hurricane were the highest speeds clocked:

- W) north
- X) south
- Y) east
- Z) west

**ANSWER:** W) NORTH

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4) MATH  *Short Answer*  Evaluate the following radical: $-\sqrt{160,000}$

**ANSWER:** $-400$

**BONUS**

4) MATH  *Short Answer*  Arrange the following 4 fractions from the LARGEST to the SMALLEST:

\[
\frac{13}{18}, \frac{7}{12}, \frac{10}{4}, \frac{2}{12}
\]

**ANSWER:** $\frac{10}{4}; \frac{13}{18}; \frac{7}{12}; \frac{2}{12}$
TOSS-UP

5) GENERAL SCIENCE  *Multiple Choice*  Which of the following is closest to average barometric pressure at sea level, in millibars:

W) 1013  
X) 760  
Y) 10  
Z) 1

ANSWER: W) 1013

BONUS

5) GENERAL SCIENCE  *Short Answer*  Name all of the following 4 units of the international system of units that are considered base units and NOT considered derived: Newton, kilogram, second, hertz

ANSWER: KILOGRAM AND SECOND

TOSS-UP

6) LIFE SCIENCE  *Short Answer*  Arachnids have how many pairs of appendages?

ANSWER: 6

BONUS

6) LIFE SCIENCE  *Short Answer*  Arachnids have 4 pairs of walking legs and a single pair of pedipalps. What is the name of the last pair of appendages?

ANSWER: CHELICERA
TOSS-UP

7) PHYSICAL SCIENCE  Multiple Choice  Doing a given amount of work at different rates always involves a different amount of:

W) mass
X) efficiency
Y) potential energy
Z) power

ANSWER: Z) POWER

BONUS

7) PHYSICAL SCIENCE  Short Answer  If a force of 200 newtons is required to accelerate an object at 25 meters per second squared on a horizontal frictionless surface, what is the mass of the object, in grams?

ANSWER: 8,000

(Solution: \( F/a = m = 200/25 = 8 \text{ kg} = 8,000 \text{ g} \) )

TOSS-UP

8) EARTH SCIENCE  Multiple Choice  Which of the following is the actual location where slippage of rock masses first occurs in an earthquake:

W) seismic front
X) focus
Y) Richter point
Z) foreshock

ANSWER: X) FOCUS

BONUS

8) EARTH SCIENCE  Short Answer  What is the name for the location on the Earth’s surface directly above an earthquake focus?

ANSWER: EPICENTER
TOSS-UP

9) MATH Short Answer What is the percentage decrease when a stock price drops from $55.00 per share to $44.00 per share?

ANSWER: 20%

BONUS

9) MATH Short Answer A cell phone company charges 25 cents per minute for the first 10 minutes of usage and 10 cents per minute for usage greater than 10 minutes. If you talked for 1½ hours, what is your total airtime charge?

ANSWER: $10.50

(Solution: $0.25 \times 10 = $2.50; 80 \text{ min} \times 0.1 = $8.00; $8 + $2.5 = $10.50)

TOSS-UP

10) GENERAL SCIENCE Multiple Choice Which of the following is closest to the height of the typical standard 12-ounce soda can:

W) 6 centimeters
X) 12 centimeters
Y) 18 centimeters
Z) 24 centimeters

ANSWER: X) 12 CENTIMETERS

BONUS

10) GENERAL SCIENCE Multiple Choice Which of the following BEST describes the composition of the Proton Exchange Membrane in fuel cells used to power automobiles:

W) polymer plastic
X) metal foil
Y) organic fiber
Z) biofilm

ANSWER: W) POLYMER PLASTIC
TOSS-UP

11) LIFE SCIENCE  *Multiple Choice*  Which of the following is closest to the length of time it takes for a typical human cell to complete mitosis:

W) 1 second  
X) 1 minute  
Y) 1 hour  
Z) 1 day  

ANSWER: Z) 1 DAY

BONUS

11) LIFE SCIENCE  *Short Answer*  Order the following 4 stages of mitosis from the EARLIEST to that LATEST: metaphase; prophase; telophase; anaphase.

ANSWER: PROPHASE; METAPHASE; ANAPHASE; TELOPHASE

TOSS-UP

12) PHYSICAL SCIENCE  *Multiple Choice*  Which of the following is an example of laboratory equipment that is specifically designed to mix fluids without spilling:

W) pipette  
X) centrifuge  
Y) Erlenmeyer flask  
Z) graduated cylinder  

ANSWER: Y) ERLENMEYER FLASK

BONUS

12) PHYSICAL SCIENCE  *Multiple Choice*  Which of the following elements is NOT a gas in its standard state:

W) fluorine  
X) nitrogen  
Y) bromine  
Z) neon  

ANSWER: Y) BROMINE
TOSS-UP

13) EARTH SCIENCE  Multiple Choice  Which of the following fossils is the oldest:

W) fossil of the earliest flowering plant
X) fossilized frog’s egg
Y) trilobite
Z) mastodon

ANSWER: Y) TRILOBITE

BONUS

13) EARTH SCIENCE  Multiple Choice  Which of the following is a layer of the Earth that is primarily characterized as rock with the properties of being hot, weak and plastic:

W) lithosphere
X) asthenosphere
Y) inner core
Z) outer core

ANSWER: X) ASTHENOSPHERE

TOSS-UP

14) MATH  Short Answer  What is the degree measure of the vertex angle in an isosceles triangle if each base angle measures 48º?

ANSWER: 84

BONUS

14) MATH  Short Answer  What is the surface area of a cube, in square feet, if one edge measures 5 feet?

ANSWER: 150
TOSS-UP

15) GENERAL SCIENCE  Multiple Choice  You wake up in the morning and your eyelids are stuck together with a thin or thick discharge caused by inflammation of the clear membrane that covers the white part of your eyes. Which of the following is MOST likely your problem:

W) sinusitis
X) cellulitis
Y) osteomyelitis
Z) conjunctivitis

ANSWER: Z) CONJUNCTIVITIS

BONUS

15) GENERAL SCIENCE  Multiple Choice  Which of the following is NOT true about nicotine:

W) chewing or smokeless tobaccos are safe when used properly because nicotine cannot be absorbed through the mucous membrane
X) nicotine and cyanide have been found in cigarettes
Y) during pregnancy, nicotine concentrates in breast milk and fetal blood
Z) nicotine is a plant alkaloid that is poisonous to most animals

ANSWER: W) CHEWING OR SMOKELESS TOBACCOS ARE SAFE WHEN USED PROPERLY BECAUSE NICOTINE CANNOT BE ABSORBED THROUGH THE MUCOUS MEMBRANE

TOSS-UP

16) LIFE SCIENCE  Short Answer  What are the scientific terms for the two general types of tissues that conduct fluids in higher plants?

ANSWER: XYLEM AND PHLOEM

BONUS

16) LIFE SCIENCE  Short Answer  What is the scientific name for the basic cell type in higher plants that is relatively unspecialized, has a thin cell wall, and carries out most of the metabolism of the plant?

ANSWER: PARENCHYMA
TOSS-UP

17) PHYSICAL SCIENCE  Short Answer  Of the 4 states of matter, which one is the most common in the universe?

ANSWER:  PLASMA

BONUS

17) PHYSICAL SCIENCE  Multiple Choice  Which of the following is the scientific term for the energy needed to transform a given quantity of a substance from a liquid to a gas at standard pressure:

W)  heat of boiling
X)  heat of fusion
Y)  heat of transition
Z)  heat of vaporization

ANSWER:  Z)  HEAT OF VAPORIZATION

TOSS-UP

18) EARTH SCIENCE  Multiple Choice  Calcite belongs to which of the following mineral groups:

W)  oxide
X)  carbonate
Y)  sulfate
Z)  silicate

ANSWER:  X)  CARBONATE

BONUS

18) EARTH SCIENCE  Short Answer  During what phase of the Moon can a solar eclipse occur?

ANSWER:  NEW MOON
**TOSS-UP**

19) **MATH Short Answer** If two sides of a parallelogram are 8 and 9 centimeters, respectively, find the perimeter, in centimeters:

ANSWER: 34

**BONUS**

19) **MATH Short Answer** Rounded to the nearest meter, if side A of a right triangle measures 6 meters and side B measures 9 meters, what is the length of the hypotenuse?

ANSWER: 11

(Solution: $6^2 + 9^2 = c^2$; $c = 11$)

**TOSS-UP**

20) **GENERAL SCIENCE Multiple Choice** Earth’s seasons are primarily caused by:

W) Earth’s distance from the Sun  
X) the tilt of Earth’s axis with respect to the Sun  
Y) Earth’s elliptical orbit around the Sun  
Z) Earth’s rotational period

ANSWER: X) THE TILT OF EARTH’S AXIS WITH RESPECT TO THE SUN

**BONUS**

20) **GENERAL SCIENCE Short Answer** What is the name for the muscle that contracts when you inhale and causes your chest cavity to expand?

ANSWER: DIAPHRAGM
TOSS-UP

21) LIFE SCIENCE  Short Answer  What is the common name for the vector of Eastern Equine Encephalitis and malaria?

ANSWER: MOSQUITO

BONUS

21) LIFE SCIENCE  Multiple Choice  What biome is dominant in sub-Saharan Africa and characterized by the dominant plants being fire resistant:

W) chaparral
X) tundra
Y) savanna
Z) temperate

ANSWER: Y) SAVANNA

TOSS-UP

22) PHYSICAL SCIENCE  Multiple Choice  Which of the following is the BEST example of a suspension:

W) water with 10% ethanol added to it
X) olive oil in water
Y) table sugar completely dissolved in water
Z) orange juice with pulp

ANSWER: Z) ORANGE JUICE WITH PULP

BONUS

22) PHYSICAL SCIENCE  Multiple Choice  According to thermodynamics, whenever energy is converted from one form to another then:

W) the net useful energy remains the same
X) the net useful energy must decrease
Y) the total energy of the system increases
Z) the total energy of the system decreases

ANSWER: X) THE NET USEFUL ENERGY MUST DECREASE
TOSS-UP

23) EARTH SCIENCE  Multiple Choice  A caldera is:

W) a huge depression formed after a magma chamber collapses
X) a long tube where magma pours out onto the surface
Y) a lateral vent that spews only gases
Z) another name for a fumarole

ANSWER: W) A HUGE DEPRESSION FORMED AFTER A MAGMA CHAMBER COLLAPSES

BONUS

23) EARTH SCIENCE  Short Answer  What most commonly happens to the speed of ocean and lake waves as they approach the shallow waters of a shore?

ANSWER: SLOW DOWN

TOSS-UP

24) MATH  Multiple Choice  Which of the following is a quadrilateral with only one pair of parallel lines:

W) trapezoid
X) rhombus
Y) rectangle
Z) hexagon

ANSWER: W) TRAPEZOID

BONUS

24) MATH  Short Answer  What are the median, mean and mode, respectively, of the following set of 5 numbers, respectively:  35,  25,  10,  25,  45

ANSWER: MEDIAN = 25;  MEAN = 28;  MODE = 25
TOSS-UP

25) GENERAL SCIENCE  Multiple Choice  Which of the following elements acts as a catalyst for destroying ozone in the upper atmosphere:

W) sulfur  
X) chlorine  
Y) nitrogen  
Z) helium

ANSWER:  X) CHLORINE

BONUS

25) GENERAL SCIENCE  Short Answer  Today, most semiconductors and transistors are made mostly with what element?

ANSWER:  SILICON