ROUND ROBIN 4

TOSS-UP

1) PHYSICAL SCIENCE  *Multiple Choice*  A child’s seesaw would be considered:

W) a complex machine  
X) a form of inclined plane  
Y) a compound lever  
Z) a class 1 lever

ANSWER: Z) A CLASS ONE LEVER

BONUS

1) PHYSICAL SCIENCE  *Short Answer*  A 100-watt light bulb is lighted by a 100 volt power source. What is the current, in amperes, running through the bulb?

ANSWER: 1 AMPERE

(Solution: current = watts/volts; 100/100 = 1 ampere)

TOSS-UP

2) LIFE SCIENCE  *Multiple Choice*  Which of the following is the scientific name for the part of the human brain where higher brain operations occur such as thinking, imagination, mathematical reasoning and language:

W) cerebral cortex  
X) cerebellum  
Y) medulla oblongata  
Z) hypothalamus

ANSWER: W) CEREBRAL CORTEX

BONUS

2) LIFE SCIENCE  *Short Answer*  What is the common botanical term for the response a cell or plant has towards or away from a stimulus?

ANSWER: TAXIS
TOSS-UP

3) GENERAL SCIENCE  Short Answer  What layer of the Sun’s atmosphere is immediately interior to the corona?

ANSWER: THE CHROMOSPHERE

BONUS

3) GENERAL SCIENCE  Short Answer  How many angstroms are in 1 micron?

ANSWER: 10,000

TOSS-UP

4) LIFE SCIENCE  Multiple Choice  What is the joint that is formed by the articulation of the tibia, fibula, and femur?

W) wrist
X) knee
Y) elbow
Z) ankle

ANSWER: X) KNEE

BONUS

4) LIFE SCIENCE  Multiple Choice  The exchange of gases between blood and the tissue occurs normally in:

W) venules
X) arterioles
Y) veins
Z) capillaries

ANSWER: Z) CAPILLARIES
TOSS-UP

5) MATH  Short Answer  What does 12 times 13 divided by 2 equal?

ANSWER:  78

BONUS

5) MATH  Short Answer  Four factorial equals what number?

ANSWER:  24

TOSS-UP

6) EARTH  SCIENCE  Short Answer  During which month does the vernal equinox occur?

ANSWER:  MARCH

BONUS

6) EARTH  SCIENCE  Short Answer  The temperature at which the relative humidity reaches 100% and condensation starts is called the:

ANSWER:  DEW POINT
TOSS-UP

7) GENERAL SCIENCE  Short Answer  Sigmund Freud proposed the idea that the subconscious mind existed in three separate divisions two of which he called the ego and the superego. What was the third?

ANSWER: THE ID

BONUS

7) GENERAL SCIENCE  Multiple Choice  Galaxies are:

W) clouds of gases around stars
X) clusters of billion of stars
Y) rare in the universe
Z) always spherical in shape

ANSWER: X) CLUSTERS OF BILLION OF STARS

TOSS-UP

8) PHYSICAL SCIENCE  Short Answer  The amount of heat needed to increase the temperature of 1.00 gram of water from 14.5°C to 15.5°C is defined as what unit of measurement?

ANSWER: CALORIE

BONUS

8) PHYSICAL SCIENCE  Short Answer  What is the chemical formula for hydrogen peroxide?

ANSWER: H₂O₂
TOSS-UP

9) EARTH SCIENCE  *Multiple Choice*  Which of the following minerals best illustrates the property of cleavage:

W) quartz  
X) diamond  
Y) topaz  
Z) mica

ANSWER: Z) MICA

BONUS

9) EARTH SCIENCE  *Multiple Choice*  Based on how it was formed, slate is classified as what type of rock:

W) igneous  
X) sedimentary  
Y) metamorphic  
Z) volcanic

ANSWER: Y) METAMORPHIC

TOSS-UP

10) MATH  *Short Answer*  What is the name of the famous theorem of geometry that states the sum of the squares of a right triangle is equal to the square of the hypotenuse?

ANSWER: PYTHAGOREAN THEOREM  (ACCEPT: PYTHAGOREAN OR PYTHAGORAS)

BONUS

10) MATH  *Short Answer*  What is the following Roman Numeral number equal to in an Arabic number: MCMLXI

ANSWER: 1961
TOSS-UP

11) PHYSICAL SCIENCE  *Multiple Choice* The mass of a quantity of matter divided by its volume provides which specific property?

W) weight  
X) specific gravity  
Y) density  
Z) malleability

ANSWER: Y) DENSITY

BONUS

11) PHYSICAL SCIENCE  *Short Answer* Assuming friction is negligible, if a lever has a mechanical advantage of 5, how much effort in newtons is needed to lift a 10 newton load?

ANSWER: 2 NEWTONS

(Solution: Force = resistance / mechanical advantage)

TOSS-UP

12) LIFE SCIENCE  *Multiple Choice* In 1665, what person, using a microscope he built, observed perforations in plant stems, which he called cells:

W) Robert Hooke  
X) Anton Van Leeuwenhoek  
Y) Carolus Linnaeus  
Z) Theodor Schwann

ANSWER: W) ROBERT HOOKE

BONUS

12) LIFE SCIENCE  *Short Answer* What are the four main human blood types?

ANSWER: O, A, B, AND AB
TOSS-UP

13) MATH Short Answer Solve the following equation: \( \frac{x}{6} = -8 \)

ANSWER: -48

BONUS

13) MATH Short Answer Find the area of a circle when the radius equals 10:

ANSWER: 314

(Solution: \( A = \pi r^2 \))

TOSS-UP

14) EARTH SCIENCE Short Answer What is the name of the phenomenon that causes an accumulation of heat in the lower atmosphere because of the absorption of long wavelength radiation from the Earth's surface?

ANSWER: GREENHOUSE EFFECT

BONUS

14) EARTH SCIENCE Short Answer A meteor that reaches the surface of the Earth is more accurately called a:

ANSWER: METEORITE
TOSS-UP

15) LIFE SCIENCE  Multiple Choice  Which of the following is the region of the body where the thyroid gland is located:

W) neck  
X) abdomen  
Y) brain  
Z) arm pit

ANSWER: W) NECK

BONUS

15) LIFE SCIENCE  Short Answer  Encephalitis is an inflammation of what organ?

ANSWER: BRAIN

TOSS-UP

16) GENERAL SCIENCE  Short Answer  Ring, Helix, Dumbbell and Veil are all names of what specific type of heavenly bodies?

ANSWER: NEBULA

BONUS

16) GENERAL SCIENCE  Short Answer  Rounded to the nearest whole number, what is the temperature in Fahrenheit of a substance at 100°C?

ANSWER: 212°
TOSS-UP

17) EARTH SCIENCE  Short Answer  Which equinox marks the moment when fall begins in the Northern Hemisphere?

ANSWER: AUTUMNAL EQUINOX

BONUS

17) EARTH SCIENCE  Multiple Choice  Underwater volcanoes that have a flat top are called:

W) seamounts  
X) island arcs  
Y) abyssal mountains  
Z) guyots

ANSWER: Z) GUYOTS

TOSS-UP

18) MATH  Short Answer  What is the smallest two-digit whole number?

ANSWER: 10

BONUS

18) MATH  Short Answer  On your first math test you scored a 56% and on the second test you scored 70%. By what percentage did you increase your score?

ANSWER: 25%

(Solution = 70-56= 14, 14/56=25%)
19) GENERAL SCIENCE  *Short Answer*  What term do physicists and engineers use most commonly to describe a change in the velocity of an object?

**ANSWER:** ACCELERATION

**BONUS**

19) GENERAL SCIENCE  *Multiple Choice*  Which list is out of order of closest to furthest distance from the sun:

- W) Mercury, Venus, Earth
- X) Jupiter, Saturn, Neptune
- Y) Venus, Mars, Earth
- Z) Mercury, Jupiter, Pluto

**ANSWER:** Y) VENUS, MARS, EARTH

**TOSS-UP**

20) PHYSICAL SCIENCE  *Short Answer*  A color made from the addition of two primary colors is called a:

**ANSWER:** SECONDARY COLOR

**BONUS**

20) PHYSICAL SCIENCE  *Multiple Choice*  At 100 degrees Fahrenheit, which of the following substances would feel hottest to touch?

- W) wood
- X) water
- Y) sand
- Z) gold

**ANSWER:** Z) GOLD
TOSS-UP

21) GENERAL SCIENCE  Short Answer  In a compound light microscope, the lens closest to the specimen is usually called the

ANSWER: OBJECTIVE

BONUS

21) GENERAL SCIENCE  Short Answer  What is the nearest star to Earth in the Milky Way?

ANSWER: THE SUN

TOSS-UP

22) PHYSICAL SCIENCE  Multiple Choice  What property of waves allows them to bend around the edges of an obstacle:

W) reflection
X) diffraction
Y) deflection
Z) dispersion

ANSWER: X) DIFFRACTION

BONUS

22) PHYSICAL SCIENCE  Short Answer  For a toaster that draws 12 amps on a 120 volt line, what is the resistance of the toaster?

ANSWER: 10 OHMS

(Solution: $I = \frac{V}{R}$,  $R = \frac{V}{I}$,  $R = \frac{120}{12} = 10$)
TOSS-UP

23) LIFE SCIENCE  Multiple Choice  Which of the following is not a case of symbiosis:

W) parasitism  
X) commensalism  
Y) mutualism  
Z) formatism

ANSWER: Z) FORMATISM

BONUS

23) LIFE SCIENCE  Short Answer  What is the name of the protein which is primarily responsible for the varying shades of color in human skin and increases in production after exposure to sunlight.

ANSWER: MELANIN

TOSS-UP

24) EARTH SCIENCE  Short Answer  What is the name of a mixture of molten rock, suspended mineral grains, and dissolved gases that forms within the crust or mantle of the Earth when temperatures are sufficiently high:

ANSWER: MAGMA  (DO NOT ACCEPT: LAVA)

(Solution: magma becomes lava when it erupts at the surface)

BONUS

24) EARTH SCIENCE  Multiple Choice  In what geological period did the first organisms with shells first become abundant:

W) Precambrian  
X) Cambrian  
Y) Devonian  
Z) Permian

ANSWER: X) CAMBRIAN
TOSS-UP

25) MATH  *Short Answer*  What is the standard formula for the surface area of a sphere?

ANSWER:  $4\pi r^2$

BONUS

25) MATH  *Short Answer*  Multiply the following 5 numbers:  (-2)(-5)(-4)(-3)(-1)

ANSWER: -120