

## 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: H<sub>2</sub>O<sub>2</sub>

### 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 Leewenhoek
- 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 =  $70-56=14$ ,  $14/56=25\%$ )

### TOSS-UP

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 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:  $I = V/R$ ,  $R = V/I$ ,  $R = 120/12 = 10$ )

### 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