

ROUND 7A

TOSS-UP

1) LIFE SCIENCE *Multiple Choice* Which species of tuna is in immediate danger of extinction due to overfishing?

- W) Big eye tuna
- X) Albacore
- Y) Yellowfin tuna
- Z) Southern bluefin tuna

ANSWER: Z) SOUTHERN BLUEFIN TUNA

BONUS

1) LIFE SCIENCE *Short Answer* What four categories of biological macromolecules make up cells?

ANSWER: PROTEINS, NUCLEIC ACIDS, CARBOHYDRATES, AND LIPIDS (DO NOT ACCEPT: FATS)

TOSS-UP

2) PHYSICAL SCIENCE *Multiple Choice* Which of the following best describes how a chemical change occurs in a substance?

- W) It changes state
- X) It gains, loses, or shares electrons
- Y) It reaches its boiling point
- Z) It is ground into a powder

ANSWER: X) IT GAINS, LOSES, OR SHARES ELECTRONS

BONUS

2) PHYSICAL SCIENCE *Short Answer* Every ocean wave is generated by an energy source. What is the most likely cause of waves that reach over 100 feet in amplitude?

ANSWER: EARTHQUAKES

TOSS-UP

3) ENERGY *Multiple Choice* In which of the following states would you be more likely to find a methane digester on a farm or ranch?

- W) Missouri
- X) Wisconsin
- Y) Utah
- Z) Maryland

ANSWER: X) WISCONSIN

BONUS

3) ENERGY *Multiple Choice* The amount of CO₂ produced from burning natural gas will be what percent of the CO₂ produced from burning coal, for the same amount of energy output?

- W) 30%
- X) 50%
- Y) 65%
- Z) 80%

ANSWER: X) 50%

TOSS-UP

4) GENERAL SCIENCE *Multiple Choice* If you have a parent flower that has red petals and the other parent has white petals and they have offspring that are pink, which of the following genetic terms best applies?

- W) Co-dominance
- X) Expressivity
- Y) Pleiotropy [**play-O-truh-pee**]
- Z) Incomplete dominance

ANSWER: Z) INCOMPLETE DOMINANCE

BONUS

4) GENERAL SCIENCE *Short Answer* What organ system, unique to aquatic vertebrae, is used to detect movements and pressure changes in water?

ANSWER: LATERAL LINE

TOSS-UP

5) EARTH AND SPACE *Short Answer* What is the spectral class of the Sun?

ANSWER: G (ACCEPT: G2, G2V)

BONUS

5) EARTH AND SPACE *Multiple Choice* Which of the following accurately describes the structure of the Sun?

- W) Convective core, convective envelope
- X) Radiative core, radiative envelope
- Y) Convective core, radiative envelope
- Z) Radiative core, convective envelope

ANSWER: Z) RADIATIVE CORE, CONVECTIVE ENVELOPE

TOSS-UP

6) MATH *Multiple Choice* A couple bought a house and calculated that they would pay 30% of their combined monthly income of \$5,700 toward the monthly mortgage payment on the house. How much will the couple pay for their monthly mortgage payment?

- W) \$1,650
- X) \$1,710
- Y) \$1,900
- Z) \$2,400

ANSWER: X) \$1,710

BONUS

6) MATH *Short Answer* The perimeter of your garden is $10 \frac{4}{5}$ [**10 and four-fifths**] yards. You purchased wooden planks to edge the garden, but you accidentally bought $12 \frac{1}{3}$ [**12 and one-third**] yards of wood. How many yards of wood will be unused?

ANSWER: $1 \frac{8}{15}$ (ACCEPT: $\frac{23}{15}$)

TOSS-UP

7) LIFE SCIENCE *Multiple Choice* In the spring of 2013, scientists from the University of Michigan and Louisiana State University predicted that a particular coastal region of the US would experience a record breaking dead-zone. For what region was this prediction made?

- W) Gulf of Mexico
- X) Puget Sound
- Y) Gulf of California
- Z) George's Bank

ANSWER: W) GULF OF MEXICO

BONUS

7) LIFE SCIENCE *Short Answer* What is the MOST common term for the general type of nourishment characteristic of mushrooms, in which the organism derives its nutrients by absorbing the biological products of a dead or dying organism?

ANSWER: SAPROPHYTIC (ACCEPT: SAPROBE, SAPROPHAGE, SAPROPHYTE, SAPROZOIC, OR SAPROTROPH)

TOSS-UP

8) PHYSICAL SCIENCE *Multiple Choice* Which of the following is NOT correct about the gravitational force between two objects?

- W) It behaves independently of the law of conservation of energy
- X) It is a form of potential energy
- Y) It is directly proportional to the mass of the two objects
- Z) It is related to the distance between the objects

ANSWER: W) IT BEHAVES INDEPENDENTLY OF THE LAW OF CONSERVATION OF ENERGY

BONUS

8) PHYSICAL SCIENCE *Multiple Choice* What substances, by definition, produce ions when dissolved in water?

- W) Electrolytes
- X) Elements
- Y) Molecules
- Z) Nonpolar

ANSWER: W) ELECTROLYTES

TOSS-UP

9) GENERAL SCIENCE *Short Answer* What term refers to the tip of a plant shoot or root that produces auxin [**AWK-sin**], causing the shoot or root to increase in length?

ANSWER: APICAL MERISTEM (DO NOT ACCEPT: APICAL OR MERISTEM ALONE)

BONUS

9) GENERAL SCIENCE *Multiple Choice* Which of these trees does NOT belong to the family *Juglandaceae* [**joo-gluhn-DAH-cee-ee**]?

- W) Pecan
- X) Butternut
- Y) Tree of heaven
- Z) Walnut

ANSWER: Y) TREE OF HEAVEN

TOSS-UP

10) EARTH AND SPACE *Multiple Choice* The dark low-lying areas of the Moon are composed of which type of rock?

- W) Basalt
- X) Gabbro
- Y) Rhyolite [**RY-uh-lyt**]
- Z) Granite

ANSWER: W) BASALT

BONUS

10) EARTH AND SPACE *Short Answer* Nephrite is a metamorphic rock that is better known as what green ornamental stone?

ANSWER: JADE

TOSS-UP

11) MATH *Multiple Choice* The mean of four observations is 15. What is the new mean after an additional observation with value 25?

- W) 15
- X) 17
- Y) 25
- Z) 32

ANSWER: X) 17

BONUS

11) MATH *Short Answer* When \$500 is divided between three people, one person gets $\frac{2}{5}$ of the money, and another gets $\frac{3}{10}$ of the money. How much money in dollars does the third person get?

ANSWER: \$150

TOSS-UP

12) ENERGY *Short Answer* What is the largest component of solar irradiance on a clear day?

ANSWER: DIRECT NORMAL IRRADIANCE (ACCEPT: DNI, BEAM RADIATION, DIRECT, DIRECT IRRADIANCE, DIRECT RADIATION)

BONUS

12) ENERGY *Short Answer* Coal plants, hydroelectric plants, nuclear power plants, and wind farms all have what two pieces of machinery in common?

ANSWER: TURBINES AND GENERATORS (ACCEPT: TURBINE, GENERATOR)

TOSS-UP

13) LIFE SCIENCE *Multiple Choice* Which organism existed over 3.5 billion years ago and is considered a living fossil?

- W) Stromatolite [**stroh-MAT-l-yt**]
- X) Algae
- Y) Krill
- Z) Trilobite

ANSWER: W) STROMATOLITE

BONUS

13) LIFE SCIENCE *Multiple Choice* Which of the following leukocytes [**LOO-kuh-sits**] occurs in the LEAST abundance in the healthy human body?

- W) Lymphocyte [**LIM-fuh-syt**]
- X) Eosinophil [**ee-uh-SIN-uh-fil**]
- Y) Neutrophil [**NOO-truh-fil**]
- Z) Basophil

ANSWER: Z) BASOPHIL

TOSS-UP

14) PHYSICAL SCIENCE *Multiple Choice* The largest voltage drop would be measured across which of the following circuit components?

- W) Conduction loop with 7 amp current and 2 ohm resistance
- X) Individual circuit component with 2 amp current and 8.5 ohm resistance
- Y) Conduction loop with 4 amp current and 4.5 ohm resistance
- Z) Individual circuit component with 5 amp current and 3 ohm resistance

ANSWER: Y) CONDUCTION LOOP WITH 4 AMP CURRENT AND 4.5 OHM RESISTANCE

BONUS

14) PHYSICAL SCIENCE *Short Answer* A diffraction grating for light acts somewhat like a prism: when light is viewed through it, the constituent colors that blend to create the original light are separated. If a white LED bulb is viewed through a diffraction grating, give the constituent colors that will be viewed by the observer looking through the grating, in the order that they appear.

ANSWER: RED, ORANGE, YELLOW, GREEN, BLUE, INDIGO, AND VIOLET (ACCEPT: VISIBLE SPECTRUM OR COLORS IN REVERSE ORDER)

TOSS-UP

15) GENERAL SCIENCE *Multiple Choice* Which is the FARTHEST planet from the Sun?

- W) Pluto
- X) Neptune
- Y) Saturn
- Z) Mars

ANSWER: X) NEPTUNE

BONUS

15) GENERAL SCIENCE *Short Answer* Identify all of the following four features that serve to distinguish vascular plants from nonvascular plants: 1) sporophytes [**SPOHR-uh-fyts**]; 2) specialized conducting tissue; 3) rhizoids [**RY-zoids**]; 4) secondary growth

ANSWER: 2 AND 4 (ACCEPT: SPECIALIZED CONDUCTING TISSUE AND SECONDARY GROWTH)

TOSS-UP

16) ENERGY *Multiple Choice* The United States imports most of its crude oil from what country?

- W) Iraq
- X) Saudi Arabia
- Y) Venezuela
- Z) Canada

ANSWER: Z) CANADA

BONUS

16) ENERGY *Multiple Choice* A 100 watt light bulb is on for 10 hours in the U.S. What is the average approximate cost in electricity for that one hour?

- W) \$.02
- X) \$.10
- Y) \$.25
- Z) \$.50

ANSWER: X) \$.10

TOSS-UP

17) EARTH AND SPACE *Short Answer* The solar wind is essentially the Sun's atmosphere boiling off. What ion makes up 96% of the solar wind?

ANSWER: HYDROGEN (ACCEPT: H⁺; DO NOT ACCEPT: ALPHA PARTICLES)

BONUS

17) EARTH AND SPACE *Multiple Choice* Which of the following plates is NOT a past or present tectonic plate?

- W) Farallon [*fa-ruh-LON*]
- X) Scotia
- Y) Laurentian [*lo-REN-shuhn*]
- Z) Juan de Fuca [*WAHN di FYOO-kuh*]

ANSWER: Y) LAURENTIAN

TOSS-UP

18) MATH *Multiple Choice* A florist buys roses at 50 cents apiece and sells them for one dollar apiece. If there are no other expenses, how many roses must be sold in order to make a profit of \$300?

- W) 150
- X) 200
- Y) 300
- Z) 600

ANSWER: Z) 600

BONUS

18) MATH *Short Answer* Arrange the following three numbers in order from least to greatest: π , $\sqrt{10}$, and $22/7$.

ANSWER: π , $22/7$, $\sqrt{10}$

TOSS-UP

19) LIFE SCIENCE *Multiple Choice* What is the location of the biceps femoris muscle?

- W) Chest
- X) Leg
- Y) Abdomen
- Z) Thigh

ANSWER: Z) THIGH

BONUS

19) LIFE SCIENCE *Short Answer* In the U.S., what potentially lethal disease is carried by deer mice and transferred to humans?

ANSWER: HANTAVIRUS (ACCEPT: HANTAVIRUS HEMORRHAGIC FEVER; HANTAVIRUS PULMONARY SYNDROME; SIN NOMBRE HANTAVIRUS)

TOSS-UP

20) PHYSICAL SCIENCE *Multiple Choice* LHC is an acronym for an instrument used in particle physics experiments located in Europe. For which of the following phrases is LHC the acronym?

- W) Long Hadron Collider
- X) Large Hadron Collider
- Y) Large Higgs Collider
- Z) Large Hadron Collinearator

ANSWER: X) LARGE HADRON COLLIDER

BONUS

20) PHYSICAL SCIENCE *Short Answer* A universal property of waves is that they transfer what quantity?

ANSWER: ENERGY

TOSS-UP

21) GENERAL SCIENCE *Multiple Choice* A monsoon refers to which of the following?

- W) A heavy rain storm
- X) A tropical, wet equatorial zone
- Y) A larger than average flood
- Z) A seasonally, dominant wind pattern

ANSWER: Z) A SEASONALLY, DOMINANT WIND PATTERN

BONUS

21) GENERAL SCIENCE *Short Answer* Zebra mussels, Burmese pythons, silver carp, and nutria are all examples of what type of ecological threat?

ANSWER: INVASIVE SPECIES (ACCEPT: INVASIVE EXOTICS, NONNATIVE INVASIVE SPECIES)

TOSS-UP

22) EARTH AND SPACE *Short Answer* Geysers are located near what kind of areas?

ANSWER: VOLCANIC (ACCEPT: GEOLOGICALLY ACTIVE OR THERMAL)

BONUS

22) EARTH AND SPACE *Multiple Choice* In which of the following depositional settings will sedimentary rock layers be deposited non-horizontally?

- W) Prograding delta
- X) Lake
- Y) River
- Z) Ocean basin

ANSWER: W) PROGRADING DELTA

TOSS-UP

23) MATH *Multiple Choice* What is the value of y if $(3, y)$ [**the ordered pair 3, y**] is a solution to the equation: $5x - 3y = 18$?

W) -11

X) -1

Y) 1

Z) 3

ANSWER: X) -1

BONUS

23) MATH *Short Answer* In the arithmetic operation long division, answers are often expressed as a whole number quotient with a whole number remainder. Indicate all of the following four choices that are also commonly used to represent the result of long division: 1) improper fraction, 2) mixed fraction, 3) decimal, 4) logarithm

ANSWER: MIXED FRACTION AND DECIMAL (ACCEPT: 2 AND 3)