

ROUND 3

TOSS-UP

1) EARTH SCIENCE *Multiple Choice* Which of the following is a coastal morphology most characteristic of the west coast of the U.S.:

- W) numerous estuaries
- X) depositional coast
- Y) extensive barrier islands
- Z) rocky coast with small spits and pocket beaches

ANSWER: Z) ROCKY COAST WITH SMALL SPITS AND POCKET BEACHES

BONUS

1) EARTH SCIENCE *Multiple Choice* Which of the following best describes how a sedimentary rock can form:

- W) compaction and cementation
- X) slow cooling and hardening of magma
- Y) fast cooling and hardening of magma
- Z) high temperature and pressure causing recrystallization

ANSWER: W) COMPACTION AND CEMENTATION

TOSS-UP

2) MATH *Short Answer* What is the degree measure of a semicircle?

ANSWER: 180

BONUS

2) MATH *Short Answer* How many degrees are in the 4th angle of a quadrilateral whose other 3 angles are 85°, 95°, and 100°?

ANSWER: 80

TOSS-UP

3) GENERAL SCIENCE *Multiple Choice* Which of the following does the prefix “ambi” (spell out the letters a, m, b, i) mean, as in the word ambidextrous:

- W) equal
- X) both
- Y) neither
- Z) always

ANSWER: X) BOTH

BONUS

3) GENERAL SCIENCE *Short Answer* Arrange the following 4 choices from the one with the LOWEST mass to the HIGHEST mass: decigram; microgram; centigram; hectogram

ANSWER: MICROGRAM; CENTIGRAM; DECIGRAM; HECTOGRAM

TOSS-UP

4) LIFE SCIENCE *Short Answer* What is the most common term for the biological polymer found in chromosomes that stores genetic information?

ANSWER: DNA (ACCEPT: DEOXYRIBONUCLEIC ACID)

BONUS

4) LIFE SCIENCE *Short Answer* Inside what human cell organelle does replication of the chromosomal DNA in preparation for mitosis occur?

ANSWER: NUCLEUS

TOSS-UP

5) PHYSICAL SCIENCE *Short Answer* What is the mass, in grams to the nearest whole number, of one cubic centimeter of pure water at standard temperature and pressure?

ANSWER: 1

BONUS

5) PHYSICAL SCIENCE *Short Answer* Name all of the following 3 choices that a physicist would consider to be simple machines: bicycle; lever; ramp

ANSWER: LEVER; RAMP

TOSS-UP

6) EARTH SCIENCE *Multiple Choice* The greatest geophysical impacts from the movement of Earth's lithospheric plates are most often seen and felt in which of the following areas:

- W) at the center of the plates
- X) at plate boundaries
- Y) evenly distributed throughout the entire plate
- Z) along riverbeds within the plates

ANSWER: X) AT PLATE BOUNDARIES

BONUS

6) EARTH SCIENCE *Short Answer* What layer of Earth's interior contains over 60% of the Earth's mass and is composed of iron- and magnesium-rich silicates?

ANSWER: MANTLE

TOSS-UP

7) MATH *Short Answer* The equation $(2 + x) + y = 2 + (x + y)$ best illustrates what basic property of addition?

ANSWER: ASSOCIATIVE

BONUS

7) MATH *Short Answer* Change the decimal 0.88 to a fraction in lowest terms:

ANSWER: $\frac{22}{25}$

TOSS-UP

8) GENERAL SCIENCE *Short Answer* One quintillion contains how many zeroes?

ANSWER: 18

BONUS

8) GENERAL SCIENCE *Short Answer* A single U.S. quarter is 2 millimeters thick. Find the height, in centimeters, of a stack of 50 quarters:

ANSWER: 10

(Solution: $2 \text{ mm} \times 50 = 100 \text{ mm} = 10 \text{ cm}$)

TOSS-UP

9) LIFE SCIENCE *Short Answer* What specific structure is most directly responsible for the motility of bacteria?

ANSWER: FLAGELLA (ACCEPT: FLAGELLUM)

BONUS

9) LIFE SCIENCE *Multiple Choice* If an animal has 42 chromosomes in its normal, non-gamete or somatic cells, what term would be given to the gametes that have 21 chromosomes:

- W) somatic
- X) unigentic
- Y) haploid
- Z) solitary

ANSWER: Y) HAPLOID

TOSS-UP

10) PHYSICAL SCIENCE *Multiple Choice* Which of the following BEST describes how the SI unit called the Newton is derived:

- W) the product of force times time
- X) the energy in one kilogram traveling at one meter per second
- Y) the force needed to accelerate 1 kilogram at one meter per second squared
- Z) the power needed to accelerate 1 kilogram at one kilometer per hour

ANSWER: Y) THE FORCE NEEDED TO ACCELERATE 1 KILOGRAM AT ONE METER PER SECOND SQUARED

BONUS

10) PHYSICAL SCIENCE *Short Answer* A car is traveling at a constant speed of 20 kilometers per hour on a long straight road. How many minutes will it take to travel a distance of 5 kilometers?

ANSWER: 15

TOSS-UP

11) EARTH SCIENCE *Multiple Choice* The best evidence for the model of Earth's interior comes from the study of:

- W) seismology
- X) paleontology
- Y) paleomagnetism
- Z) glaciology

ANSWER: W) SEISMOLOGY

BONUS

11) EARTH SCIENCE *Multiple Choice* Which of the following is TRUE of the Richter Scale:

- W) values are always given in whole numbers
- X) an earthquake measuring 5 has 50-times more energy than an earthquake measuring 4
- Y) it is based on a scale of 0 to 14
- Z) it is based on a logarithmic scale

ANSWER: Z) IT IS BASED ON A LOGARITHMIC SCALE

TOSS-UP

12) MATH *Short Answer* In the real numbers, a number times its multiplicative inverse equals what?

ANSWER: 1

BONUS

12) MATH *Short Answer* Find the elapsed time, in hours and minutes reduced to their lowest terms, between 12:15 AM and 5:05 PM:

ANSWER: 16 HOURS 50 MINUTES

TOSS-UP

13) GENERAL SCIENCE *Short Answer* What hard silvery-grey metal is the 9th most common element in the Earth's crust, has an atomic number of 22, and takes its name from the Titans?

ANSWER: TITANIUM

BONUS

13) GENERAL SCIENCE *Short Answer* What state in the U.S. has the largest continuous system of mangroves in the world?

ANSWER: FLORIDA

TOSS-UP

14) LIFE SCIENCE *Short Answer* What is the most common term for the symbiotic relationship where one organism benefits and the other is harmed?

ANSWER: PARASITISM

BONUS

14) LIFE SCIENCE *Short Answer* What is the most common term for the type of symbiosis where one organism benefits and the other is neither significantly harmed nor helped by the interaction?

ANSWER: COMMENSALISM

TOSS-UP

15) PHYSICAL SCIENCE *Multiple Choice* When using the periodic chart, what number gives the number of protons in a given element:

- W) period number
- X) group number
- Y) atomic number
- Z) average atomic mass

ANSWER: Y) ATOMIC NUMBER

BONUS

15) PHYSICAL SCIENCE *Multiple Choice* Which of the following is NOT true:

- W) compounds have atoms from more than one element
- X) atoms can bond together to make molecules
- Y) all helium atoms have one more proton than all hydrogen atoms
- Z) all oxygen molecules have 8 neutrons

ANSWER: Z) ALL OXYGEN MOLECULES HAVE 8 NEUTRONS

TOSS-UP

16) EARTH SCIENCE *Multiple Choice* Most blizzards that strike the continental U.S. most directly originated in which of the following locations:

- W) the Gulf of Alaska
- X) the Gulf of Mexico
- Y) along the Gulf Stream
- Z) in the North Sea

ANSWER: W) THE GULF OF ALASKA

BONUS

16) EARTH SCIENCE *Short Answer* What terrestrial planet rotates in an opposite direction to the planet Earth?

ANSWER: VENUS

TOSS-UP

17) MATH *Short Answer* What is the mathematical term for coplanar lines that never intersect?

ANSWER: PARALLEL

BONUS

17) MATH *Short Answer* What is the least common denominator of the following 3 fractions:

$$\frac{2}{3}; \frac{5}{6}; \frac{1}{5}$$

ANSWER: 30

TOSS-UP

18) GENERAL SCIENCE *Multiple Choice* Which of the following types of maps would be most useful on a hiking trip through the Alps:

- W) synoptic
- X) topographic
- Y) planimetric
- Z) Mercator projection

ANSWER: X) TOPOGRAPHIC

BONUS

18) GENERAL SCIENCE *Multiple Choice* Regarding computer technology, which of the following BEST describes the bit:

- W) an analogue magnetic storage sequence
- X) a computer processor
- Y) a memory value of 1 through 8
- Z) a binary digit that stores information

ANSWER: Z) A BINARY DIGIT THAT STORES INFORMATION

TOSS-UP

19) LIFE SCIENCE *Short Answer* What is the scientific term for the biting structures of spiders?

ANSWER: CHELICERAE (ACCEPT: CHELICERA)

BONUS

19) LIFE SCIENCE *Short Answer* In what structure of a nucleated cell are ribosomes assembled into their subunits?

ANSWER: NUCLEOLUS (DO NOT ACCEPT: NUCLEUS)

TOSS-UP

20) PHYSICAL SCIENCE *Short Answer* If the angle of incidence for a beam of light on a mirror is 27 degrees, what is the angle of reflection, in degrees?

ANSWER: 27

BONUS

20) PHYSICAL SCIENCE *Multiple Choice* Which of the following is TRUE of gases:

- W) they have a definite shape
- X) they are highly compressible
- Y) they behave like a fluid
- Z) their particles are in uniform motion

ANSWER: X) THEY ARE HIGHLY COMPRESSIBLE

TOSS-UP

21) EARTH SCIENCE *Multiple Choice* Which of the following terms best describes the cleavage of a mineral:

- W) silky
- X) brittle
- Y) perfect one way
- Z) sub-metallic

ANSWER: Y) PERFECT ONE WAY

BONUS

21) EARTH SCIENCE *Multiple Choice* Which of the following is a region of Earth's atmosphere where convection is most likely to take place:

- W) troposphere
- X) stratosphere
- Y) tropopause
- Z) thermosphere

ANSWER: W) TROPOSPHERE

TOSS-UP

22) MATH *Short Answer* Find the reciprocal of $10\frac{1}{5}$:

ANSWER: $\frac{5}{51}$

BONUS

22) MATH *Short Answer* Convert $\frac{5}{3}$ into percent, rounded to the nearest tenth of a percent:

ANSWER: 166.7 (must be exact)

TOSS-UP

23) GENERAL SCIENCE *Short Answer* What is the most common element in most steel?

ANSWER: IRON

BONUS

23) GENERAL SCIENCE *Short Answer* Stainless steel is differentiated from other steels based mainly on the content of what element?

ANSWER: CHROMIUM

TOSS-UP

24) LIFE SCIENCE *Multiple Choice* Which of the following is part of the nephron in the kidney:

- W) islet cells (read as: EY-let)
- X) ureter
- Y) amygdala (read as: ah-MIG-dih-la)
- Z) glomerulus (read as: glow-MAIR-you-lus)

ANSWER: Z) GLOMERULUS

BONUS

24) LIFE SCIENCE *Short Answer* The human body is most commonly described as having what type of symmetry?

ANSWER: BILATERAL

TOSS-UP

25) PHYSICAL SCIENCE *Multiple Choice* Which of the following BEST explains why a concrete floor feels colder than a wooden floor if both are at 21°C:

- W) wood is not as dense as concrete
- X) concrete conducts heat better than wood
- Y) wood is alive and concrete is not
- Z) concrete is much less elastic than wood

ANSWER: X) CONCRETE CONDUCTS HEAT BETTER THAN WOOD

BONUS

25) PHYSICAL SCIENCE *Short Answer* Molasses flows more slowly than water. What is the most common scientific term for the ability of different substances to flow more or less freely?

ANSWER: VISCOSITY