

### ROUND 3

#### TOSS-UP

1) EARTH SCIENCE *Multiple Choice* The temperature outside is 85° F and the air is holding a maximum amount of moisture. If the temperature drops rapidly to 65°F, which of the following will MOST likely happen:

- W) it will rain
- X) it will become sunny
- Y) humidity is relatively unchanged
- Z) the relative humidity is lowered by about 25%

ANSWER: W) IT WILL RAIN

#### BONUS

1) EARTH SCIENCE *Short Answer* The summit of Mount McKinley or Denali at about 6,200 meters is found in what layer of the Earth's atmosphere?

ANSWER: TROPOSPHERE

---

#### TOSS-UP

2) MATH *Multiple Choice* Which of the following is NOT true:

- W)  $5 \times 0 = 0$
- X)  $2 \times \frac{1}{2} = 5 \div 5$
- Y)  $\frac{0}{5} = 0$
- Z)  $\frac{5}{0} = 5$

ANSWER: Z)  $\frac{5}{0} = 5$

#### BONUS

2) MATH *Short Answer* Simplify the following:  $(x^3y^4z^2) \times (2y^3)^0$

ANSWER:  $x^3y^4z^2$

**TOSS-UP**

3) GENERAL SCIENCE *Short Answer* Convert 10 square feet into square inches:

ANSWER: 1440

**BONUS**

3) GENERAL SCIENCE *Multiple Choice* If you are 5 feet 10 inches tall, which of the following is closest to your height, in meters:

- W) 1.8
- X) 1.7
- Y) 1.6
- Z) 1.5

ANSWER: W) 1.8

---

**TOSS-UP**

4) LIFE SCIENCE *Short Answer* What is MOST commonly noted as the most diverse class of life on Earth?

ANSWER: INSECT (ACCEPT: INSECTA)

**BONUS**

4) LIFE SCIENCE *Short Answer* Which one of the following 5 organisms is LEAST related to the others: centipede; beetle; fly; bed bug; wasp

ANSWER: CENTIPEDE

(Solution: centipedes are chilopods; all others are insects)

**TOSS-UP**

5) PHYSICAL SCIENCE *Short Answer* The bubbles in boiling water are composed of what molecules?

ANSWER: WATER (ACCEPT: H<sub>2</sub>O)

**BONUS**

5) PHYSICAL SCIENCE *Short Answer* How much work is done in holding a steel block in place by applying a force of 800 newtons for 5 seconds?

ANSWER: 0 (ACCEPT: NONE)

---

**TOSS-UP**

6) EARTH SCIENCE *Multiple Choice* Which of the following is NOT a likely impact of continued global warming:

- W) volcanic activity will increase
- X) polar ice could melt enough to raise the sea levels
- Y) coral bleaching
- Z) major changes in weather patterns

ANSWER: W) VOLCANIC ACTIVITY WILL INCREASE

**BONUS**

6) EARTH SCIENCE *Multiple Choice* Which of the following is NOT true about ocean water:

- W) cool, salty water is more dense than warm, less salty water
- X) about 97% of Earth's surface water is salt water
- Y) about 3.5% of sea water consists of dissolved substances
- Z) the proportions of dissolved gases in the ocean are nearly the same as in the atmosphere

ANSWER: Z) THE PROPORTIONS OF DISSOLVED GASES IN THE OCEAN ARE NEARLY THE SAME AS IN THE ATMOSPHERE

**TOSS-UP**

7) MATH *Short Answer* If 10% of a certain number is 240, what is 25% of the original number?

ANSWER: 600

**BONUS**

7) MATH *Short Answer* Giving your answer as a proper fraction in its simplest form, subtract the following two fractions:  $\frac{4}{8} - \frac{14}{12}$

ANSWER:  $-\frac{2}{3}$

---

**TOSS-UP**

8) GENERAL SCIENCE *Short Answer* If a circle's circumference is divided by its radius, what is the resulting value to the nearest whole number?

ANSWER: 6

**BONUS**

8) GENERAL SCIENCE *Multiple Choice* Which of the following is a number with 3 significant digits:

- W) 0.003
- X) 0.03030
- Y) 0.033
- Z) 0.0300

ANSWER: Z) 0.0300

**TOSS-UP**

9) LIFE SCIENCE *Multiple Choice* Which of the following do clams use as an anchor to fix themselves into the sand:

- W) mantle
- X) foot
- Y) siphon
- Z) ganglia

ANSWER: X) FOOT

**BONUS**

9) LIFE SCIENCE *Short Answer* Name all of the following 4 organisms that are bivalve mollusks: octopus; oyster; snail; clam

ANSWER: OYSTER; CLAM

---

**TOSS-UP**

10) PHYSICAL SCIENCE *Short Answer* What property of sound is most directly responsible for it bending around objects?

ANSWER: DIFFRACTION

**BONUS**

10) PHYSICAL SCIENCE *Multiple Choice* Which of the following is the basic unit of energy:

- W) degree
- X) joule
- Y) volt
- Z) pascal

ANSWER: X) JOULE

**TOSS-UP**

11) EARTH SCIENCE *Multiple Choice* Which of the following BEST describes earthquake aftershocks:

- W) all tremors under magnitude 4 on the Richter scale
- X) a series of smaller tremors that follow a large earthquake within days or weeks
- Y) any tremors that originate from the epicenter within a 1 year period
- Z) the tremor that occurs at the initial point of rupture

ANSWER: X) A SERIES OF SMALLER TREMORS THAT FOLLOW A LARGE EARTHQUAKE WITHIN DAYS OR WEEKS

**BONUS**

11) EARTH SCIENCE *Multiple Choice* Which of the following is closest to the maximum wavelength of an open ocean tsunami:

- W) 2000 feet
- X) 3 miles
- Y) 30 miles
- Z) 125 miles

ANSWER: Z) 125 MILES

---

**TOSS-UP**

12) MATH *Short Answer* What is the greatest common factor of the numbers 14 and 49?

ANSWER: 7

**BONUS**

12) MATH *Short Answer* What is the Roman numeral equivalent of the year 2006?

ANSWER: MMVI

**TOSS-UP**

13) GENERAL SCIENCE *Multiple Choice* In which of the following biomes does MOST of Earth's photosynthesis take place:

- W) tundra
- X) tropical forests
- Y) oceans
- Z) taiga

ANSWER: Y) OCEANS

**BONUS**

13) GENERAL SCIENCE *Multiple Choice* Which of the following is a property of carbon that makes it most effective as a polymer building block:

- W) it is in period 2 of the Periodic Table
- X) it is a non-metal
- Y) it has a valence of 4
- Z) it is highly electronegative

ANSWER: Y) IT HAS A VALENCE OF 4

---

**TOSS-UP**

14) LIFE SCIENCE *Multiple Choice* Which of the following is the location of the patella bone:

- W) shoulder
- X) knee
- Y) abdomen
- Z) arm

ANSWER: X) KNEE

**BONUS**

14) LIFE SCIENCE *Short Answer* When blood leaves the human lung through the pulmonary vein, to what organ will it first go?

ANSWER: HEART

**TOSS-UP**

15) PHYSICAL SCIENCE *Short Answer* How many protons does an atom have if it is in group two, period three and is the 12<sup>th</sup> element of the of the periodic table?

ANSWER: 12

**BONUS**

15) PHYSICAL SCIENCE *Short Answer* If selenium has an atomic mass of 79, and an atomic number of 34, how many neutrons does it have?

ANSWER: 45

(Solution:  $79 - 34 = 45$ )

---

**TOSS-UP**

16) EARTH SCIENCE *Short Answer* Recently, Pluto was de-listed as a planet. To what category does it now belong?

ANSWER: DWARF PLANET(S) (ACCEPT: KUIPER BELT OBJECT)

**BONUS**

16) EARTH SCIENCE *Multiple Choice* Studies using which of the following processes is BEST used for calculating the age of Earth:

- W) radioisotope half-life
- X) heat loss from the Sun
- Y) principal of superposition
- Z) ice core sampling

ANSWER: W) RADIOISOTOPE HALF-LIFE



### TOSS-UP

17) MATH *Multiple Choice* The number 3,101 is evenly divisible by which of the following numbers:

- W) 3
- X) 7
- Y) 9
- Z) 11

ANSWER: X) 7

### BONUS

17) MATH *Multiple Choice* Which of the following is the product of 3.14 and  $9^3$ :

- W) 27.14
- X) 729.14
- Y) 2289.06
- Z) 2742.04

ANSWER: Y) 2289.06

---

### TOSS-UP

18) GENERAL SCIENCE *Multiple Choice* Vinegar reacts with which of the following kitchen ingredients to release bubbles of  $\text{CO}_2$ :

- W) baking soda
- X) sugar
- Y) flour
- Z) salt

ANSWER: W) BAKING SODA

### BONUS

18) GENERAL SCIENCE *Multiple Choice* The finer a coffee bean is ground, the stronger the coffee will taste after brewing. This is BEST explained by an increase in the ground coffee beans:

- W) mass
- X) volume
- Y) surface area
- Z) density

ANSWER: Y) SURFACE AREA

**TOSS-UP**

19) LIFE SCIENCE *Multiple Choice* Which of the following are the 3 basic organs of higher plants:

- W) plastids, cell walls, and golgi
- X) xylem, phloem, and cambium
- Y) roots, stems, and leaves
- Z) cork, bark, and wood

ANSWER: Y) ROOTS, STEMS, AND LEAVES

**BONUS**

19) LIFE SCIENCE *Short Answer* What group of modified epidermal cells in the roots of higher plants is responsible for MOST water absorption?

ANSWER: ROOT HAIRS

---

**TOSS-UP**

20) PHYSICAL SCIENCE *Short Answer* Water beading up on a cold glass on a humid day is an example of what phase change?

ANSWER: CONDENSATION

**BONUS**

20) PHYSICAL SCIENCE *Multiple Choice* The product of mass and velocity would most commonly be described as:

- W) force
- X) joules
- Y) momentum
- Z) acceleration

ANSWER: Y) MOMENTUM

**TOSS-UP**

21) EARTH SCIENCE *Multiple Choice* A mineral that splits along planes of weakness into even sheets is BEST described as having:

- W) good cleavage
- X) silky luster
- Y) conchoidal fracture
- Z) crystalline shape

ANSWER: W) GOOD CLEAVAGE

**BONUS**

21) EARTH SCIENCE *Multiple Choice* Which of the following is NOT true about minerals:

- W) cinnabar is the most important mercury ore mineral
- X) pyrite is a common sulfide mineral
- Y) galena is the most important ore of lead
- Z) granite is a widespread mineral used in cement

ANSWER: Z) GRANITE IS A WIDESPREAD MINERAL USED IN CEMENT

---

**TOSS-UP**

22) MATH *Multiple Choice* Which of the following is NOT true:

- W)  $30\% \times 60\% = 18\%$
- X) the square of an odd number is always odd
- Y) the reciprocal of the smallest prime number is  $\frac{1}{2}$
- Z) the number 27 is a perfect square

ANSWER: Z) THE NUMBER 27 IS A PERFECT SQUARE

**BONUS**

22) MATH *Short Answer* What is the price of a \$15.00 item that is marked up 25%?

ANSWER: \$18.75

**TOSS-UP**

23) GENERAL SCIENCE *Short Answer* Entomology is the study of what class of organisms?

ANSWER: INSECTS

**BONUS**

23) GENERAL SCIENCE *Multiple Choice* Which of the following is MOST closely related to the wasp:

- W) fly
- X) mosquito
- Y) flea
- Z) bee

ANSWER: Z) BEE

---

**TOSS-UP**

24) LIFE SCIENCE *Short Answer* What are the common names, respectively, for the 2 types of lenses of a compound light microscope that function first to magnify the light just after the light passes through the specimen on the slide and then just before the light enter the observers eyes?

ANSWER: OBJECTIVE LENS AND OCULAR LENS (THE ORDER IN WHICH THE ANSWERS ARE GIVEN MATTERS UNLESS THE STUDENT SAYS WHICH LENS GOES WITH WHICH PART OF THE QUESTION)  
(ACCEPT: OBJECTIVE AND OCULAR)

**BONUS**

24) LIFE SCIENCE *Short Answer* What is the scientific term scientists use to describe the rod-like shape of most Anthrax bacteria?

ANSWER: BACILLUS (ACCEPT: BACILLI)

### TOSS-UP

25) PHYSICAL SCIENCE *Multiple Choice* Which of the following is the MOST appropriate term for a mixture of two liquids that is uniformly distributed and does not separate:

- W) substance
- X) solvent
- Y) solution
- Z) suspension

ANSWER: Y) SOLUTION

### BONUS

25) PHYSICAL SCIENCE *Multiple Choice* In which of the following organizational sections of the Periodic Table are lithium, beryllium, boron and carbon all sequentially located:

- W) gases
- X) periods
- Y) halogens
- Z) groups

ANSWER: X) PERIODS