

## ROUND 1

### TOSS-UP

1) LIFE SCIENCE *Short Answer* What organelle functions to isolate a human cell's chromosomes from the cytoplasm?

ANSWER: NUCLEUS

### BONUS

1) LIFE SCIENCE *Short Answer* What is the primary oxygen-carrying protein found in red blood cells?

ANSWER: HEMOGLOBIN

---

### TOSS-UP

2) PHYSICAL SCIENCE *Short Answer* What physical state of matter is intermediate between a solid and gas?

ANSWER: LIQUID

### BONUS

2) PHYSICAL SCIENCE *Multiple Choice* Which of the following BEST describes the term static:

- W) stationary
- X) low
- Y) constant
- Z) used

ANSWER: W) STATIONARY

**TOSS-UP**

3) EARTH SCIENCE *Short Answer* What is the general name for the rising and falling of sea levels in response to the forces exerted by the Moon and Sun?

ANSWER: TIDES

**BONUS**

3) EARTH SCIENCE *Multiple Choice* Approximately what fraction of Earth's surface is covered by oceans:

- W) one-half
- X) two-thirds
- Y) seven-tenths
- Z) four-fifths

ANSWER: Y) SEVEN-TENTHS

---

**TOSS-UP**

4) MATH *Short Answer* How many degrees are in one-third of a right angle?

ANSWER: 30

**BONUS**

4) MATH *Short Answer* Round the number 535,279 to the nearest ten-thousand:

ANSWER: 540,000

**TOSS-UP**

5) GENERAL SCIENCE *Short Answer* The number  $4.56 \times 10^{11}$  has how many zeroes?

ANSWER: 9

**BONUS**

5) GENERAL SCIENCE *Short Answer* Giving your answer in grams, subtract 200 grams from 6.2 kilograms:

ANSWER: 6,000 (ACCEPT:  $6 \times 10^3$ )

---

**TOSS-UP**

6) LIFE SCIENCE *Short Answer* How many permanent teeth does a typical adult human have?

ANSWER: 32

**BONUS**

6) LIFE SCIENCE *Short Answer* How many canine teeth does the typical human adult have?

ANSWER: 4

### TOSS-UP

7) PHYSICAL SCIENCE *Multiple Choice* Mary tried to lift her couch by exerting 500 newtons of force but it doesn't budge. If the couch weighed 2,000 newtons, how much work did she do:

- W) 0
- X) 50 watts
- Y) 500 joules
- Z) 2000 joules

ANSWER: W) 0

### BONUS

7) PHYSICAL SCIENCE *Short Answer* Jeff walks west in a straight path for 100 meters and then east in a straight path for 150 meters. What is the magnitude of his displacement, in meters?

ANSWER: 50

---

### TOSS-UP

8) EARTH SCIENCE *Multiple Choice* The hydrologic cycle describes the circulation of Earth's:

- W) tides
- X) water
- Y) sediments
- Z) rocks

ANSWER: X) WATER

### BONUS

8) EARTH SCIENCE *Short Answer* What is the name of the rock that makes up most of the ocean floor and volcanic ocean islands?

ANSWER: BASALT

**TOSS-UP**

9) MATH *Short Answer* In a right triangle, what is the name for the side opposite the 90° angle?

ANSWER: HYPOTENUSE

**BONUS**

9) MATH *Short Answer* Rounded to the nearest meter, find the length of the hypotenuse of a right triangle if the legs measure 5 and 12 meters?

ANSWER: 13

(Solution:  $5^2 + 12^2 = c^2$ ;  $c = 13$ )

---

**TOSS-UP**

10) GENERAL SCIENCE *Short Answer* What is the SI base unit for length?

ANSWER: METER

**BONUS**

10) GENERAL SCIENCE *Short Answer* Name all of the following 3 choices that are measurements units for speed: mach; newton; knots

ANSWER: MACH; KNOTS

### TOSS-UP

11) LIFE SCIENCE *Multiple Choice* Most of the heart is composed of which of the following types of tissues:

- W) epithelial
- X) connective
- Y) nervous
- Z) muscle

ANSWER: Z) MUSCLE

### BONUS

11) LIFE SCIENCE *Short Answer* In the taxonomical name *Homo sapiens*, what taxonomical rank does *sapiens* represent?

ANSWER: SPECIES

---

### TOSS-UP

12) PHYSICAL SCIENCE *Short Answer* What atomic particle balances the charge of protons to produce a neutral atom?

ANSWER: ELECTRON

### BONUS

12) PHYSICAL SCIENCE *Short Answer* Isotopes of the same element are based on their different numbers of what atomic particle?

ANSWER: NEUTRONS

**TOSS-UP**

13) EARTH SCIENCE *Short Answer* Which of the Gas giant planets is closest to the Sun?

ANSWER: JUPITER

**BONUS**

13) EARTH SCIENCE *Short Answer* What are the 2 main factors causing the metamorphism of rocks?

ANSWER: HEAT AND PRESSURE (in any order)

---

**TOSS-UP**

14) MATH *Short Answer* What is the name for any segment with one endpoint at the center of a circle and the other endpoint on the circle?

ANSWER: RADIUS (ACCEPT: RADII)

**BONUS**

14) MATH *Short Answer* Rounded to the nearest ten-thousandth, convert  $\frac{1}{3}$ <sup>rd</sup> to a decimal:

ANSWER: 0.3333 (ACCEPT: .3333)

**TOSS-UP**

15) GENERAL SCIENCE *Short Answer* If there are 640 ounces of water in 5 gallons, how many ounces are in  $\frac{1}{2}$  gallon?

ANSWER: 64

**BONUS**

15) GENERAL SCIENCE *Short Answer* Name all of the following 4 choices that are measurement units of area: meter; hectare; acre; mile

ANSWER: HECTARE; ACRE

---

**TOSS-UP**

16) LIFE SCIENCE *Short Answer* What is generally considered the basic unit of life?

ANSWER: THE CELL

**BONUS**

16) LIFE SCIENCE *Short Answer* In what organelle of a plant cell does photosynthesis occur?

ANSWER: CHLOROPLAST (ACCEPT: PLASTID)



**TOSS-UP**

17) PHYSICAL SCIENCE *Short Answer* An ionic state of an atom of hydrogen would have how many protons?

ANSWER: 1

**BONUS**

17) PHYSICAL SCIENCE *Short Answer* What is the name for the biochemical process that converts grape juice into wine or soy beans into soy sauce?

ANSWER: FERMENTATION

---

**TOSS-UP**

18) EARTH SCIENCE *Short Answer* Giving your answer as north, south, east, or west, a southerly wind blows FROM what direction?

ANSWER: SOUTH

**BONUS**

18) EARTH SCIENCE *Multiple Choice* Which of the following clouds has little vertical development:

- W) altostratus
- X) altocumulus
- Y) cirrus
- Z) nimbostratus

ANSWER: Y) CIRRUS

**TOSS-UP**

19) MATH *Short Answer* What is the exact circumference, in centimeters, of a circle whose radius is 3 centimeters?

ANSWER:  $6\pi$

**BONUS**

19) MATH *Short Answer* Change each of the following 3 fractions, respectively, to equivalent fractions with a denominator of 30:  $\frac{1}{3}$ ;  $\frac{3}{5}$ ;  $\frac{5}{6}$

ANSWER:  $\frac{10}{30}$ ;  $\frac{18}{30}$ ;  $\frac{25}{30}$

---

**TOSS-UP**

20) GENERAL SCIENCE *Short Answer* What is the common name for the antiseptic, found in many homes, that decomposes into water and oxygen?

ANSWER: HYDROGEN PEROXIDE

**BONUS**

20) GENERAL SCIENCE *Short Answer* What is the chemical formula for hydrogen peroxide?

ANSWER:  $\text{H}_2\text{O}_2$

**TOSS-UP**

21) LIFE SCIENCE *Short Answer* What is the scientific name for the white of a cooked egg?

ANSWER: ALBUMEN

**BONUS**

21) LIFE SCIENCE *Short Answer* What term is generally used for biological catalysts?

ANSWER: ENZYMES

---

**TOSS-UP**

22) PHYSICAL SCIENCE *Short Answer* What term do scientists use for the force of gravity acting on anything that has mass?

ANSWER: WEIGHT

**BONUS**

22) PHYSICAL SCIENCE *Short Answer* How many protons are present in a single helium nucleus?

ANSWER: 2

**TOSS-UP**

23) EARTH SCIENCE *Multiple Choice* A weather forecast of 100% relative humidity suggests an increased possibility of:

- W) rain
- X) wind
- Y) rising temperature
- Z) drying conditions

ANSWER: W) RAIN

**BONUS**

23) EARTH SCIENCE *Short Answer* What is the name for all Great Circles that pass through the north and south poles?

ANSWER: LONGITUDES (ACCEPT: MERIDIANS)

---

**TOSS-UP**

24) MATH *Short Answer* Every triangle has how many vertices?

ANSWER: 3

**BONUS**

24) MATH *Short Answer* If the perimeter of a triangle is 45 centimeters and the lengths of two of its sides are 16 and 12 centimeters, find the length of the third side, in centimeters:

ANSWER: 17

### **TOSS-UP**

25) GENERAL SCIENCE *Short Answer* What general term describes the angle or degree north or south of the equator?

ANSWER: LATITUDE

### **BONUS**

25) GENERAL SCIENCE *Short Answer* The geographic north pole is at what latitude?

ANSWER: 90 (ACCEPT: 90° NORTH)