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### TOSS-UP

- Matitute Mark is 198 Marithus Mark 18 182 1) GENERAL SCIENCE Multiple Choice Which of the following does the prefix "photo" (spell out the letters p, h, o, t, o) mean, as in the word photometer: Implitute 教教教·後然 Milital 精神 并接 % Millinin 教養 養 學
  - W) record (read as: REE-cord)

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X) light

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- Y) measure
- Z) expose

ANSWER: X) LIGHT

### **BONUS**

1) GENERAL SCIENCE Short Answer Arrange the following 3 choices in order of DECREASING average size: blood platelet; grain of common table salt; ragweed pollen

ANSWER: GRAIN OF SALT; RAGWEED POLLEN; BLOOD PLATELET

### **TOSS-UP**

- 2) LIFE SCIENCE *Multiple Choice* Which of the following is NOT a structure found in human 和小 教教林林·林·林·柏斯拉伽 Millim Mark 18 18 D. S. H. M. Antikall cells:
- W) mitochondrion
- X) cell wall
- Y) lysosome
- Z) peroxisome

ANSWER: X) CELL WALL

### **BONUS**

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- 2) LIFE SCIENCE Multiple Choice Which of the following is closest to the meaning of Milital At A S Impitute 横 株 接 序 Mulitute of the state of the st intercellular (read carefully as: in-TER-cellular):
- W) from within cells
  - X) between cells
  - Y) inside of cells

ANSWER: X) BETWEEN CELLS

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- 3) PHYSICAL SCIENCE Multiple Choice Which of the following must be TRUE for a tree that doubled its mass over a growing period of 2 years:
- W) it has doubled its volume
- X) it has doubled its number of atoms
- Y) it has doubled its inertia
- Z) it has doubled its density

ANSWER: Y) IT HAS DOUBLED ITS INERTIA

### **BONUS**

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3) PHYSICAL SCIENCE Short Answer What is the ideal mechanical advantage of a ramp that is 24 meters long and 4 meters higher at one end versus the other?

ANSWER: 6

(Solution: input distance/output distance: 24/4 = 6)

### **TOSS-UP**

- 4) EARTH SCIENCE *Multiple Choice* The presence of which of the following is evidence that 2 The state of the s valley glaciers have or had at one time joined into a larger glacier:
- W) perpendicular striation pattern
- X) overlapping end moraines
- Y) medial moraine
- Z) V-shaped valley

ANSWER: Y) MEDIAL MORAINE

### **BONUS**

- 4) EARTH SCIENCE *Multiple Choice* Which of the following is NOT generally true regarding 別加州縣 glaciers:
- W) the Antarctic ice sheet is depressing the crust of the Earth
  - X) we are currently in an interglacial period
  - Y) the ice front of a glacier with a large zone of ablation is rapidly advancing
  - Z) the Little Ice Age ended around the mid-nineteenth century

ANSWER: Y) THE ICE FRONT OF A GLACIER WITH A LARGE ZONE OF ABLATION IS RAPIDLY ADVANCING

- 5) MATH Multiple Choice Which of the following is the exact interval notation for all real numbers greater than or equal to -10 and less than 5:
- W) (-10, 5] (read as: open parenthesis, negative 10, comma, 5, close bracket)
- X) [-10, 5] (read as: open bracket, negative 10, comma, 5, close bracket)
- Y) [-10, 5) (read as: open bracket, negative 10, comma, 5, close parenthesis)
- Z) (-10, 5) (read as: open parenthesis, negative 10, comma, 5, close parenthesis)

ANSWER: Y) [-10, 5)

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(note: if student interrupts, accept: "bracket, negative or minus 10, 5 parenthesis)

(Solution: bracket for numbers included in the set; parenthesis for # not included in the set)

### **BONUS**

- 5) MATH Short Answer Name all of the following 5 numbers that are NOT prime numbers:
- 2; 5; 17; 33; 37

ANSWER: 33

Y.

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### **TOSS-UP**

human body? 6) GENERAL SCIENCE Short Answer What is the average internal Celsius temperature of the

ANSWER: 37

### **BONUS**

6) GENERAL SCIENCE Short Answer By name or number, arrange the following 3 choices from the one with the LOWEST temperature to the HIGHEST temperature: 1) coldest temperature recorded on Earth; 2) average surface temperature of Saturn; 3) coldest ocean water temperature

ANSWER: 2) AVERAGE SURFACE TEMPERATURE OF SATURN; 1) COLDEST (ACCEPT: 2; 1; 3) TEMPERATURE RECORDED ON EARTH; 3) COLDEST OCEAN WATER TEMPERATURE Asitute the the 'S

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7) LIFE SCIENCE *Short Answer* What is the name of the blood vessels in vertebrate bodies where most of the exchange of oxygen and carbon dioxide occurs?

ANSWER: CAPILLARIES (ACCEPT: CAPILLARY)

## BONUS 1/2

Mysitute starte 7) LIFE SCIENCE Short Answer What specific part of the human brain is most responsible for regulating body temperature?

ANSWER: HYPOTHALAMUS

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### **TOSS-UP**

8) PHYSICAL SCIENCE Short Answer Which one of Newtons Laws of motion most directly deals with the resistance of a body to a change in its motion? Milling 新林·莲 然

ANSWER: FIRST LAW (ACCEPT: LAW OF INERTIA)

### **BONUS**

8) PHYSICAL SCIENCE *Short Answer* Jerry has a mass of 100 kilograms. He runs with a velocity of 0.5 meters per second. Giving your answer in proper SI units, what is his momentum?

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ANSWER: 50 KILOGRAM METERS PER SECOND (must give units)

(Solution: momentum = mv = (100kg)(0.5 m/s) = 50 kg.m/s)

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- 9) EARTH SCIENCE Multiple Choice Which of the following geological terms best refers to deposits of unsorted and unstratified sediments deposited by the movement of a glacier:
- W) till

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W.

Y.

Y.

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Y.

Y.

- X) loess (read as: LUSS)
- Z) glacial milk

ANSWER: W) TILL

### **BONUS**

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9) EARTH SCIENCE *Short Answer* What is the most abundant element in the Sun?

ANSWER: HYDROGEN

10) MATH Multiple Choice Which of the following is undefined:

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- W)  $2 \div 0$
- $X) 0 \div 2$
- Y) 0 0

 $\begin{array}{c} \begin{array}{ccc} & 0. \\ \text{Z} \end{array}) \begin{array}{c} 0^2 \end{array}$ ANSWER: W)  $2 \div 0$ 

### **BONUS**

10) MATH *Short Answer* Add the following 2 fractions and give your answer as a mixed fraction in lowest terms:  $\frac{23}{3} + 2\frac{3}{3}$ in lowest terms:  $\frac{23}{2} + 2\frac{3}{4}$ 

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ANSWER:  $14\frac{1}{}$ Milling 新春·養原 Militate # 18

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11) GENERAL SCIENCE Short Answer What is the SI base unit used for the intensity of a light source?

ANSWER: CANDELA

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Y.

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### **BONUS**

11) GENERAL SCIENCE Short Answer Giving your answer in proper scientific notation, convert 400 grams per liter into milligrams per liter:

ANSWER:  $4 \times 10^5$ 

### **TOSS-UP**

- 12) LIFE SCIENCE Multiple Choice Which of the following describes the shape of a bacterial pilus: Maritule 教育 养 淺 序 Militally Mar # 13 182 Mylinte Mark 18 18
- W) a solid sphere
  X) a cube: X) a cuboidal shaped cell
  Y) a thin the
  - Y) a thin tube
  - Z) a helical thick solid fiber

ANSWER: Y) A THIN TUBE

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### **BONUS**

12) LIFE SCIENCE *Short Answer* Name all of the following 4 groups of plants that are legumes: peas; rice; soy beans; peanuts Aniththe Mark is 182

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ANSWER: PEAS; SOY BEANS; PEANUTS (ACCEPT: ALL BUT RICE)

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- 13) PHYSICAL SCIENCE *Multiple Choice* The most useful unit of concentration in the chemistry lab is:
- W) mole fraction
- X) mass percent
- Z) molarity

Y.

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Y.

Y.

Y.

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1

Y.

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ANSWER: Z) MOLARITY

### **BONUS**

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- 13) PHYSICAL SCIENCE *Multiple Choice* Which of the following is NOT true of chemical reactions:
  - W) they are always reversible
  - X) energy is either absorbed or released
- Z) chemical bonds are broken and formed

ANSWER: W) THEY ARE ALWAYS REVERSIBLE

14) EARTH SCIENCE Short Answer What northward-moving ocean current is the dominant feature generally located off the east coast of the U.S.?

ANSWER: GULF STREAM

# BONUS

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14) EARTH SCIENCE *Short Answer* Spring tides typically coincide with what 2 phases of the Moon?

ANSWER: FULL; NEW (in any order) Agitute the the 18

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15) MATH Short Answer What is the length, in inches, of one side of a square if the diagonal measures  $7\sqrt{2}$ ?

ANSWER: 7

Y.

Y.

Y.

Y.

Y.

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Y.

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## BONUS

15) MATH Short Answer If the area of a rectangle is 200 centimeters squared and the length is 20 centimeters, what is the perimeter of the rectangle, in centimeters?

ANSWER: 60

(Solution: 200 = (20)(w), w = 10; P = 2(20) + 2(10) = 60 cm)

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### **TOSS-UP**

- 16) GENERAL SCIENCE Multiple Choice Which of the following is the study of spiders:
- W) arachnology
- X) dendrochronology
- Y) planktology
- Z) lepidopterology

ANSWER: W) ARACHNOLOGY

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16) GENERAL SCIENCE *Short Answer* What is the astronomical term for the orbital arrangement planet will usually appear its brightest? of a superior planet with reference to the positions of the Sun and Earth, at which time the superior

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ANSWER: OPPOSITION

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- 17) LIFE SCIENCE Multiple Choice Which of the following is the location of the human thymus gland:
- W) upper chest
- X) inguinal canal
- Y) abdomen
- z) abdoi Z) brain

Y.

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W.

Y.

Y.

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Y.

ANSWER: W) UPPER CHEST

### **BONUS**

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17) LIFE SCIENCE Short Answer What is the most common globular protein in red blood cells?

ANSWER: HEMOGLOBIN

### TOSS-UP

- Matinta Mar 14 18 1980 18) PHYSICAL SCIENCE *Multiple Choice* Which of the following is a heterogeneous mixture:
  - W) 5.0% glucose solution
  - X) rubbing alcohol
- Z) concrete Y) mixture of hydrogen and oxygen gases

ANSWER: Z) CONCRETE

### **BONUS**

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- 18) PHYSICAL SCIENCE Multiple Choice Which of the following would be the most logical instrument to use when a small amount of suspended particles must be separated from a liquid:
- W) pH meter
- X) centrifuge
- Y) spectrometer
- Z) tweezers dititute sta

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ANSWER: X) CENTRIFUGE

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- 19) EARTH SCIENCE Multiple Choice Which of the following best describes how stalagmites in caves are formed:
- W) mechanical weathering
- X) chemical weathering

Y.

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Y.

Y.

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Y.

Y.

Z) decaying

ANSWER: X) CHEMICAL WEATHERING

### **BONUS**

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- 19) EARTH SCIENCE *Multiple Choice* Which of the following is the chief constituent of limestone:
  - W) quartz
  - X) clay
  - Y) sand
- sand Z) calcite

ANSWER: Z) CALCITE

20) MATH Short Answer If a line has a slope of 10, what is the slope of every line that is perpendicular to it?

- (ACCEPT: -0.1)

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### **BONUS**

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20) MATH Short Answer Consider an isosceles triangle whose vertex angle measures 20°. Find the measure of one of the EXTERIOR angles, in degrees, at the base of the triangle: Maritata Mark 13 18

ANSWER: 100

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21) GENERAL SCIENCE Short Answer What is the name of the atomic process that provides the energy for a star to shine?

ANSWER: FUSION

Y.

Y.

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Y.

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### **BONUS**

21) GENERAL SCIENCE Short Answer The zodiac is typically considered to be made of how many constellations?

ANSWER: 12

### **TOSS-UP**

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- 22) LIFE SCIENCE Multiple Choice Which of the following is NOT found in prokaryotes:
- W) DNA
- NA کی X) RNA کی ۲ Y) ribosomes
  Z) gol
  - Z) golgi

ANSWER: Z) GOLGI

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# BONUS

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22) LIFE SCIENCE Short Answer Name all of the following 4 groups of organisms that are insects: flies; beetles; crayfish; moths

Mylithite ## # 18 PK ANSWER: FLIES; BEETLES; MOTHS (ACCEPT: ALL BUT CRAYFISH)

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- 23) PHYSICAL SCIENCE *Multiple Choice* Ultrasonic sound frequencies are typically considered to be:
- W) above 20 hertz

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Y.

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- X) below 20 hertz
- Y) above 20 kilohertz
- Z) above 2,000 hertz

ANSWER: Y) ABOVE 20 KILOHERTZ

### **BONUS**

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23) PHYSICAL SCIENCE Short Answer In color synthesis using visible light, what is the most common term for the colors produced by combining equal properties.

ANSWER: SECONDARY

### **TOSS-UP**

- 24) EARTH SCIENCE *Multiple Choice* The transfer of energy from the Sun across space is accomplished primarily by:
- W) conduction
- X) convection
- Y) radiation
- Z) radio waves

ANSWER: Y) RADIATION

# BONUS

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Mytitute 精神 林 溪 序忆 24) EARTH SCIENCE Short Answer What layer of Earth's atmosphere starts at about the stratopause and extends upwards to about 55 miles above the Earth?

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Drithin Min har 's Pic ANSWER: MESOSPHERE Milliante Am Ax 38

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Marithle Mar of 18 25) MATH Short Answer If a car travels at a rate of 50 miles per hour, what is the distance, in miles, traveled in 5 hours?

ANSWER: 250

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(Solution: d = rt = (50mi/hr)(5 hr) = 250 miles)

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## **BONUS**

25) MATH Short Answer Giving your answer in exponential form, simplify the following Inditute 素素 · 養 · 學 motivite # 14 18 Marith Mar H & PR Matitute ## # 18

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expression: 
$$\frac{10^3 \times 10^4}{10^2}$$
ANSWER: 
$$10^5$$

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ANSWER:  $10^5$ 

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