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#### TOSS-UP

- Malithia Mar ht is 1980 1) PHYSICS Multiple Choice In Galileo's experiments on balls rolling down an inclined plane, he had originally hypothesized: mytitute 新春 茶 溪 %

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- X) that all balls underwent uniform acceleration
  Y) the 2<sup>nd</sup> law of motion

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Z) the 3<sup>rd</sup> law of motion

ANSWER: X) THAT ALL BALLS UNDERWENT UNIFORM ACCELERATION

## **BONUS**

1) PHYSICS Short Answer What is the centripetal force, in Newtons, that is required to cause a 10 kilogram body to move at 3 meters per second in uniform circular motion with a radius of 10 meters? Maithle Mark 18 18

ANSWER: 9 NEWTONS (Solution:  $CF = m v^2 / r = 10 x 3^2 / 10 = 9$ )

2) BIOLOGY Short Answer Give the genus and species name for the first bacterium shown to be the cause of a disease:

ANSWER: BACILLUS ANTHRACIS

# BONUS 13

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Milling 新洲 · 養原 2) BIOLOGY Short Answer In the late 1800's, who was the first person to isolate and grow numerous pathogenic Monerans?

Maritule Mark 18 18 ANSWER: ROBERT KOCH Military Market 18

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W) group 1A

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X) group 2A

Y) group 7A

Z) group 8A

ANSWER: Y) GROUP 7A

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#### **BONUS**

3) CHEMISTRY Short Answer What element is a corrosive, greenish-yellow gas, is widely used in the manufacturing of polymers such as Teflon, and is the 13<sup>th</sup> most about 13<sup>th</sup> crust?

ANSWER: FLUORINE (ACCEPT: F)

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## TOSS-UP

4) ASTRONOMY Short Answer Containing roughly ten times more gas than Earth's, why does Titan's atmosphere extend some ten times farther into space than does our own?

ANSWER: WEAKER GRAVITATIONAL PULL (ACCEPT: SMALLER MASS)

#### **BONUS**

4) ASTRONOMY Short Answer What is the most common term for the imaginary band on either maitute Market 18 182 side of the ecliptic where the path of the Sun, Moon, and planets are generally found?

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ANSWER: THE ZODIAC

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5) MATH *Short Answer* On a blueprint, if three-quarters of an inch represents 1 foot, then 2 inches will represent what distance, in feet, expressed as the most reduced compound fraction?

(ACCEPT: 2.66)

5) MATH Short Answer How old is Michelle if 4 years ago she was one-half the age she will be 10 years from now?

ANSWER: 18

(Solution:  $x - 4 = \frac{1}{2}(x + 10)$ )

#### **TOSS-UP**

- 6) EARTH SCIENCE *Multiple Choice* Groundwater that is rich in calcium and magnesium bicarbonates is termed:
  - W) hard water
  - X) soft water

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- Z) recharge water

ANSWER: W) HARD WATER

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### **BONUS**

- 6) EARTH SCIENCE *Multiple Choice* Which of the following descriptions is NOT true of eskers:
  - W) they were formed above glaciers by the widening of crevasses

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- X) they are low, steep-sided ridges of sand and gravel
- Y) deposits were laid down by running water
- Z) their deposits are roughly sorted and bedded

ANSWER: W) THEY WERE FORMED ABOVE GLACIERS BY THE WIDENING OF CREVASSES

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7) GENERAL SCIENCE Short Answer What major biome occurs only in the Northern Hemisphere and is composed of both Low Arctic and High Arctic areas?

ANSWER: TUNDRA

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Y.

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# **BONUS**

7) GENERAL SCIENCE Short Answer Give the respective SI multipliers for the following prefixes: exa; peta; and giga

ANSWER: 10<sup>18</sup>; 10<sup>15</sup>; 10<sup>9</sup>

# **TOSS-UP**

- 8) COMPUTER SCIENCE Multiple Choice A Java stock ticker that runs within the user's Web browser is an example of: Milling 新春 · 養 「寒 Maritule Mark 18 180 Moritally Market 18 180
- W) an applet X) liter

  - Y) firmware
  - Z) a taskbar

ANSWER: W) AN APPLET

## **BONUS**

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8) COMPUTER SCIENCE Multiple Choice What is the octal equivalent of the binary number 1100 (read as: one, one, zero, zero)? Militate A H W Mikitute 横林塔原 Militally Art 13 PR Myjthin Mark 13 18

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- **W**) 11
- X) 14
- Y) 2

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- 9) PHYSICS Multiple Choice Which of the following moves in the form of a longitudinal compression wave:
- W) ocean wave

Y.

Y.

Y.

Y.

Y.

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Y.

- X) sound wave
- Y) light wave
- Z) electromagnetic wave

ANSWER: X) SOUND WAVE

#### **BONUS**

9) PHYSICS *Short Answer* Assuming  $g = 9.8 \text{ m/sec}^2$ , what is the weight on Earth, in Newtons, of a 70 kilogram person?

**ANSWER: 686 NEWTONS** 

#### **TOSS-UP**

10) BIOLOGY Multiple Choice Which of the following Orders does NOT belong to the Class Insecta:

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- X) Diptera W) Lepidoptera

  - Y) Isoptera
  - Z) Chelicerata

ANSWER: Z) CHELICERATA

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- Milling 新洲 · 養原 10) BIOLOGY Multiple Choice Which of the following diseases is NOT caused by bacteria:
  - W) strep throat
  - X) toxic shock syndrome
  - Y) scarlet fever
  - Z) influenza

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ANSWER: Z) INFLUENZA

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Militite 紫 茶、溪 11) CHEMISTRY Short Answer What is the pH of a solution at 25°C that has a hydrogen ion concentration of 0.001?

ANSWER: 3

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## **BONUS**

11) CHEMISTRY Short Answer Which 3 Noble gases undergo no chemical reactions and form no known compounds?

ANSWER: HELIUM, NEON, ARGON (ACCEPT: He, Ne, Ar)

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## **TOSS-UP**

12) ASTRONOMY *Short Answer* What gas makes up most of the atmosphere of Mars?

ANSWER: CARBON DIOXIDE (ACCEPT: CO<sub>2</sub>)

#### **BONUS**

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12) ASTRONOMY Short Answer Longitude is to right ascension as latitude is to:

motivite # 14 18 ANSWER: DECLINATION

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Marithle Mark to 180 13) MATH *Short Answer* In order, what are the prime numbers between 30 and 50?

ANSWER: 31 37 41 42 47

ANSWER: 31, 37, 41, 43, 47

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Y.

Y.

Y.

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Y.

#### **BONUS**

13) MATH *Short Answer* Find the prime factorization of 1050:

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ANSWER:  $2\times3\times5\times5\times7$  (ACCEPT:  $2\times3\times5^2\times7$ )

#### TOSS-UP

Mytitute 新科·接際 14) EARTH SCIENCE Short Answer What is the term for wave activity between the line of breakers and the shore, produced as an ocean wave steepens and falls forward?

ANSWER: SURF

#### **BONUS**

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- 14) EARTH SCIENCE Multiple Choice Distinctly and finely stratified layers of silt and clay deposited in lakes of glacial origin are known as:
- y) drumlins Z) esker

ANSWER: W) VARVES Milling 素素 素 % Mylitute At A S PR Milital 教教教教教教

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Militate 38	15) GENERAL SCIENC kilometers per hour?	E Multiple Choice	One knot is app	proximately equal to	how many

W) 0.6

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Y.

2) 1.65 Z) 1.0

ANSWER: X) 1.9

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#### **BONUS**

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15) GENERAL SCIENCE Short Answer What term describes the ability of a microscope to remain very nearly in focus when switching from one objective lens to another:

ANSWER: PARFOCAL (ACCEPT: PARFOCALITY)

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### **TOSS-UP**

- 16) COMPUTER SCIENCE Multiple Choice The process of converting 3D information to a 2D screen image is called: Milling # # 18 180 Militale Market 18 18 Militate Mark to 18 180
- W) texturing X) rend.
  - X) rendering
  - Y) rastering
  - Z) modeling

ANSWER: X) RENDERING

#### **BONUS**

16) COMPUTER SCIENCE Multiple Choice What is the minimum amount of RAM required for the proper execution of Windows 2000 Professional: Mylitute # # 18 18 Maritha Mark 13 18 Militate ## # 18 18 Anitute the the is the

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W) 80 MB

X) 64 MB

Y) 40 MB

Z) 32 MB

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ANSWER: X) 64 MB Military # 13

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- 17) PHYSICS Multiple Choice Ultrasonic sound frequencies are typically considered to be:
- W) above 20,000 kilohertz
- X) below 20,000 kilohertz
- Y) above 20,000 Hertz
- Z) below 20,000 Hertz

ANSWER: Y) ABOVE 20,000 HERTZ

#### **BONUS**

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- per unit path in human tissue: 17) PHYSICS Multiple Choice Which of the following will deposit the greatest amount of energy
  - W) gamma ray
  - X) x-ray

Y.

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1

1

Y.

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- Y) beta particles
- Z) alpha particles

ANSWER: Z) ALPHA PARTICLES

#### **TOSS-UP**

18) BIOLOGY *Short Answer* One species benefits while the other is unaffected is most specifically an example of what symbiotic relationship?

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ANSWER: COMMENSALISM

18) BIOLOGY Short Answer What is the term for the epidermal rupture in cork cells, common to the birch tree, that allows air to diffuse trough the bark?

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ANSWER: LENTICEL Militate And At & PR Militate Market 18 182

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Milling Mar H. 13 PR. 19) CHEMISTRY Short Answer What does the acronym MSDS, the safety information sheet for a particular chemical substance, stand for?

ANSWER: MATERIAL SAFETY DATA SHEET

# **BONUS**

19) CHEMISTRY Multiple Choice If an atom X, which has an electronegativity of 3.5, bonds with atom Y, which has an electronegativity of 0.9, what type of bond is most likely prevalent:

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W) ionic

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Y.

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Y.

Y.

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Y.

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- X) polar covalent
- Y) non-polar covalent
  Z) neutral

ANSWER: W) IONIC

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#### **TOSS-UP**

Mytitute 精神 林 溪 序》 20) ASTRONOMY Short Answer What is the common astronomical term that derives its name from the Latin word meaning ocean or 'seas' that is used to label the darker and smoother parts of the moon's surface: Marithus Mark 18 180 Matitude Mar # 13 1%

ANSWER: MARIA

#### **BONUS**

20) ASTRONOMY Short Answer What celestial phenomenon most directly causes a comet's tail Militally Art of Section 1997 Milling 新春 紫原 Milling # # 13 PS to point away from the Sun:

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ANSWER: THE SOLAR WIND

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- 21) EARTH SCIENCE Multiple Choice The Alpine-Himalayan mountain chain formed by:
- W) rifting
- X) transform faulting
- Y) continental collision
- Z) continent to ocean subduction

ANSWER: Y) CONTINENTAL COLLISION

#### **BONUS**

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- 21) EARTH SCIENCE Multiple Choice Which of the following minerals is classified as a native EAI element:
  - W) gypsum
  - X) quartz
  - Y) graphite

W.

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Y.

ANSWER: Y) GRAPHITE

#### **TOSS-UP**

22) GENERAL SCIENCE *Short Answer* In Freudian theory, libidinal drives reside in what division of the personality?

ANSWER: ID

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22) GENERAL SCIENCE Multiple Choice A typical 6-ounce brewed cup of tea contains about how many milligrams of caffeine:

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- W) 30
- X) 70
- Y) 110
- X) 150

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ANSWER: X) 70

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- 23) PHYSICS Multiple Choice Pitch in an airplane is typically controlled by which of the following:
- W) horizontal stabilizer
- X) aileron

Y.

Y.

Y.

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Y.

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- Y) vertical stabilizer
- Z) swing arm

ANSWER: W) HORIZONTAL STABILIZER

#### **BONUS**

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23) PHYSICS *Short Answer* What is the wavelength, in meters, of a sound wave that has a frequency of 3,500 hertz and a speed in a certain medium of 250 medium.

**ANSWER: 0.1 METERS** 

(Solution: wavelength = speed / f = 350 / 3,500 = 0.1 meters)

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### **TOSS-UP**

24) BIOLOGY Short Answer What is the anatomical term for movement of a bone that results in a decrease in the angle of a joint, bringing bones together?

ANSWER: FLEXION

#### **BONUS**

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- 24) BIOLOGY Multiple Choice Which of the following trees does NOT have simple, toothed e leaves:
  - W) Quaking Aspen
  - X) Eastern Cottonwood
  - Y) White Birch
  - Z) Yellow Buckeye

ANSWER: Z) YELLOW BUCKEYE

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- Matitude Mar At 13 1980 25) CHEMISTRY Multiple Choice The concentration of a solution expressed in the number of gram-equivalent weights of solute per liter of solution is called:
  - W) normality
  - X) molality

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Y.

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- z) equivalent w Z) molarity Y) equivalent weight

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ANSWER: W) NORMALITY

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#### **BONUS**

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25) CHEMISTRY Short Answer In the chemical reaction that expands a typical car air bag, when sodium azide is broken down, what main toxic product is released in the first

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ANSWER: SODIUM (ACCEPT: SODIUM HYDROXIDE)

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