ROUND 15

TOSS-UP

- Malithia War No. 18 1980 1) GENERAL SCIENCE Multiple Choice Which of the following is TRUE:
 - W) all yeasts are nonpathogenic in humans
 - X) all humans have the same number of chromosomes

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Y) all bats carry rabies
Z) all DMA Z) all DNA contains phosphorous

ANSWER: Z) ALL DNA CONTAINS PHOSPHOROUS

BONUS %

1) GENERAL SCIENCE Short Answer To anneal a metal, what do you generally treat it with?

ANSWER: HEAT (ACCEPT: HIGH TEMPERATURES)

TOSS-UP

- 2) LIFE SCIENCE *Multiple Choice* Lipids will dissolve best in which of the following:
- W) 3% salt water
- X) milk
- Y) distilled water
- Z) chloroform

ANSWER: Z) CHLOROFORM

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- 2) LIFE SCIENCE Multiple Choice Which of the following statements is NOT true:

 W) all living things 75.
- W) all living things require energy except in some states of dormancy

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- X) energy is transformed from one state to another in living things
- Y) the laws of thermodynamics do not apply to living things
- Z) enzymes allow certain reactions to occur at faster rates than without them

ANSWER: Y) THE LAWS OF THERMODYNAMICS DO NOT APPLY TO LIVING THINGS

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- 3) GENERAL SCIENCE *Multiple Choice* Which of the following is NOT true of glycerol:
- W) it has 3 carbons
- X) it is sometimes used as a sweetener in human foods
- Y) it has no caloric value in humans

ANSWER: Y) IT HAS NO CALORIC VALUE IN HUMANS

- 3) GENERAL SCIENCE Multiple Choice Which of the following stars typically has the GREATEST density:
 - W) black dwarf
 - X) neutron star
 - Y) Main Sequence star
 - Z) Blue Giant

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ANSWER: X) NEUTRON STAR

TOSS-UP

- 4) EARTH SCIENCE Multiple Choice Which of the following coasts in North America contains the most pronounced fjords:
 - W) the west coast from Puget Sound to Alaska
 - X) the west coast from Oregon to Mexico
 - Y) the east coast from Maine to Florida
 - Z) the entire Gulf Coast

ANSWER: W) THE WEST COAST FROM PUGET SOUND TO ALASKA

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BONUS

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4) EARTH SCIENCE Short Answer What is the specific name for accumulated snow or ice that survives one melt season on a glacier?

ANSWER: FIRN

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- 5) PHYSICAL SCIENCE Multiple Choice Which of the following most closely relates to the first law of thermodynamics:
- W) conservation of energy
- X) transformation of mass into energy
- Y) energy moving from a cold to a hot object
- Z) kinetic energy of molecules and atoms

ANSWER: W) CONSERVATION OF ENERGY

BONUS

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- 5) PHYSICAL SCIENCE Short Answer The specific heat of water is about 10-times that of copper. By words or numbers, name all of the fall. copper. By words or numbers, name all of the following 3 statements that are TRUE:
 - 1) 1 gram of water requires more energy than 1 gram of copper to raise its temperature by 1°C
 - 2) water will cool down in the same environment much faster than a sample of copper of the same mass
 - 3) 1 gram of water has 10-times as much average translational kinetic energy than 1 gram of copper at the same temperature

ANSWER: 1

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TOSS-UP

- Milling 新春 紫 塚 6) MATH Multiple Choice The graph of the equation, $\frac{x}{2} + \frac{y}{4} = 1$, is a:
 - W) straight line
 - X) parabola
 - Y) ellipse

ANSWER: W) STRAIGHT LINE

(Solution: y = -2x + 4)

BONUS

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6) MATH Short Answer A hardware store-owner buys a 100-pound box of nails for \$200. If the owner repackages the nails into 2-pound bags and sells them each for \$6.00 per bag, find his profit in dollars after selling all the nails: slitute 新春等學 別加州縣

(Solution: 50 bags \times \$6 = \$300; 300 - 200 = \$100)

- 7) LIFE SCIENCE Multiple Choice During which of the following embryonic stages of a human are all 3 germ layers formed:
- W) zygote
- X) blastula
- Y) gastrula
- Z) morula

ANSWER: Y) GASTRULA

BONUS

- 7) LIFE SCIENCE *Multiple Choice* Which of the following do all chordates possess at some time in their lives:
 - W) gill slits
 - X) radula

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- , очок lungs Z) exoskeleton

ANSWER: W) GILL SLITS

TOSS-UP

- 8) GENERAL SCIENCE *Multiple Choice* Which of the following sound frequencies would generally NOT be heard by humans:
 - W) 20 hertz
 - X) 200 hertz
 - Y) 2 kilohertz
 - Z) 20 kilohertz

ANSWER: Z) 20 KILOHERTZ

BONUS

- 8) GENERAL SCIENCE *Multiple Choice* Which of the following is the greatest contributor to ambient carbon monoxide concentrations in the U.S.:
- W) industrial processes
- X) electric utilities
- Y) transportation
- Z) farm animals

ANSWER: Y) TRANSPORTATION

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- 9) EARTH SCIENCE Multiple Choice Which of the following is NOT true about earthquakes:
- W) the focus of an earthquake is the point from which energy is released
- X) the epicenter is the point on Earth's surface directly above the focus
- Y) lithospheric plate interactions commonly cause both earthquakes and volcanoes
- Z) primary seismic waves cause the most damage to buildings during an earthquake

ANSWER: Z) PRIMARY SEISMIC WAVES CAUSE THE MOST DAMAGE TO BUILDINGS **DURING AN EARTHQUAKE**

BONUS

9) EARTH SCIENCE *Short Answer* Arrange the following 3 types of seismic waves from the FIRST to arrive at a seismic recording station to the LAST from a given earthquake: S-wave; L-wave; P-wave

ANSWER: P-WAVE; S-WAVE; L-WAVE

TOSS-UP

- 10) PHYSICAL SCIENCE Multiple Choice Distillation will NOT work very well under which of the following situations: Militalia 教育教士養 PR
- W) the components in the mixture have the same boiling points

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- X) the mixture consists of a solid and a liquid
- Y) the mixtures is colored
- Z) the mixture is not colored

ANSWER: W) THE COMPONENTS IN THE MIXTURE HAVE THE SAME BOILING POINTS

BONUS

10) PHYSICAL SCIENCE Multiple Choice Acetylene has a triple bond between its two carbons. Which of the following shapes does it have: Britists & & & Millate the the is the Drithy the 14 18 18

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- W) bent
- X) tetrahedral
- Y) linear
- Z) see-saw

ANSWER: Y) LINEAR William Star # '3'

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- 11) MATH Multiple Choice Which of the following is NOT true:
- W) π is an irrational number
- X) a dodecahedron has 12 faces
- Y) 5 factorial is 5-times as large as 4 factorial
- Z) if n is a multiple of 2, then n + 1 is also a multiple of 2

ANSWER: Z) IF N IS A MULTIPLE OF 2, THEN N + 1 IS ALSO A MULTIPLE OF 2

BONUS

11) MATH Short Answer Ebony has taken 5 math tests and averaged 90% on her first 2 tests but averaged 100% on the next 3 tests. What is her overall percent average after these 5 tests, assuming all are weighted equally?

ANSWER: 96

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(Solution: [3(100%) + 2(90%)]/5 = 96%)

TOSS-UP

12) LIFE SCIENCE Short Answer In certain diseases, red blood cells are damaged and destroyed in massive numbers. What organ will often enlarge under these circumstances and be central in the removal of the abnormal red blood cells and their breakdown products?

ANSWER: SPLEEN

BONUS

12) LIFE SCIENCE Short Answer Name all of the following 4 molecules that serve as neurotransmitters in vertebrates: adrenaline; dopamine; serotonin; sphingosine (read as: SFINGgo-seen)

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ANSWER: ADRENALINE; DOPAMINE; SEROTONIN

(ACCEPT: ALL BUT SPHINGOSINE) Istitute the the second

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13) GENERAL SCIENCE Short Answer Instead of lenses, what do refractor telescope use to collect light from celestial objects?

ANSWER: MIRRORS

Y.

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Y.

BONUS

13) GENERAL SCIENCE Short Answer What is the most common term for the final stage of a star with between 1 and 3 solar masses?

ANSWER: WHITE DWARF (ACCEPT: BLACK DWARF)

TOSS-UP

- 14) EARTH SCIENCE Multiple Choice Which of the following is NOT true about the Milling 教教教學 Appalachian Mountain Range:
- W) it is older than the Himalayan range
 X) it has no active volcance.

 - Y) the southeastern portion is undergoing accelerated mountain building

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Z) it occurs along an ancient plate boundary

MOUNTAIN BUILDING ANSWER: Y) THE SOUTHEASTERN PORTION IS UNDERGOING ACCELERATED.

BONUS

14) EARTH SCIENCE Multiple Choice Which of the following is the name for the mineral with Militate Mark 18 18 Mailing # # '8 18 Marithus Mar # 13 1900 the chemical composition Fe₃O₄:

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- W) magnetite
- X) pyrite
- Y) olivine

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Z) biotite mica

ANSWER: W) MAGNETITE Stitute the the light of the

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- 15) PHYSICAL SCIENCE Multiple Choice Which of the following is TRUE:
- W) unlike charges repel

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- X) lithium is an alkaline earth metal
- Y) magnetic poles always come in pairs
- Z) some isotopes of helium have 1 proton

ANSWER: Y) MAGNETIC POLES ALWAYS COME IN PAIRS

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BONUS

directly below. If air resistance is ignored, how many seconds, rounded to the nearest whole second, will it take a rock launched horizontally from the catapult at 25 meters are at a second. 15) PHYSICAL SCIENCE Short Answer Consider a catapult on a cliff 20 meters above the ground will it take a rock launched horizontally from the catapult at 25 meters per second to hit the ground?

ANSWER: 2

TOSS-UP

16) MATH Short Answer A carpenter is building a vertical wall and using one, 2-by-4 vertical stud every 16 inches. If the wall is 8 feet long, how many vertical studs will he use?

ANSWER: 7

BONUS

16) MATH Short Answer A circle has a circumference of 80π . Giving your answer in terms of π , find the length of a 36° arc of this circle: Molitule ## # 18 PR Militate Market 18 180

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ANSWER: 8π (Solution: $C = 80\pi$; $36^{\circ}/360^{\circ} = 1/10 \times 80\pi = 8\pi$)

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17) LIFE SCIENCE *Short Answer* What is the most common term used to describe a hydrocarbon chain that has all single bonds between carbons?

ANSWER: SATURATED

Y.

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Y.

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Y.

BONUS

- 17) LIFE SCIENCE Multiple Choice Which of the following does NOT occur in mitosis:
- W) synapsis of chromosomes
- X) chromosomes line up at metaphase
- Y) nuclear membrane dissolves
- Z) sister chromatids separate

ANSWER: W) SYNAPSIS OF CHROMOSOMES

TOSS-UP

- 18) GENERAL SCIENCE Multiple Choice Which of the following does one arcsecond equal:
- W) 60 arcminutes
- X) 60 arcs
- Z) 1/360th of an arcminute

ANSWER: Y) 1/60TH OF AN ARCMINUTE

BONUS

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- 18) GENERAL SCIENCE *Multiple Choice* If a superior planet is at opposition, it can be seen:
 - W) only at sunset
 - X) just before sunrise
 - Y) throughout the night

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Z) not at all

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ANSWER: Y) THROUGHOUT THE NIGHT

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19) EARTH SCIENCE Multiple Choice The MOST catastrophic mass extinction event in Earth's history occurred about how many million years ago:

W) 65

X) 250

Y) 2,800

Z) 4,800

Y.

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ANSWER: X) 250

BONUS

19) EARTH SCIENCE *Short Answer* What is the name for the largest extinction event when nearly all life on Earth came to an end?

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ANSWER: PERMIAN EXTINCTION (ACCEPT: PERMIAN or PERMIAN-TRIASSIC or PERMO-TRIASSIC)

TOSS-UP

- 20) PHYSICAL SCIENCE Multiple Choice Which of the following best describes the following reaction: $2Mg + O_2 \rightarrow 2MgO$ Militate # # 18 18 Maritule Mark 13 182
- W) combination X) decom
 - Y) single replacement
 - Z) combustion

ANSWER: W) COMBINATION

BONUS

20) PHYSICAL SCIENCE Short Answer Name all of the following 3 substances that will likely form a weak electrolyte when dissolved in pure water: Meithte state if 182 Mylithin the At 's Ph gritute 素 养 · 沒 「彩 acetic acid; magnesium chloride; sodium hydroxide

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ANSWER: ACETIC ACID

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21) MATH Short Answer Choosing from x-coordinate, y-coordinate, slope and height, what value of the graph of a linear function is always constant?

ANSWER: SLOPE

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BONUS 13

21) MATH Short Answer What is the exact value of the $\log_{10} 10^{20}$? (read as: log base 10, of 10 to the 20th power)

ANSWER: 20

TOSS-UP

22) LIFE SCIENCE Short Answer If a normal human lymphocyte underwent mitosis but NOT cytokinesis, how many chromosomes would the cell have? Marithle Mar of 18 18

ANSWER: 92

BONUS

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22) LIFE SCIENCE *Short Answer* The structure of proteins is classified from primary through quaternary levels. Which level is determined by the sequence of its amino acids?

ANSWER: PRIMARY

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23) PHYSICAL SCIENCE Short Answer Name all of the following 4 choices that are organic acids: citric acid; hydrochloric acid; nitric acid; hydrogen sulfide

ANSWER: CITRIC ACID

BONUS 1/3

23) PHYSICAL SCIENCE Short Answer Name all of the following 3 physical properties of a block of iron that change when the temperature of an object is raised: electrical conductance; volume; density

ANSWER: ALL

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Y.

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TOSS-UP

24) EARTH SCIENCE *Short Answer* The smelting of pure iron ore is done to remove what atoms which are bonded to the iron atom?

ANSWER: OXYGEN

BONUS

term for what often forms over open water in frigid temperatures as a result of vapor condensation?

ANSWER: FOC (ACCESS) 24) EARTH SCIENCE Short Answer Also known as Arctic sea smoke, what is the meteorological

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ANSWER: FOG (ACCEPT: ARCTIC FOG)

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Malithin Mar N. 18 P. 25) MATH Short Answer What is the name for any line in the same plane as a circle and intersecting the circle at exactly one point?

ANSWER: TANGENT

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Mulitude Mar by 13 1982 25) MATH Short Answer Solve the following equation for x: $256 = 2^{(x+1)}$

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ANSWER: 7

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