

ROUND 2

TOSS-UP

1) MATH *Short Answer* An angle measures 45° . What is the measure of its supplement, in degrees?

ANSWER: 135°

BONUS

1) MATH *Multiple Choice* Given that a cubit is a unit of length equal to 18 inches, which of the following is the longest?

- W) 3.1 cubits
- X) 78 inches
- Y) 6 feet
- Z) 2.1 yards

ANSWER: X) 78 INCHES

TOSS-UP

2) LIFE SCIENCE *Short Answer* How many chromatids would you find in a tetrad?

ANSWER: 4

BONUS

2) LIFE SCIENCE *Multiple Choice* Which of the following patterns of inheritance are NOT correctly paired?

- W) Red, pink, white color in flowers – sex-linked inheritance
- X) Eye color – dominance/recessive inheritance
- Y) ABO blood type – codominance
- Z) Colorblindness – sex-linked inheritance

ANSWER: W) RED, PINK, WHITE COLOR IN FLOWERS – SEX-LINKED INHERITANCE

TOSS-UP

3) GENERAL SCIENCE *Short Answer* What is the molecular formula for magnesium chloride?

ANSWER: MgCl_2

BONUS

3) GENERAL SCIENCE *Multiple Choice* Which of the following elements is contained in least significant concentrations in manganese nodules found on the ocean floor?

- W) Iron
- X) Plutonium
- Y) Nickel
- Z) Manganese

ANSWER: X) PLUTONIUM

TOSS-UP

4) MATH *Short Answer* When 10^{-4} is written in decimal form, how many zeroes are to the right of the decimal?

ANSWER: 3

BONUS

4) MATH *Short Answer* A gumball machine contains 30 green, 14 red, and 12 blue gumballs. Providing your answer as a fraction in lowest terms, if you put enough money in for one gumball, what is the probability that you will get a red gumball?

ANSWER: $\frac{1}{4}$

TOSS-UP

5) PHYSICAL SCIENCE *Short Answer* What is the total resistance, in ohms, of two resistors in series when one is a 3 ohm resistor and the other is a 2 ohm resistor?

ANSWER: 5

BONUS

5) PHYSICAL SCIENCE *Multiple Choice* Carbon-14 emits beta radiation and decays with a half life of 5730 years. Four half lives are about how long in years?

- W) 358
- X) 716
- Y) 1433
- Z) 22,920

ANSWER: Z) 22,920

TOSS-UP

6) EARTH AND SPACE *Multiple Choice* Which of the following is a measure of a mineral's resistance to scratching?

- W) Hardness
- X) Streak
- Y) Luster
- Z) Fracture

ANSWER: W) HARDNESS

BONUS

6) EARTH AND SPACE *Multiple Choice* Moraines, drumlins, and eskers are depositional features caused by which of the following?

- W) Wind
- X) Glaciers
- Y) Gravity
- Z) Waves

ANSWER: X) GLACIERS

TOSS-UP

7) LIFE SCIENCE *Multiple Choice* Which of the following portions of the seed serves as the plant embryo's food supply until germination?

- W) Pollen
- X) Embryo
- Y) Endosperm
- Z) Gametophyte [*guh-MEE-tuh-fyt*]

ANSWER: Y) ENDOSPERM

BONUS

7) LIFE SCIENCE *Short Answer* How many chambers are in the hearts of most reptiles?

ANSWER: THREE

TOSS-UP

8) ENERGY *Multiple Choice* Why are exhaust fans energy efficient cooling mechanisms in early summer months?

- W) Electricity rates are lower in the summer
- X) Exhaust fans physically pull hot air out of the home
- Y) Exhaust fans create a cooling breeze
- Z) Exhaust fans create a vacuum that prevents hot air from leaking inside the home

ANSWER: X) EXHAUST FANS PHYSICALLY PULL HOT AIR OUT OF THE HOME

BONUS

8) ENERGY *Multiple Choice* About how long in years do wind turbines typically last?

- W) 10 to 15
- X) 20 to 25
- Y) 30 to 40
- Z) 50 to 60

ANSWER: X) 20 TO 25

TOSS-UP

9) GENERAL SCIENCE *Multiple Choice* Which of the following adjectives best describes the ocean floor at a divergent plate boundary?

- W) Smooth
- X) Sandy
- Y) Mountainous
- Z) Flowing

ANSWER: Y) MOUNTAINOUS

BONUS

9) GENERAL SCIENCE *Multiple Choice* The movement of water through a plant is caused by which of the following?

- W) The attraction of water molecules to sugar molecules
- X) The force of osmosis drawing water into the roots
- Y) Transpiration from leaves and stems
- Z) Translocation of sugars in the stems

ANSWER: Y) TRANSPIRATION FROM LEAVES AND STEMS

TOSS-UP

10) MATH *Short Answer* Providing your answer as a fraction in lowest terms, what is the probability that, if you toss a standard die once, you roll a two?

ANSWER: $\frac{1}{6}$

BONUS

10) MATH *Short Answer* If Chris weighs 15 pounds more than Stephanie, and together they weigh 99 pounds, what is Chris' weight in pounds?

ANSWER: 57

TOSS-UP

11) PHYSICAL SCIENCE *Multiple Choice* Which of the following is NOT used in calculating acceleration?

- W) Initial velocity
- X) Average speed
- Y) Time interval
- Z) Final velocity

ANSWER: X) AVERAGE SPEED

BONUS

11) PHYSICAL SCIENCE *Multiple Choice* Which of the following is the pH of a substance with a hydronium concentration of 1×10^{-13} moles per liter?

- W) -13
- X) 5
- Y) 9
- Z) 13

ANSWER: Z) 13

TOSS-UP

12) EARTH AND SPACE *Multiple Choice* Which of the following energy sources is derived from living things?

- W) Uranium
- X) Peat
- Y) Steam
- Z) Photons

ANSWER: X) PEAT

BONUS

12) EARTH AND SPACE *Short Answer* In mechanical weathering, aeolian [**ee-OH-lee-uhn**] processes most affect which type of dry, low latitude environment?

ANSWER: DESERT

TOSS-UP

13) LIFE SCIENCE *Multiple Choice* Glucose, sucrose, fructose, and lactose are all examples of which of the following?

- W) Lipids
- X) Proteins
- Y) Carbohydrates
- Z) Corn syrup

ANSWER: Y) CARBOHYDRATES

BONUS

13) LIFE SCIENCE *Multiple Choice* Which of the following statements about microbial growth is most accurate?

- W) Microorganisms in the environment always grow at their maximum rate
- X) A given microbial species will usually grow faster in the environment than is possible in the laboratory
- Y) Prolonged exponential growth in the environment is rare for microorganisms
- Z) In the laboratory, growth slows when microorganisms are grown in pure culture

ANSWER: Y) PROLONGED EXPONENTIAL GROWTH IN THE ENVIRONMENT IS RARE FOR MICROORGANISMS

TOSS-UP

14) ENERGY *Multiple Choice* Which of the following is a difficulty related to nuclear fusion?

- W) The temperature required to start the reaction
- X) The lack of deuterium on Earth
- Y) The products of the fusion process are radioactive
- Z) The smell

ANSWER: W) THE TEMPERATURE REQUIRED TO START THE REACTION

BONUS

14) ENERGY *Multiple Choice* Why are alkaline [**AL-kuh-lyn**] batteries NOT always recyclable?

- W) They may contain lead-acid
- X) They may contain nickel-cadmium
- Y) They may contain mercury
- Z) They may contain absorbent glass material

ANSWER: Y) THEY MAY CONTAIN MERCURY

TOSS-UP

15) GENERAL SCIENCE *Multiple Choice* Which of the following is an example of a food chain?

- W) Herring, cod, seal, shark, phytoplankton [*fy-tuh-PLANGK-tuhn*], copepod
- X) Phytoplankton, copepod, herring, cod, seal, shark
- Y) Cod, copepod, herring, phytoplankton, seal, shark
- Z) Herring, shark, seal, cod

ANSWER: X) PHYTOPLANKTON, COPEPOD, HERRING, COD, SEAL, SHARK

BONUS

15) GENERAL SCIENCE *Multiple Choice* A number of people became ill after eating an oyster dinner in a restaurant. Which of the following statements is a hypothesis that may help explain why these people became sick?

- W) People who ate dinner on Thursday night at the restaurant became ill
- X) Anyone who eats oysters will get sick
- Y) The oysters served at the restaurant were contaminated with bacteria
- Z) Symptoms of the illness were nausea and dizziness

ANSWER: Y) THE OYSTERS SERVED AT THE RESTAURANT WERE CONTAMINATED WITH BACTERIA

TOSS-UP

16) MATH *Short Answer* What is the slope of a line passing through the points with coordinates (0, 0) and (4, 8)?

ANSWER: 2

BONUS

16) MATH *Short Answer* If line segment AB with one endpoint A = (4, 2) has midpoint M = (5, 4), find the coordinates of point B.

ANSWER: (6, 6)

TOSS-UP

17) PHYSICAL SCIENCE *Short Answer* During a head-on car collision, what physical quantity remains constant for all passengers not wearing seat belts?

ANSWER: SPEED (ACCEPT: VELOCITY)

BONUS

17) PHYSICAL SCIENCE *Short Answer* Neglecting the effect of air resistance, what is the shape of the trajectory of a projectile launched at a 75° angle from ground level?

ANSWER: PARABOLA

TOSS-UP

18) EARTH AND SPACE *Multiple Choice* Which of the following mineral properties can be unreliable?

- W) Color
- X) Cleavage
- Y) Density
- Z) Crystal Form

ANSWER: W) COLOR

BONUS

18) EARTH AND SPACE *Short Answer* A Sverdrup [**SVER-druh-p**] is a measure of flow for ocean currents equal to 1,000,000 cubic meters per second. If flow of the Amazon River is 200,000 cubic meters per second, how many Sverdrups is this to one decimal place?

ANSWER: 0.2

TOSS-UP

19) LIFE SCIENCE *Multiple Choice* Which of the following is the male reproductive part of a flower?

- W) Stamen
- X) Sepal
- Y) Petal
- Z) Pistil

ANSWER: W) STAMEN

BONUS

19) LIFE SCIENCE *Multiple Choice* Which of the following statements is NOT true about leopards?

- W) They are hybrids of lions and panthers
- X) They can leap to the branch of a tree while holding an impala carcass in their mouths
- Y) They have a very broad diet
- Z) They are solitary

ANSWER: W) THEY ARE HYBRIDS OF LIONS AND PANTHERS

TOSS-UP

20) ENERGY *Multiple Choice* About what percent of aluminum soda cans were recycled in 2010?

- W) 10%
- X) 20%
- Y) 30%
- Z) 50%

ANSWER: Z) 50%

BONUS

20) ENERGY *Short Answer* What is the name of the machine that turns organic waste into natural gas?

ANSWER: DIGESTER (ALSO ACCEPT: ANAEROBIC DIGESTER)

TOSS-UP

21) GENERAL SCIENCE *Multiple Choice* Which of the following statements best describes Darwin's theory of natural selection?

- W) Giraffes who stretch their necks to reach leaves high in trees will pass this trait on to their offspring
- X) Giraffes have long necks because the trees are continuing to get taller
- Y) Giraffes with long necks can eat more food in the trees and will not reproduce
- Z) Giraffes that have longer necks can better reach food in the trees, survive, and reproduce

ANSWER: Z) GIRAFFES THAT HAVE LONGER NECKS CAN BETTER REACH FOOD IN THE TREES, SURVIVE, AND REPRODUCE

BONUS

21) GENERAL SCIENCE *Multiple Choice* Which of the following provides the best explanation for most localized die-offs of fish populations?

- W) Reduced oxygen levels in the water
- X) Intense sunlight during the summer months
- Y) A crash in the phytoplankton population
- Z) Global climate change

ANSWER: W) REDUCED OXYGEN LEVELS IN THE WATER

TOSS-UP

22) MATH *Short Answer* The measures of two acute angles in a right triangle are in the ratio 2:7 [**2 to 7**]. What are the measures in degrees of these two angles?

ANSWER: 20° AND 70°

BONUS

22) MATH *Short Answer* Express the product of the two binomials $3x + 4$ and $2x + 1$ in standard polynomial form.

ANSWER: $6x^2 + 11x + 4$

TOSS-UP

23) PHYSICAL SCIENCE *Short Answer* If an object has a constant velocity, what is its acceleration?

ANSWER: ZERO

BONUS

23) PHYSICAL SCIENCE *Short Answer* If a car's velocity changes from 0 meters per second to 30 meters per second ten seconds later, what is its average acceleration in meters per second squared?

ANSWER: 3

TOSS-UP

24) EARTH AND SPACE *Short Answer* The main Hawaiian Islands are the tops of giant undersea volcanoes. What type of volcanoes are they?

ANSWER: SHIELD

BONUS

24) EARTH AND SPACE *Multiple Choice* Which of the following is considered a non-metallic mineral resource?

- W) Chromite
- X) Magnetite
- Y) Quartz
- Z) Platinum

ANSWER: Y) QUARTZ

TOSS-UP

25) LIFE SCIENCE *Short Answer* What is the term for a biological preparation that imparts immunity or resistance to a particular disease, often containing an agent that resembles a disease-causing microorganism, such as weakened or killed forms of the microbe?

ANSWER: VACCINE

BONUS

25) LIFE SCIENCE *Short Answer* What is the name of a diagram used to predict an outcome of a particular cross or breeding experiment, used to determine the probability of an offspring having a particular genotype?

ANSWER: PUNNETT SQUARE