

DOUBLE ELIMINATION ROUND 1

TOSS-UP

1) GENERAL SCIENCE *Short Answer* What layer of the Sun's atmosphere is immediately interior to the corona?

ANSWER: THE CHROMOSPHERE

BONUS

1) GENERAL SCIENCE *Short Answer* According to the internationally accepted system of scientific units called the SI system, what are the basic units for mass and time?

ANSWER: KILOGRAM AND SECOND

TOSS-UP

2) EARTH SCIENCE *Multiple Choice* The source of energy for the movements of crustal plates is currently thought to be the result of:

- W) tidal motion that produces a net westward movement of landmasses
- X) the pulling apart of the poles resulting from the Earth's rotation
- Y) convection currents produced within the mantle
- Z) remnant magnetism

ANSWER: Y) CONVECTION CURRENTS PRODUCED WITHIN THE MANTLE

BONUS

2) EARTH SCIENCE *Multiple Choice* Studies of the atmosphere have recently linked global warming with increases in the height of which layer of the Earth's atmosphere?

- W) Troposphere
- X) Stratosphere
- Y) Mesosphere
- Z) Ionosphere

ANSWER: W) TROPOSPHERE

TOSS-UP

3) MATHEMATICS *Short Answer* What is the sum of the measures of the exterior angles in a convex polygon?

ANSWER: 360 DEGREES

BONUS

3) MATHEMATICS *Short Answer* Given a circle of radius 1 how many radians are in the circle?

ANSWER: 2 PI

TOSS-UP

4) LIFE SCIENCE *Multiple Choice* In mammals, what teeth are evolved primarily to function in gripping and tearing:

- W) incisors
- X) canines
- Y) molars
- Z) wisdom

ANSWER: X) CANINES

BONUS

4) LIFE SCIENCE *Short Answer* How many teeth are found in the normal human adult jaw or mandible?

ANSWER: 16

TOSS-UP

5) PHYSICAL SCIENCE *Multiple Choice* To which of the following is the ozone layer of Earth's upper atmosphere most opaque:

- W) Most infrared radiation
- X) Most ultraviolet radiation.
- Y) Most of the visible light spectrum.
- Z) Most radio waves.

ANSWER: X) MOST ULTRAVIOLET RADIATION

BONUS

5) PHYSICAL SCIENCE *Short Answer* Calculate the density, to the first decimal place, for an object with a mass of 2500 grams that displaces 200 milliliters of water.

ANSWER: 12.5 GRAMS/MILLILITER (ACCEPT 12.5 GRAMS/CM³)

TOSS-UP

6) GENERAL SCIENCE *Multiple Choice* What can analog signals do that digital signals cannot do?

- W) Carry only discrete values
- X) Transmit binary data
- Y) Transmit information
- Z) Have a continuum of values

ANSWER: Z) HAVE A CONTINUUM OF VALUES

BONUS

6) GENERAL SCIENCE *Multiple Choice* What do scientists call the apparent shift in position of an object when viewed from two different positions?

- W) parallax
- X) interference
- Y) subduction
- Z) occultation

ANSWER: W) PARALLAX

TOSS-UP

7) EARTH SCIENCE *Multiple Choice* Which of the following is one of the principal causes of property damage during earthquakes and occurs when vibrations force groundwater upwards, making the soil lose its cohesion and behave temporarily as a fluid?

- W) rifting
- X) desedimentation
- Y) fluidization
- Z) liquefaction

ANSWER: Z) LIQUEFACTION

BONUS

7) EARTH SCIENCE *Short Answer* Name, in order from the oldest to the most recent, the three major subdivisions of the Phanerozoic Eon.

ANSWER: PALEOZOIC; MESOZOIC; CENOZOIC (must be in order)

TOSS-UP

8) MATHEMATICS *Short Answer* What are the first 5 prime numbers greater than 1?

ANSWER: 2, 3, 5, 7, 11

BONUS

8) MATHEMATICS *Short Answer* When 6 times a number is decreased by 11, the result is 37. What is the number?

ANSWER: 8

TOSS-UP

9) LIFE SCIENCE *Multiple Choice* Which of the following is NOT true of the plasma membrane:

- W) it is made partly of lipids
- X) it contains proteins imbedded in the lipid bilayer
- Y) it is selectively permeable
- Z) it is rigid and helps maintain a definite shape for the cell

ANSWER: Z) IT IS RIGID AND HELPS MAINTAIN A DEFINITE SHAPE FOR THE CELL

BONUS

9) LIFE SCIENCE *Short Answer* It is generally believed that most of the oxygen in the air on Earth today came from what general biological process:

ANSWER: PHOTOSYNTHESIS

TOSS-UP

10) PHYSICAL SCIENCE *Multiple Choice* Which of the following best explains why door knobs are located on the edge of the door away from the door's hinges?

- W) To increase the door's mass
- X) To increase the door's inertia
- Y) To increase the applied torque
- Z) To decrease the door's inertia

ANSWER: Y) TO INCREASE THE APPLIED TORQUE

BONUS

10) PHYSICAL SCIENCE *Short Answer* If acceleration because of gravity is 10 meters per second squared, how many meters will an apple fall in three seconds if friction is ignored and it starts from a resting position?

ANSWER: 45

TOSS-UP

11) GENERAL SCIENCE *Short Answer* What is the common name for the dinosaur from the Cretaceous Period whose name in Greek means 'three horned face'?

ANSWER: TRICERATOPS

BONUS

11) GENERAL SCIENCE *Short Answer* In a hydroelectric powerplant, what is the common name for the machine that converts the kinetic energy of falling water into rotary motion?

ANSWER: A TURBINE

TOSS-UP

12) EARTH SCIENCE *Multiple Choice* The densest ocean water is formed during the winter in what region of the Earth?

- W) Norway
- X) Antarctica
- Y) Greenland
- Z) North Pole

ANSWER: X) ANTARCTICA

BONUS

12) EARTH SCIENCE *Multiple Choice* Which of the following is the only ocean current that flows nearly unimpeded around the Earth:

- W) the Antarctic Circumpolar Current
- X) the Gulf Stream
- Y) the North Equatorial Current
- Z) the South Equatorial Current

ANSWER: W) THE ANTARCTIC CIRCUMPOLAR CURRENT

TOSS-UP

13) MATHEMATICS *Short Answer* If each side of a square is tripled what is the ratio of the area of the enlarged square to the original square?

ANSWER: 9 (Accept "9 to 1," "9:1," or "9 over 1")

BONUS

13) MATHEMATICS *Short Answer* Eighteen of the 30 students in a class are girls. What percent of the students are boys?

ANSWER: 40%

TOSS-UP

14) LIFE SCIENCE *Multiple Choice* Which of the following infectious diseases cannot be cured with current antibiotics:

- W) strep throat
- X) toxic shock syndrome
- Y) scarlet fever
- Z) influenza

ANSWER: Z) INFLUENZA

BONUS

14) LIFE SCIENCE *Multiple Choice* Which of the following is a phylum of plants that is characterized by naked or uncovered seeds?

- W) Gymnosperms
- X) Angiosperms
- Y) Algae
- Z) Monocots

ANSWER: W) GYMNOSPERMS

TOSS-UP

15) PHYSICAL SCIENCE *Multiple Choice* What is peculiar in the rotation of the planet Uranus?

- W) It is much slower than is typical for Jovian planets
- X) It is much faster than is typical for Jovian planets
- Y) The equator rotates much faster than the poles
- Z) It rotates on its side with its axis is nearly parallel to the plane of its orbit

ANSWER: Z) IT ROTATES ON ITS SIDE WITH ITS AXIS IS NEARLY PARALLEL TO THE PLANE OF ITS ORBIT

BONUS

15) PHYSICAL SCIENCE *Multiple Choice* Which of the following requires the most energy:

- W) Raising the temperature of one gram of water by one degree Celsius
- X) Changing one gram of ice from a solid to a liquid
- Y) Changing one gram of water from a liquid to a gas
- Z) Lowering the temperature of one gram of water by one degree Celsius

ANSWER: Y) CHANGING ONE GRAM OF WATER FROM A LIQUID TO A GAS

TOSS-UP

16) GENERAL SCIENCE *Short Answer* Sigmund Freud proposed the idea that the subconscious mind existed in three separate divisions two of which he called the ego and the superego. What was the third?

ANSWER: THE ID

BONUS

16) GENERAL SCIENCE *Multiple Choice* Which of the following is the best description of galaxies:

- W) clouds of gases around stars
- X) clusters of billion of stars
- Y) rare in the universe
- Z) always spherical in shape

ANSWER: X) CLUSTERS OF BILLION OF STARS

TOSS-UP

17) EARTH SCIENCE *Multiple Choice* What do scientists call the current produced when wave water flows rapidly back to the ocean through a break in a sandbar?

- W) Rip tide
- X) Longshore current
- Y) Tidal bore
- Z) High tide

ANSWER: W) RIP TIDE

BONUS

17) EARTH SCIENCE *Multiple Choice* Which of the following best describes a Plesiosaur that lived during the Late Triassic Period?

- W) a giant marine reptile
- X) a small, lightweight, plant-eating dinosaur
- Y) a flying reptile
- Z) the largest herbivore of the Triassic Period

ANSWER: W) A GIANT MARINE REPTILE

TOSS-UP

18) MATHEMATICS *Short Answer* The ratio of boys to girls enrolled at Big High School is 2:3. There are 1500 students enrolled. How many are girls?

ANSWER: 1000

BONUS

18) MATHEMATICS *Short Answer* How many distinct diagonals are contained within a regular octagon?

ANSWER: 20

TOSS-UP

19) LIFE SCIENCE *Multiple Choice* In bean and corn seeds, the food supply that is used by the seed to germinate and grow is in which of the following:

- W) cotyledon (PRONOUNCED: KOT-ill-ee-don)
- X) root tip
- Y) abscission zone
- Z) petiole

ANSWER: W) COTYLEDON

BONUS

19) BIOLOGY *Short Answer* What physical condition that has reached alarming proportions in the U.S. population is most closely correlated with type II diabetes?

ANSWER: OBESITY

TOSS-UP

20) PHYSICAL SCIENCE *Multiple Choice* Which of the following does not ultimately derive its energy to move from the sun?

- W) A sail boat
- X) A car with a gasoline engine
- Y) A marathon runner
- Z) A nuclear powered submarine

ANSWER: Z) A NUCLEAR POWERED SUBMARINE

BONUS

20) PHYSICAL SCIENCE *Short Answer* If the atomic weight of manganese is 55, how many kilograms of manganese, to the third decimal place will contain two moles of manganese atoms?

ANSWER: .110

TOSS-UP

21) GENERAL SCIENCE *Short Answer* In a compound light microscope, what is the most common name of the lens closest to the specimen?

ANSWER: OBJECTIVE

BONUS

21) GENERAL SCIENCE *Short Answer* Ring, Helix, Dumbbell and Veil are all names of what specific type of heavenly bodies?

ANSWER: NEBULA

TOSS-UP

22) EARTH SCIENCE *Short Answer* The floor of what ocean is expanding in size as a result of sea-floor spreading, tectonic plate movement, and subduction?

ANSWER: ATLANTIC OCEAN

BONUS

22) EARTH SCIENCE *Short Answer* Surprisingly more common than rainbows in most parts of the world, what is the name of the optical phenomenon where blobs of light that are often tinged with color appear to the left and/or right of the sun, and are caused by the refraction of sunlight through flat, hexagonal ice crystals?

ANSWER: SUNDOGS (ACCEPT: PARHELIA)

TOSS-UP

23) MATHEMATICS *Short Answer* Find the y-intercept of the following line:
 $2x + 3y = 6$.

ANSWER: $y = 2$ (accept 2)

BONUS

23) MATHEMATICS *Short Answer* What is the sum of the whole number factors of 20?

ANSWER: 42

TOSS-UP

24) LIFE SCIENCE *Short Answer* What male reproductive part of a plant produces pollen?

ANSWER: THE ANTHOR (ACCEPT: STAMEN)

BONUS

24) LIFE SCIENCE. *Short Answer* What are the respective scientific names for the three basic shapes of bacteria with the following appearances spherical, rod-shaped and spiral-shaped?

ANSWER: COCCUS BACILLUS SPIRILLUM (ACCEPT: COCCI, BACCILI and SPIRILLA)

TOSS-UP

25) PHYSICAL SCIENCE *Multiple Choice* What is the name for the procedure which is used to separate molecules of different polarity by placing them on paper and then placing the bottom edge of the paper on in a certain polar or nonpolar solvent?

- W) electrophoresis
- X) titration
- Y) chromatography
- Z) vertical separation

ANSWER: Y) CHROMATOGRAPHY

BONUS

25) PHYSICAL SCIENCE *Multiple Choice* Astronauts in the space shuttle are about 100 miles above the earth's surface. What is true about the effect of gravity on these space shuttle astronauts?

- W) The astronauts are far outside the earth's gravitational field
- X) The astronauts have some mass, but it is less than their mass would be on the earth's surface
- Y) The astronauts experience "apparent weightlessness" because they are constantly falling around the earth
- Z) The astronauts have no mass as they are orbiting the earth

ANSWER: Y) The astronauts experience "apparent weightlessness" because they are constantly falling around the earth