SCIENCE BOWL ROUND [insert random number here]

**TOSSUP**

Biology: Short Answer: How many chromosomes are found in human somatic cells?

Answer: 46

**BONUS**

Biology: Short Answer: The process by which mRNA is decoded at the ribosome is

called what?

Answer: Translation

**TOSSUP**

Chemistry: Multiple Choice: The law of definite proportions was proposed by who?

w. John Dalton

x. Joseph Proust

y. Robert Boyle

z. Aristotle

Answer: X – Joseph Proust

**BONUS**

Chemistry: Short Answer: Along with the law of definite proportions, what other law helps form the basis for stoichiometry?

Answer: The Law of Multiple Proportions

**TOSSUP**

Physics: Short Answer: A six ohm resistor is connected in series with a nine ohm resistor. If this circuit is connected to a 15 volt battery, how many amps travel through the circuit?

Answer: 1 amp

**BONUS**

Physics: Short Answer: Find the power generated by a circuit of 6 amps and .5 ohms.

Answer: 18 W

**TOSSUP**

Astronomy: Multiple Choice: What is the closest star to our sun?

w. Betelgeuse

x. Sirius A

y. Polaris

z. Proxima Centauri

Answer: Z – Proxima Centauri

**BONUS**

Astronomy: Multiple Choice: What is the approximate circumference at the equator of the Earth?

w. 25000 km

x. 29000 km

y. 52000 km

z. 40000 km

Answer: Z – 40000 km

**TOSSUP**

General Science: Multiple Choice: In the classification system of taxonomy, which of the following is less specific than Phylum?

w. Kingdom

x. Division

y. Class

z. Order

Answer: W - Kingdom

**BONUS**

General Science: Multiple Choice: What two volcanoes are thought to have created the Hawaiian Islands?

w. Pinatubo and Fuji

x. Mauna Kea and Mauna Loa

y. Aloha and Ohana

z. Kilimanjaro and St. Helens

Answer: X – Mauna Kea and Mauna Loa

**TOSSUP**

Earth Science: Multiple Choice: The Earth’s core is composed mainly of

w. molten lead

x. molten granite

y. molten iron

z. steam

Answer: Y – molten iron

**BONUS**

Earth Science: Short Answer: The layer of the Earth containing the crust and the uppermost mantle is known as what?

Answer: lithosphere

**TOSSUP**

Math: Short Answer: Find the volume of a cone of height 5m and base radius 3m.

Answer: 15 cubic meters

**BONUS**

Math: Short Answer: If water is poured into a conical cup of these dimensions at a rate of 1 cubic meter per four seconds, how fast is the radius of the base changing per minute, on average?

Answer: 3 meters per minute

**TOSSUP**

Biology: Multiple Choice: Capsaicin is a secondary metabolite associated with what taste?

w. Sweet

x. Sour

y. Bitter

z. Spicy

Answer: Z – Spicy

**BONUS**

Biology: Short Answer: As a biconcave lens, the eye will project images in what position with respect to the actual object?

Answer: Upside down

**TOSSUP**

Chemistry: Multiple Choice: When alpha decay occurs to an element, by what number is its atomic mass changed?

w. Decreased by 2

x. Decreased by 4

y. Increased by 4

z. Unchanged

Answer: X – Decreased by 4

**BONUS**

Chemistry: Short Answer: Polonium undergoes alpha decay. What element does it become?

Answer: Lead

**TOSSUP**

Physics: Short Answer: A soccer ball is kicked with a force of 2000N over a period of .25 seconds. If this same force was applied over .5 seconds, what is the difference in impulse?

Answer: 4000N/s

**BONUS**

Physics: Short Answer: Impulse can also be called a change in what quantity?

Answer: Momentum

**TOSSUP**

Astronomy: Short Answer: What are the two most commonly formed bodies when a star collapses?

Answer: Neutron star and a black hole

**BONUS**

Astronomy: Short Answer: The Big Dipper is part of what other major constellation?

Answer: Ursa Major

**TOSSUP**

General Science: Multiple Choice: Of the Nobel Prizes, how many are related to science?

w. 1

x. 2

y. 3

z. 4

Answer: Y – 3

**BONUS**

General Science: Multiple Choice: What polysaccharide, made from seaweed, increases viscosity in ice cream?

w. Glucose

x. Fructose

y. Guar Gum

z. Carrageenan

Answer: Z – Carrageenan

**TOSSUP**

Earth Science: Short Answer: What is the third most abundant gas in Earth’s atmospheric air?

Answer: Argon

**BONUS**

Earth Science: Short Answer: What boundary, approximately 100km above sea level, is the commonly accepted line between the atmosphere and outer space?

Answer: Karman line

**TOSSUP**

Math: Short Answer: Fully factor the following expression: .

Answer:

**BONUS**

Math: Short Answer: 1,000 girls are admitted to Harvard Medical School in a given year. This population is evenly dispersed. The dean states that the number of girls rejected will be equal to three standard deviations of the population. Assuming that those who are not rejected are accepted, how many girls will be accepted?

Answer: 3 (ouch, that’s pretty selective.)

**TOSSUP**

Biology: Multiple Choice: Which of the following is an amino acid produced naturally by the human body?

w. Cytosine

x. Methionine

y. Isoleucine

z. Glutamine

Answer: Z – Glutamine

**BONUS**

Biology: Short Answer: How many amino acids are nonpolar?

Answer: 10

**TOSSUP**

Chemistry: Short Answer: A spontaneous reaction has a Gibbs’ free energy that is

w. positive

x. negative

y. zero

z. positive, then negative

Answer: X – negative

**BONUS**

Chemistry: Short Answer: The exponential dependence of a reaction rate on temperature is known as what?

Answer: Arrhenius equation

**TOSSUP**

Physics: Short Answer: The phenomenon of a magnet floating over a supercooled superconductor is best described by what effect?

Answer: Meissner effect

**BONUS**

Physics: Short Answer: Rollin films are involved in the “creeping” of what element in a superfluid state?

Answer: Helium

**TOSSUP**

Astronomy: Short Answer: The Little Dipper is known by what other name?

Answer: Ursa Minor

**BONUS**

Astronomy: Short Answer: The asteroid belt exists in between which two planets?

Answer: Mars and Jupiter

**TOSSUP**

General Science: Short Answer: How many multiple Nobel Prize winners are there?

Answer: Four

**BONUS**

General Science: Multiple Choice: Las Vegas draws 90% of its water from what shrinking lake?

Answer: Lake Mead

**TOSSUP**

Earth Science: Multiple Choice: Approximately how much gold is estimated to have existed, and currently exists, in the Earth’s crust?

w. 1 Olympic swimming pool

x. 2 Olympic swimming pools

y. 5 Olympic swimming pools

z. 10 Olympic swimming pools

Answer: X – 2 Olympic swimming pools

**BONUS**

Earth Science: Short Answer: Of the “big three” precious metals, which one is the best conductor?

Answer: Silver

**TOSSUP**

Math: Short Answer: What is the difference of the first 5000 whole numbers and from the first 5002 numbers?

Answer: 10003

**BONUS**

Math: Short Answer: What is the sum of the first seven prime numbers?

Answer: 58

**TOSSUP**

Biology: Short Answer: How many bones are in the human wrist?

Answer: 8

**BONUS**

Biology: Short Answer: The bones in the wrist are known by what name?

Answer: Carpals

**TOSSUP**

Chemistry: Multiple Choice: Which of the following is true about bromine?

w. It will form a triple bond with hydrogen

x. It will form a covalent bond with itself

y. It has one valence electron

z. It is a metal

Answer: X - It will form a covalent bond with itself

**BONUS**

Chemistry: Short Answer: The law that states that the enthalpy change from the beginning to the end of a reaction is constant, regardless of intermediate steps, is what?

Answer: Hess’s Law

**TOSSUP**

Physics: Multiple Choice: When white light is directed through a prism, which of the following colors emerges at the greatest angle?

w. Red

x. Blue

y. Yellow

z. Purple

Answer: Z – Purple

**BONUS**

Physics: Short Answer: What color is most directly linked to pleasure sensors in the brain?

Answer: Red

**TOSSUP**

Astronomy: Short Answer: The site in Great Britain suspected of ancient astronomic purpose is called what?

Answer: Stonehenge

**BONUS**

Astronomy: Halley’s comet returns to Earth every how many years?

Answer: 76 years