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| **One Lightning Round** |
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| Mira Loma Science Bowl |
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| **Russ Islam** |
| **3/5/2010** |
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TOSS-UP

1. BIOLOGY; Short Answer: Complete the analogy: two neurons:synapse::one neuron and one muscle cell:

ANSWER: MOTOR END PLATE or NEUROMUSCULAR JUNCTION

TOSS-UP

2. GENERAL SCIENCE; Short Answer: Research on what enzyme’s chromosome-lengthening and anti-aging properties won the Nobel Prize in Physiology and Medicine in 2009?

ANSWER: TELOMERASE

TOSS-UP

1. EARTH SCIENCE; Short Answer: What is the dew point when the dry-bulb temperature is 24 degrees C and the wet-bulb temperature is 15 degrees C?

(W) 4 degrees C

(X) 8 degrees C

(Y) 18 degrees C

(Z) 36 degrees C

ANSWER: X—8 DEGREES C

TOSS-UP

4. CHEMISTRY; Short Answer: Also known as 2,4-dichlorophenoxacetic acid, what toxic substance was used in the Vietnam War to clear foliage from the dense forests of Vietnam and Cambodia?

ANSWER: AGENT ORANGE

TOSS-UP

5. PHYSICS; Multiple Choice: In the M-theory version of superstring theory, there are how many parallel universes?

(W) 5

(X) 6

(Y) 11

(Z) 12

ANSWER: Y—11

TOSS-UP

1. MATH; Short Answer: A class of data in a histogram ranges from 0 to 10. In this case, the number 5 is known as the

(W) class width

(X) class mark

(Y) class center

(Z) class divider

ANSWER: X—CLASS MARK

TOSS-UP

7. ASTRONOMY; Multiple Choice: What is the maximum number of planets that the naked eye can see on any given night?

(W) 2

(X) 3

(Y) 4

(Z) 5

ANSWER: Z—5

TOSS-UP

8. BIOLOGY; Short Answer: What immunoglobulin class is most prevalent in the secondary immune response?

ANSWER: IgG

TOSS-UP

9. GENERAL SCIENCE; Short Answer: What chemist, who worked at Caltech, sequenced hemoglobin, established the theory of hybridization, and developed modern organic chemistry?

ANSWER: LINUS PAULING

TOSS-UP

10. EARTH SCIENCE; Short Answer: During what era did the initial opening of the Altantic Ocean most likely occur?

ANSWER: MESOZOIC

TOSS-UP

11. CHEMISTRY; Short Answer: Which of the following amino acids is hydrophobic: methionine, glutamine, cysteine, isoleucine, and alanine?

ANSWER: METHIONINE, ISOLEUCINE, ALANINE

TOSS-UP

12. PHYSICS; Multiple Choice: Who proposed the plum-pudding model of the atom?

(W) J. J. Thomson

(X) Rutherford

(Y) Yanagisawa

(Z) Bohr

ANSWER: W—J. J. THOMSON

TOSS-UP

13. MATH; Short Answer: What is the derivative of f(x) =

ANSWER:

TOSS-UP

14. ASTRONOMY; Multiple Choice: Where must an observer stand on Earth in order to see the entire sky over the course of a year?

(W) the north pole

(X) the south pole

(Y) the equator

(Z) anywhere

ANSWER: Y—THE EQUATOR

TOSS-UP

15. BIOLOGY; Short Answer: Blood can only clot in the presence of what ion?

ANSWER: K+

TOSS-UP

16. GENERAL SCIENCE; Short Answer: What American psychologist and education philosopher, working at Harvard at the turn of the 20th century, developed the theory of cognitivism?

ANSWER: WILLIAM JAMES

TOSS-UP

17. EARTH SCIENCE; Multiple Choice: California’s San Andreas fault is an example of a?

(W) tear fault

(X) upthrust fault

(Y) dip-slip fault

(Z) Strike-slip fault

ANSWER: Z—STRIKE-SLIP FAULT

TOSS-UP

18. CHEMISTRY; Short Answer: What type of dihydroxlyation was developed in 1976 and converts an alkene to a cis vicinal diol?

ANSWER: UPJOHN DIHYDROXYLATION

TOSS-UP

19. PHYSICS; Short Answer: Discovered in 1845, what effect is the first experimental evidence that light and magnetism are interrelated?

ANSWER: FARADAY EFFECT

TOSS-UP

20. MATH; Short Answer: What is the determinant of the matrix

ANSWER: 6

TOSS-UP

21. ASTRONOMY; Short Answer: Escape velocity depends on what two characteristics of the celestial body?

ANSWER: MASS AND RADIUS

TOSS-UP

22. BIOLOGY; Short Answer: Babies cannot walk because their axons have not been \_\_\_\_\_\_, resulting a weak transmission of electrical impulses that precludes bipedal locomotion?

ANSWER: MYELINATED

TOSS-UP

23. GENERAL SCIENCE; Short Answer: What American psychologist applied his theory of behaviorism to teach birds to play piano and published a book known as *Walden II* in the Sixties?

ANSWER: B. F. SKINNER

TOSS-UP

24. EARTH SCIENCE; Short Answer: In what period did *Archaeopteryx* live in?

ANSWER: JURASSIC PERIOD

TOSS-UP

25. CHEMISTRY; Short Answer: What is the most common enzyme on Earth?

ANSWER: RIBULOSE-5-PHOSPHATE