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| **One Lightning Round** |
| 25 Toss-Ups |
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| Mira Loma Science Bowl 2009 |
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| **Russ Islam** |
| **12/26/2009** |
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TOSS-UP

1. BIOLOGY; Multiple Choice: What enzyme replaces RNA primers with DNA nucleotides

during replication?

(W) DNA ligase

(X) DNA pol I

(Y) DNA pol III

(Z) Primase

ANSWER: X—DNA POL I

TOSS-UP

2. EARTH SCIENCE; Short Answer: Meteorites that are small, black and glassy are known as

what?

ANSWER: TEKTITES

TOSS-UP

3. CHEMISTRY; Multiple Choice: Photochemical smog in large cities is attributed mostly to

emissions from automobiles. The colored gas most associated with smog is

(W) An oxide of nitrogen

(X) An oxide of sulfur

(Y) An oxide of hydrogen

(Z) A chloride of sulfur

ANSWER: W—AN OXIDE OF NITROGEN

TOSS-UP

4. GENERAL SCIENCE; Short Answer: Which two scientists determined that DNA is the

genetic material through an experiment involving bacteriophages and radioactive

isotopes ?

ANSWER: HERSHEY AND CHASE

TOSS-UP

5. PHYSICS; Short Answer: Represented by the equation , what wavelength symbolizes the wave-particle duality of matter?

ANSWER: DE BROGLIE WAVELENGTH

TOSS-UP

1. MATH; Short Answer: What is the derivative of ln x + 2?

ANSWER:

TOSS-UP

7. ASTRONOMY; Multiple Choice: What is the smallest Galilean satellite?

(W) Triton

(X) Ganymede

(Y) Io

(Z) Europa

ANSWER: W—TRITON

TOSS-UP

8. BIOLOGY; Multiple Choice: How many chromosomes are in a human?

(W) 23

(X) 46

(Y) 92

(Z) Over 92

ANSWER: Z—OVER 92

TOSS-UP

9. EARTH SCIENCE; Short Answer: Lakes that are nutrient-poor are known as what?

ANSWER: OLIGOTROPHIC

TOSS-UP

10. CHEMISTRY; Short Answer: For the dissociation of weak acids, the equilibrium constant is known as what?

ANSWER: ACID DISSOCIATION CONSTANT

TOSS-UP

11. GENERAL SCIENCE; Short Answer: Viagra maintains vasocongestion of the penis by inhibiting enzymes that destroy what neurotransmitter?

ANSWER: NITRIC OXIDE

TOSS-UP

12. PHYSICS; Multiple Choice: What elementary particle is classified as a lepton, has a

charge of -1, a spin of ½, and has the second longest mean lifetime of any subatomic

subatomic particle?

(W) Meson

(X) Muon

(Y) Tauon

(Z) Electron

ANSWER: X—MUON

TOSS-UP

13. MATH; Multiple Choice: What mathematician developed the time signatures seen at the beginning of each line in sheet music and also created a useful equation involving the squares of the sides of a triangle?

(W) Leibniz

(X) Napier

(Y) Euler

(Z) Pythagoras

ANSWER: Z—PYTHAGORAS

TOSS-UP

14. ASTRONOMY; Short Answer: What type of trip, also known as an impossible trip,

occurs when you are traveling faster than the speed of light?

ANSWER: SPACELIKE TRIP

TOSS-UP

15. BIOLOGY; Short Answer: The science of determining a tree’s age by counting its rings is known as what?

ANSWER: DENDROCHRONOLOGY

TOSS-UP

16. EARTH SCIENCE; Short Answer: Tablelands, such as Brazil’s *tableiros*, are formed when river valleys dissect what geological feature?

ANSWER: PLATEAU

TOSS-UP

17. CHEMISTRY; Multiple Choice: A compound has the formula Ca. X can be

(W) Br

(X) O

(Y) P

(Z) N

ANSWER: W—BR

TOSS-UP

18. GENERAL SCIENCE; Short Answer: What picture of the Earth was taken by Apollo 8 in 1968?

ANSWER: *EARTHRISE*

TOSS-UP

19. PHYSICS; Multiple Choice: Which scientist linked the worlds of electricity and magnetism through a series of equations and laws?

(W) Faraday

(X) Volta

(Y) Maxwell

(Z) Planck

ANSWER: Y—MAXWELL

TOSS-UP

20. MATH; Short Answer: Find the determinant of the matrix .

ANSWER: UNDEFINED

TOSS-UP

21. ASTRONOMY; Short Answer: Gas from a companion star can flow toward compact

object, such as a black hole, and form a thin disk known as what?

ANSWER: ACCRETION DISK

TOSS-UP

22. BIOLOGY; Short Answer: Monocytes are precursors of what cells of the immune system?

ANSWER: Macrophages

TOSS-UP

23. EARTH SCIENCE; Short Answer: What epoch are we currently in?

ANSWER: HOLOCENE

TOSS-UP

24. CHEMISTRY; Multiple Choice: When equal masses of the following compounds are

dissolved in water, which one is expected to conduct electricity the least?

(W) Magnesium chloride

(X) Sulfur trioxide

(Y) Potassium permanganate

(Z) Glyceraldehyde-3-phosphate

ANSWER: W—MAGNESIUM CHLORIDE

TOSS-UP

25. GENERAL SCIENCE; Short Answer: HeLa cells have been dividing for over half a century. From whom did they come?

ANSWER: HENRIETTA LACKS