

1. Technology

The most promising type of these objects is the Proton Exchange Membrane. By what two-word name are objects known which convert hydrogen and oxygen into water, creating direct current with the excess energy? Some scientists are hopeful that these objects can solve our energy problems.

ANSWER: (Hydrogen or Methanol) Fuel Cell(s) (accept Hydrogen Cell(s) or Methanol Cell(s))

2. British Literature

Which 1882 novel includes the characters Ben Gunn and Billy Bones? It was written by Robert Louis Stevenson and narrated by Jim Hawkins, and it featured Long John Silver.

ANSWER: Treasure Island

3. Physics (30 Seconds)

Give your answer using a single unit. How much energy is stored in a spring that has a spring constant of 40 Newtons per meter and is stretched by half a meter?

ANSWER: 5 Joules (accept -5 Joules)

4. Pop Culture

Which television show's stars include Wilmer Valderrama, Kurtwood Smith, Laura Prepon, and Ashton Kutcher? They play, respectively, Fez, Red, Donna, and Kelso in this Fox sitcom.

ANSWER: (That) 70s Show

5. Religion/Mythology

French legend claims that this woman spent the last thirty years of her life evangelizing in Provence and living in a cave. Give the last name of the woman who was cleansed of seven sins and was the first person to see Christ after his resurrection according to the New Testament.

ANSWER: (Mary) Magdalene

6. United States History

Although he was the leader of the Republican Party, whose attempts at the party presidential nomination were turned down in 1856 and 1860? He instead became the party's first Secretary of State. He was stabbed in the throat the same night that Lincoln was assassinated but survived. Name this man often associated with the purchase of Alaska.

ANSWER: (William Henry) Seward

7. Algebra (30 Seconds)

There are no parentheses in this problem. Find all solutions to the equation:

$$5x^3 - 35x^2 + 50x = 0$$

ANSWER: 0, 2, 5 (all three in any order, do not prompt or accept negative answers)

8. Current Events

What has been described by Donald Rumsfeld as "the least worst place we could have selected"? Each year

the United States tries to pay \$4000 in rent to use this area for our Navy, but the checks are never cashed. It is now the home of six hundred sixty unlawful combatants who are being held despite the lack of formal charges against them. Name this Cuban bay.

ANSWER: Guantanamo (Bay) (accept Gitmo) (prompt on Cuba, Camp X-Ray or Camp Delta)

9. World Literature

Who wrote the words, “For always night and day I hear lake water lapping with low sounds by the shore; while I stand on the roadway, or on the pavements gray, I hear it in the deep heart’s core”? This 1923 Nobel Prize Winner died and was buried in 1939 in France but was moved in 1948 to Ireland.

ANSWER: (William Butler) Yeats

10. Biology

This genetic syndrome, whose name begins with the letter K, affects about one-tenth of one percent of males, and it results in sterility and some feminine body features. Identify this syndrome caused by an extra X chromosome.

ANSWER: Klinefelter(‘s) (prompt on XXY)

11. Language Arts

The common meaning of this word comes from French, while the religious meaning comes from Latin. The common meaning is an intense emotion or ardent affection, while the religious meaning refers to the sufferings of a martyr, especially Jesus. Name this word beginning with P.

ANSWER: Passion

12. Music

In the early 1960s, who became one of the first people to direct major orchestras in different cities—Montreal and Los Angeles? He would later direct the Israeli and New York Philharmonic Orchestras, and he was the first conductor used by the Three Tenors. Name this son of the founder of the Bombay Symphony Orchestra.

ANSWER: (Zubin) Mehta

13. Geometry/Trigonometry (30 Seconds)

What is the length of an arc that subtends two pi over three radians in a circle if the circle has a radius of six centimeters?

ANSWER: Four Pi Centimeters

14. World History

Which royal house of England ended its reign with the Houses of Lancaster and York? In total, it reigned from 1154 to 1485 and included Henry the Second, Richard the Lion-Hearted, and John.

ANSWER: Plantagenet (accept Anjou or Angevin)

15. Astronomy/Earth Science/Geography

Which astronomer was a Major in World War One and then an attorney? He was the first person to find a star outside of the Milky Way Galaxy and observed that other galaxies are moving away from us. A space

telescope named after him was sent into orbit in 1990.

ANSWER: (Edwin) Hubble

16. United States Literature

After finishing college, which writer made a living doing laundry and then teaching English? He has not had to worry about finding work since he became a bestselling author in 1974. One of his characters is Roland of Gilead, the Last Gunslinger, who has been in The Dark Tower series. Name this author of Carrie, The Shining, and The Green Mile.

ANSWER: (Stephen) King

17. Chemistry (10 Seconds)

What is the common name for the liquid alkaloid with chemical formula $C_{10}H_{14}N_2$? As a drug, it can have either an invigorating or tranquilizing effect. Though it is very toxic, most of the deaths it causes are due to its addictive powers. Identify this chemical found in tobacco plants.

ANSWER: Nicotine

18. Calculus/Math History (10 Seconds)

Which French mathematician from the early eighteenth century was a critic of calculus but discovered a basic calculus theorem? The theorem states that if a function is continuous between two inputs and has the same output for both inputs, then the derivative must equal zero at some point between the two inputs.

ANSWER: (Michel) Rolle

19. Art/Architecture

This family made most of its money in the mining industry, and its art collecting began with Solomon in the 1920s. Who started museums named after themselves in Venice, Berlin, and Bilbao? Their New York City museum was designed by Frank Lloyd Wright.

ANSWER: Guggenheim(s)

20. Nonfiction

Which real-life professor appears as a member of the Zion Council in *The Matrix Reloaded*? He wrote Race Matters in 1993 and has written many essays on Black-Jewish relations and African American scholarship. His name was in the news a lot a year ago due to a public dispute he had with the President of Harvard University.

ANSWER: (Cornel) West

NOTE: These questions are for breaking ties. If you need to replace a question, use the corresponding question from the Replacement packet. In a tiebreaker, the first correct answer wins the match.

Tiebreaker #1

What consists of a core of soft iron wound with two separate coils of wire? Current supplied to the primary coil induces a current in the secondary coil, and the number of windings is proportional to the electrical potential of each coil. This term begins with the letter T.

ANSWER: Transformer

Tiebreaker #2

According to Herodotus, he was a freed slave who died at Delphi in the sixth century BC. Some historians claim that he never existed, and it is certain that he did not write at least some of the stories attributed to him. Who is associated with the stories “The Wolf in Sheep’s Clothing”, “The Frogs Desiring a King”, “The Fox and the Grapes”, and “The Hare and the Tortoise”? These are all fables.

ANSWER: Aesop

Tiebreaker #3

Which state uses the postal abbreviation SD?

ANSWER: South Dakota