



### Tossup 1: Literature — Mythology

<p>He knows which gender gets more pleasure from sex because, for 7 years, he was turned into a woman as punishment for disturbing a pair of mating snakes. Perhaps it is because of this knowledge that Hera strikes him blind. Or perhaps it is because he watched Athena bathing that he can no longer see with his eyes. The only sight this Theban advisor now possesses is foresight. Name this counsel to Oedipus, whose name appropriately became a common title for blind Greek seers.</p>	<p><u>Tiresias</u></p>
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### Bonus 1: Social Studies — U.S. History

<p>From a description, identify the New Deal program.</p>		
<p><b>A</b></p>	<p>Upon its establishment, its primary aim was flood control, and private companies opposed this agency's production and sale of electric power.</p>	<p><u>TVA</u> (<i>Tennessee Valley Authority</i>)</p>
<p><b>B</b></p>	<p>Its symbol was a blue eagle, its goal was to reduce unemployment and guarantee labor rights, but in 1935 it was declared unconstitutional.</p>	<p><u>NRA</u> (<i>National Recovery Administration</i>)</p>
<p><b>C</b></p>	<p>Under its umbrella were the Federal Arts Project, Federal Writers' Project, and Federal Theater Project, and it employed over eight million people.</p>	<p><u>WPA</u> (<i>Works Progress Administration or Work Projects Administration</i>)</p>
<p><b>D</b></p>	<p>Established by the Wagner act, it hears labor disputes and investigates unfair labor practices.</p>	<p><u>NLRB</u> (<i>National Labor Relations Board</i>)</p>



### Tossup 2: Social Studies — World History

<p>While sailing to Greece, he was captured by pirates, who he befriended while being held captive. Upon being released he hunted them down and executed them. At eighteen he married Cornelia, who bore him his only legitimate child. Name this man who became a Roman war hero by conquering the Gauls; and who was stabbed 23 times by conspirators including his fellow senate members Brutus and Cassius.</p>	<p><b>Gaius <u>Julius Caesar</u></b></p>
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### Bonus 2: Miscellaneous — Sports

<p>Identify these facts related to Michael Jordan.</p>		
<p><b>A</b></p>	<p>Jordan played for Dean Smith at this eastern university.</p>	<p><b>University of <u>North Carolina</u></b></p>
<p><b>B</b></p>	<p>This was the only other team Jordan played for besides the Chicago Bulls.</p>	<p><b><u>Washington Wizards</u></b> (<i>accept either location or team name</i>)</p>
<p><b>C</b></p>	<p>Jordan was selected 3rd overall in 1984, two picks behind this center chosen by the Houston Rockets.</p>	<p><b>Hakeem <u>Olajuwon</u></b> (<i>ohLIEzhoo-wahn</i>)</p>
<p><b>D</b></p>	<p>In the mid 1990s, Jordan played baseball for this minor league team based in Alabama.</p>	<p><b><u>Birmingham Barons</u></b> (<i>accept either location or team name</i>)</p>



### Tossup 3: Science — Biology

<p>This phenomenon is similar to taxis and kinesis, but lacks motility. This class of behaviors is prompted by external stimuli, such as contact, gravity, water, and sunlight. Those stimuli cause uneven concentrations of phytohormones, which cause plants to grow toward or away from those stimuli. Name this type of behavioral response associated with plants.</p>	<p><b><u>Tropism</u></b></p>
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### Bonus 3: Literature — Literature

<p>Best of luck; answering these questions will be quite the Odyssey.</p>		
<b>A</b>	<p>The original version of the Odyssey is attributed to this blind poet.</p>	<b><u>Homer</u></b>
<b>B</b>	<p>This 20th century author wrote Ulysses, centered around a Dubliner named Leopold Bloom.</p>	<b>James <u>Joyce</u></b>
<b>C</b>	<p>This poet's 'Ulysses' presents an aged Odysseus coercing his sailors to return to the sea.</p>	<b>Alfred, Lord <u>Tennyson</u></b>
<b>D</b>	<p>In "The Penelopiad," this female author of The Handmaid's Tale presents the story from Penelope's point of view.</p>	<b>Margaret <u>Atwood</u></b>



### Tossup 4: Math — Other (Computational: 30 Seconds)

You want to make a necklace with two red beads, one blue bead, and two green beads. How many distinct necklaces can you make, realizing that rotations of the same necklace are all identical?

6

### Bonus 4: Science — Chemistry

Name these recipients of the Nobel Prize in Chemistry.

**A** This woman was awarded the 1911 prize for discovering radium and polonium.

**Marie Curie**

**B** This American was awarded the 1954 prize for his study of the chemical bond, and later won a Peace Prize for advocating against nuclear arms testing.

**Linus Pauling**

**C** This American was awarded the 1961 prize for discovering his namesake "dark" cycle of photosynthesis.

**Melvin Calvin**

**D** This man was awarded the 1909 prize for his work on catalysis, and discovered a namesake process for manufacturing nitric acid.

**Wilhelm Ostwald**



### Tossup 5: Fine Arts — Music

<p>This opera's libretto by Nahum Tate differs significantly from the legend on which it is based. Instead of the gods commanding the titular warrior to leave, it is a sorceress who issues the command because she hates the queen he loves. As predicted, even though he offers to disregard the gods and stay, the queen tells him to leave, and subsequently kills herself in her famous "lament," "When I am laid in earth." Premiered in 1689 at a girls' school, name this opera based on the Aeneid by Henry Purcell.</p>	<p><b><u>Dido and Aeneas</u></b></p>
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### Bonus 5: Math — Other

<p>A carnival game costs one dollar to play, and pays back three dollars if you flip heads on two coins in a row.</p>		
<b>A</b>	What is the probability that you win?	<b><u>1/4</u></b>
<b>B</b>	What is the expected value for the game, in dollars?	<b><u>-1/4 dollars</u></b> (accept <u>-0.25 dollars</u> )
<b>C</b>	If, instead, winning entailed rolling a sum of 2 on two six-sided dice, what would the probability of winning be?	<b><u>1/36</u></b>
<b>D</b>	In that modified game, what would your expected value be, in dollars?	<b><u>-11/12 dollars</u></b>



### Tossup 6: Miscellaneous — Entertainment

<p>She appeared on the first cover of Ms. Magazine in 1972, with an accompanying article decrying the loss of women's power in America, with this woman in particular as a prime example. The more literal loss of power ended in 1973, as well as her traditional costume, first introduced in December, 1941. Cathy Lee Crosby made a more toned down appearance as her in 1974, but Lynda Carter wore the traditional garb of what famous superheroine, created by Dr. William and Elizabeth Marston.</p>	<p><b><u>Wonder Woman</u></b> (prompt on <i>Diana Prince</i>)</p>
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### Bonus 6: Social Studies — Geography

Identify the following American mountains.		
<b>A</b>	This mountain goes by two names – one is the name of a President, the other the name of the national park in which it is located.	<b>Mount <u>McKinley</u> or <u>Denali</u></b>
<b>B</b>	This mountain, the tallest in Oregon, is considered a dormant but potentially active volcano.	<b>Mount <u>Hood</u></b>
<b>C</b>	A wind on this peak in New Hampshire in 1934 set the record for strongest wind ever.	<b>Mount <u>Washington</u></b>
<b>D</b>	This mountain in North Carolina is the tallest peak east of the Mississippi River. Its namesake died in an attempt to verify its height.	<b>Mount <u>Mitchell</u></b>



### Tossup 7: Math — General

The first example of one of these was the Liouville constant, though these are uncountably infinite. None of them are rational, but not all irrational numbers are these. For example, the square root of two is not, but pi and e are. Name this type of number that cannot be expressed as the root of a polynomial with algebraic coefficients.

**Transcendental numbers**  
*(prompt nonalgebraic numbers)*

### Bonus 7: Fine Arts — Visual Art

Identify the art movement given an artist and a work by him or her.

**A** Henri Matisse, The Dessert: Harmony in Red.

**Fauvism**

**B** Jackson Pollock, Greyed Rainbow.

**Abstract Expressionism**  
*(prompt incomplete answer)*

**C** Picasso, Les Demoiselles d'Avignon.

**Cubism**

**D** Marcel Duchamp, Fountain.

**Dada**



### Tossup 8: Social Studies — Other

<p>This concept was originally designed as a method to test young Parisian immigrants. In today's population, it is normally distributed with a mean of 100 and standard deviation of 15. To evaluate yours, you could use the (<i>moderator: spell</i>) WAIS or Stanford-Binet test. Identify this number, originally calculated as 100 times your mental age, divided by your chronological age.</p>	<p><b><u>Intelligence Quotient</u></b> (<i>accept IQ</i>)</p>
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### Bonus 8: Science — Physics

<p>All physical interactions can be reduced to one of the four fundamental forces of nature. Identify each, given a clue.</p>		
<b>A</b>	<p>This force can be described by Maxwell's equations, and affects electric charges.</p>	<p><b><u>Electromagnetism</u></b></p>
<b>B</b>	<p>This force causes all masses to be attracted to each other.</p>	<p><b><u>Gravity</u></b></p>
<b>C</b>	<p>This force mediated by the W and Z bosons causes some forms of nuclear decay.</p>	<p><b><u>Weak nuclear force</u></b></p>
<b>D</b>	<p>This force mediated by gluons affects particles with color charge.</p>	<p><b><u>Strong nuclear force</u></b></p>





### Tossup 9: Literature — Literature

He passed away on November 10, 2007. In 1955 this prolific writer, together with Ed Fancher and Dan Wolf, first published the arts and politics oriented newspaper The Village Voice. His novel The Deer Park draws upon his experiences as a Hollywood screenwriter. He was awarded two Pulitzer Prizes, one for his novel about the 1967 March on the Pentagon, Armies of the Night and another for his recounting of the last days of murderer Gary Gilmore in The Executioner's Song. Identify this author of The Naked and the Dead.

**Norman Kingsley Mailer**

### Bonus 9: Math — Calculus

Find the derivatives of the following functions, with respect to  $x$ .

<b>A</b>	$x$ cubed plus five $x$	<b><u><math>3x^2 + 5</math></u></b>
<b>B</b>	$x$ times the natural log of $x$	<b><u><math>\ln x + 1</math></u></b>
<b>C</b>	2 plus tangent $x$	<b><u>secant squared of <math>x</math></u></b> (accept <u><math>1</math></u> over cosine squared of $x$ )
<b>D</b>	The natural log of the sine of $x$	<b><u>cotangent of <math>x</math></u></b> (accept <u><math>1</math></u> over tangent of $x$ )



### Tossup 10: Science — Astronomy

Its arms, like Norma, Crux, Perseus, and Cygnus, surround a bar about 27,000 light-years long, making this galaxy a barred spiral. It is believed that a black hole at the center of that galaxy is located near Sagittarius. Name this galaxy which, in several billion years, may collide with the nearest spiral galaxy, Andromeda.

Milky Way galaxy

### Bonus 10: Literature — Literature

Given a work that didn't win a Pulitzer by a Pulitzer Prize-winning author, name the author.

**A** The Bridges at Toko-ri

**James Michener**

**B** Death in the Afternoon

**Ernest Hemingway**

**C** Light in August

**William Faulkner**

**D** The Bluest Eye

**Toni Morrison**

**END OF FIRST HALF – 2 minute timeout**



**Tossup 11: Miscellaneous — Interdisciplinary**

<p>In February, 2007, Plácido Domingo announced that LA Opera and Theatre du Chatelet, Paris were co-producing this opera, based on director David Cronenberg's 1986 film which the opera's composer, Howard Shore, had scored. The film itself was based on a short story from Belgian writer George Langelaan which inspired a Vincent Price film in the 50s. In both cases, the ambitious scientist makes the mistake of going through his homemade teleportation device before making sure he is the only organism in the device. Give the common title that sees the character merge with the title insect.</p>	<p><b>The <u>Fly</u></b></p>
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**Bonus 11: Literature — Mythology**

<p>Identify the following about the Underworld of Greek and Roman myth.</p>		
<p><b>A</b></p>	<p>Upon reclaiming his wife Eurydice (<i>yuh-RID-a-see</i>) from the underworld, this musician made the mistake of looking back.</p>	<p><b><u>Orpheus</u></b></p>
<p><b>B</b></p>	<p>Persephone ate a few seeds from this fruit while in the underworld, which ensured that she would return there every year.</p>	<p><b><u>Pomegranate</u></b></p>
<p><b>C</b></p>	<p>This area of Hades is the final resting place for the righteous and heroic.</p>	<p><b><u>Elysian Fields</u></b> (<i>also accept Elysium or Elysian Plains</i>)</p>
<p><b>D</b></p>	<p>This son of Europa and brother of Minos acted as one of the judges of the underworld.</p>	<p><b><u>Rhadamanthus</u></b></p>



### Tossup 12: Social Studies — U.S. History

After graduating from West Point, he fought in the Mexican-American War, where he met the man who would command him two decades later. Earning his infamous nickname at the First Battle of Bull Run, he would be killed in 1863 at the Battle of Chancellorsville. Name this most celebrated Confederate general of the Civil War, who was killed accidentally by his own troops.

**Thomas Jonathan "Stonewall" Jackson**

### Bonus 12: Math — Other

Simplify the following using trigonometric identities, leaving only cosines in your solution if necessary.

<b>A</b>	Sine squared of $x$ plus cosine squared of $x$ .	<u>1</u>
<b>B</b>	Three times cosine squared of $x$ minus sine squared of $x$ .	<u>4 cosine squared of <math>x</math> - 1</u>
<b>C</b>	Cosine of the quantity $x$ minus $\pi$ .	<u>negative cosine of <math>x</math></u>
<b>D</b>	Cosine of $x$ times cosine of $y$ , minus sine of $x$ times sine of $y$ .	<u>cosine of the quantity <math>x + y</math></u>



### Tossup 13: Math — Calculus (Computational: 30 Seconds)

Find the derivative of the function $x$ times $e$ to the $2x$ .	<b><u><math>(2x + 1)</math> times <math>e</math> to the <math>(2x)</math></u></b> <i>(accept <math>2x e</math> to the <math>(2x) + x e</math> to the <math>(2x)</math>)</i>
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### Bonus 13: Science — Biology

Answer these questions about chromosomes.	
<b>A</b>	Humans have this many chromosomes in non-reproductive cells. <b><u>46</u></b> <i>(do not accept 23)</i>
<b>B</b>	Because reproductive cells have only one set of chromosomes, they are called this. <b><u>Haploid</u></b>
<b>C</b>	When chromosomes are condensed, they take the shape of an X, with this region where the arms cross. <b><u>Centromere</u></b>
<b>D</b>	Females have two X chromosomes per cell, but one in each cell takes an inactive form, named this. <b><u>Barr body</u></b>



**Tossup 14: Literature — Literature**

<p>Responsible for introducing the word "panache" (<i>PUH-NASH</i>) to the English language, this play was a great success immediately upon its release. The play opens with nobles milling about a large Parisian theatre in anticipation of a performance. Christian de Neuvillette walks in, and eventually spies the girl he came to see, Roxane. He is disheartened to learn she is an intellectual, and will eventually enlist the services of the title character to woo her. Identify this play by Edmund Rostand, featuring a title character with a very large nose.</p>	<p><b><u>Cyrano de Bergerac</u></b></p>
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**Bonus 14: Miscellaneous — Interdisciplinary**

<p>In each case, and in either order, identify the pair of people who passed away on the same day.</p>		
<b>A</b>	<p>July 4, 1826; the two former vice-presidents.</p>	<p><b>John <u>Adams</u> and Thomas <u>Jefferson</u></b></p>
<b>B</b>	<p>November 22, 1963; the Irish born author who converted to Christianity with help from J.R.R. Tolkien; and the British-born American author who wrote Brave New World.</p>	<p><b>Clive Staples <u>Lewis</u> and Aldous Leonard <u>Huxley</u></b></p>
<b>C</b>	<p>February 12, 2000; the cartoonist who drew the Peanuts cartoon strip, and the former coach of the Dallas Cowboys and namesake of King of the Hill's middle school.</p>	<p><b>Charles Monroe <u>Schulz</u> and Thomas Wade <u>Landry</u></b></p>
<b>D</b>	<p>December 25, 1989; the former dictator of Romania, and the four-time former dictator of the New York Yankees.</p>	<p><b>Nicolae <u>Ceausescu</u> and Billy <u>Martin</u></b></p>



### Tossup 15: Science — Chemistry

Usually measured in kilojoules, in electrochemistry it is often calculated as negative  $n F \Delta E$ . Chemical systems attempt to minimize this quantity, which is why it is zero for systems in equilibrium, and why negative values of it indicate a reaction will be spontaneous. Name this potential function symbolized  $\Delta G$ .

**Gibbs free energy** (*accept  
Gibbs energy, prompt free  
energy*)

### Bonus 15: Social Studies — U.S. History

Identify these generals of the American Revolution.

**A** This "Gentleman" was the British commander at the battle of Saratoga.

**John Burgoyne**

**B** This man took over command of the southern Continental Army from Horatio Gates.

**Nathanael Greene**

**C** This British general surrendered his army at Yorktown.

**Lord Charles Cornwallis**

**D** This general was relieved of his duties after getting into an argument with Washington at the Battle of Monmouth.

**Charles Lee**



### Tossup 16: Fine Arts — Visual Art

Often criticized by Nazi party members for being "un-German" because of its modernist style, it was characterized by them as a front for communists and social liberals. Operating from 1919 to 1933, this school attempted to combine the elements of craft and art together into one. This school's second director was Hannes Meyer, a vocal communist, who, upon being fired, was replaced by Ludwig Mies van der Rohe. Identify this school of art and architecture, founded by Walter Gropius.

**Staatliches Bauhaus** (*STAHT-  
leek-ess BOW-hows*)

### Bonus 16: Math — Geometry

Find the volumes of the following solids.

<b>A</b>	A sphere with radius 3.	<b><u>36 pi</u></b>
<b>B</b>	A cylinder with height 2 and radius pi.	<b><u>2 pi cubed</u></b>
<b>C</b>	A cone with radius 3 and height 1.	<b><u>3 pi</u></b>
<b>D</b>	A cube inscribed in a sphere with radius 2.	<b><u>16 root 2</u></b>





**Tossup 17: Math — Other (Computational: 30 Seconds)**

In a normal distribution, if a score of 15 has a z score of 0, and a score of 20 has a z score of 1, what is the probability, to the nearest whole percent, of having a score of 10 or more?	<b>84%</b>
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**Bonus 17: Literature — Literature**

Answer these questions about literary works that feature the Devil as antagonist.	
<b>A</b>	In this Goethe play, Mephistopheles wagers that he can corrupt God's favorite man by giving him everything he wants. <b><u>Faust</u></b>
<b>B</b>	The Devil and Tom Walker is this author's tale of a miser who reneges on a deal with the Devil only to be damned when he forgets his Bible. <b><u>Washington Irving</u></b> ( <i>accept Geoffrey Crayon</i> )
<b>C</b>	In the Steven Vincent Benet story The Devil and Daniel Webster, Satan puts this man on trial for his soul. <b><u>Jabez Stone</u></b>
<b>D</b>	This epic poem by John Milton retells the story of Adam and Eve and features a Lucifer who is both evil and heroic as he wages war on Creation. <b><u>Paradise Lost</u></b>



### Tossup 18: Social Studies — Geography

<p>It is connected to the mainland by the Isthmus of Perekop, which is near the Kerch Peninsula. Bordered on the east by the Sea of Azov, its capital is Simferopol, and it is most well known as the site of a 19th century war. Name this Ukrainian peninsula that is bordered on the south and west by the Black Sea.</p>	<p><b><u>Crimea</u></b> (<i>accept Krim</i>)</p>
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### Bonus 18: Science — Astronomy

Answer these questions about Kepler's laws.		
<b>A</b>	According to his first law, planets' orbits take this shape.	<b><u>Ellipse</u></b>
<b>B</b>	His first law also states that the sun is located at this point relative to the orbit of a planet.	<b><u>Focus of the ellipse</u></b>
<b>C</b>	According to his second law, a line between the sun and a planet sweeps out equal areas in equal times, a consequence of the conservation of this quantity.	<b><u>Angular momentum</u></b> ( <i>prompt momentum</i> )
<b>D</b>	According to his third law, the square of the period of a planet's orbit is proportional to the cube of this quantity.	<b><u>Semimajor axis of the orbit</u></b>



### Tossup 19: Science — Physics

<p>Also known as Descartes's Law, it yields 0 for one angle when the other is at the critical angle, and yields no solution when total internal reflection occurs. It relates the speed of light in two media to the angles of incidence and refraction when light passes between them. Name this law of optics that can be written as <math>n_1 \sin \theta_1 = n_2 \sin \theta_2</math>.</p>	<p><u>Snell's law</u></p>
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### Bonus 19: Fine Arts — Music

Identify the following American composers.		
<b>A</b>	This minimalist is famous for writing the score to The Truman Show and The Hours, as well as his opera Einstein on the Beach.	<b>Philip <u>Glass</u></b>
<b>B</b>	This composer of the Maple Leaf Rag and the opera Treemonisha is considered the finest ragtime musician.	<b>Scott <u>Joplin</u></b>
<b>C</b>	This composer who died of a brain tumor is famous for songs such as "Summertime," "Swanee," and "Oh, Lady Be Good."	<b>George <u>Gershwin</u></b>
<b>D</b>	This proponent of atonality and polytonality is as famous for his Concord Sonata, though his primary occupation was working as an insurance agent.	<b>Charles <u>Ives</u></b>



**Tossup 20: Literature — Literature**

<p>He is a painter, and we are introduced to one of his paintings, a blindfolded woman bearing a torch against a nearly black background, which is indicative of his former views regarding imperialism. Also the author of a pamphlet regarding the civilization of natives, if you were to ask about this character after the events of the book, someone might tell you "he dead." Before that ultimate fate, however, he managed to get in the words "The horror! The horror!" Identify this ivory trader from Joseph Conrad's novella Heart of Darkness.</p>	<p><b>Mr. <u>Kurtz</u></b></p>
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**Bonus 20: Social Studies — Other**

<p>Identify these facts related to Buddhism.</p>		
<p><b>A</b></p>	<p>Buddhism was first taught by this man.</p>	<p><b>Siddhartha <u>Gautama</u></b> (<i>prompt on Buddha</i>)</p>
<p><b>B</b></p>	<p>Suffering, the origin of the suffering, the cessation of suffering, and the path that leads to the cessation of suffering make up these.</p>	<p><b>The <u>Four Noble Truths</u></b></p>
<p><b>C</b></p>	<p>The last part of the answer to part 2 relates to this, which is broken down into three categories: Wisdom, Ethical conduct, and Mental discipline.</p>	<p><b>Noble <u>Eightfold Path</u></b></p>
<p><b>D</b></p>	<p>This perfect state is the end of Samsara.</p>	<p><b><u>Nirvana</u></b></p>

**END OF MATCH**



### Tossup A: Math — Calculus (Computational: 30 Seconds)

Use the first three terms of the Taylor series for  $e^x$ , centered about  $x$  equals zero, to approximate the value of  $e$  to the first power.

2.5 (accept 5/2)

### Bonus A: Social Studies — World History

Identify these facts about Benjamin Disraeli.

**A** To date, Disraeli has been the only British Prime Minister of this religion.

Judaism

**B** Disraeli was a member of this political party, a rival of the Liberals.

Conservative Party (prompt on Tory Party; accept *Conservative and Unionist Party*)

**C** This Liberal, who served as Prime Minister 4 separate times, was a rival of Disraeli's.

**William Ewart Gladstone**

**D** This British Queen was a friend of Disraeli's.

**Queen Victoria**



### Tossup B: Science — Chemistry

<p>This process is undergone by electron acceptors, and can be characterized by the gain of C-H bonds or loss of C-O bonds. It happens when ferric ions are converted to ferrous ions. In this process, electrons are gained by a chemical species, and its oxidation number is lowered. Name this chemical process, the opposite of oxidation.</p>	<p><u>Reduction</u></p>
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### Bonus B: Literature — Literature

<p>Identify the following about a book.</p>		
<p><b>A</b></p>	<p>This Dickens novel discusses the life of an orphan who escapes from his stepfather, Mr. Murdstone, to become a successful man.</p>	<p><u>David Copperfield</u></p>
<p><b>B</b></p>	<p>This eccentric, wealthy woman originally dislikes the protagonist because he is male. She eventually comes to love him as a second mother.</p>	<p>Aunt <u>Betsey</u> Trotwood</p>
<p><b>C</b></p>	<p>This impoverished man's only true asset is his wife, whose father and family heirlooms keep him out of debtor's prison for most of the book.</p>	<p>Wilkins <u>Micawber</u></p>
<p><b>D</b></p>	<p>Uriah Heep tries to marry this woman, the daughter of a wealthy businessman, but the book's protagonist eventually weds her in his second marriage.</p>	<p><u>Agnes</u> Wickfield</p>



### Tossup C: Miscellaneous — Interdisciplinary

<p>Among his medical contributions are work on migraines, the placebo effect, and one of the first papers on the ill effects of tobacco on the lungs. The valve at the junction of the small and large intestines is named for him. As head of the Amsterdam Surgeon's Guild, he would perform annual public dissections of human bodies to raise money, and for his first one, the Guild commissioned a portrait. Identify this surgeon whose dissection of a criminal's forearm is captured in an early work by young Rembrandt van Rijn.</p>	<p><b>Dr. Nicolaes <u>Tulp</u></b></p>
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### Bonus C: Science — Biology

Name these animal phyla.	
<b>A</b>	This phylum contains humans and all vertebrates, as well as a few invertebrates. <b><u>Chordata</u></b> (accept <i>chordates</i> )
<b>B</b>	This phylum contains starfish, sea urchins, sea cucumbers, and other "spiny-skinned" marine creatures. <b><u>Echinodermata</u></b> (accept <i>echinoderms</i> )
<b>C</b>	This diverse phylum contains squid, clams, and snails. <b><u>Mollusca</u></b> (accept <i>mollusks</i> )
<b>D</b>	This largest phylum of animals contains insects, lobsters, centipedes, and spiders. <b><u>Arthropoda</u></b> (accept <i>arthropods</i> )



### Tossup D: Literature — Language Arts

<p>Systems using these are classified as either "register" or "contour." While they are usually regarded as lexical, they can also function grammatically, as they do in Japanese. Ai-Cham has the most of any living language, with eleven. Tildes, dots, and lines differentiate those of Vietnamese, and while the central and eastern Tibetan dialects have them, the western do not. Name this system present in many modern African and Asian languages, which distinguishes words not only by pronunciation, but also by pitch.</p>	<p><b>Tones</b> (<i>accept <u>tonal</u> language or equivalent</i>s)</p>
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### Bonus D: Math — General

Identify these data structures in computer science.		
<b>A</b>	Items can be pushed and popped from this structure, which follows a last-in-first-out order.	<b><u>Stack</u></b>
<b>B</b>	This structure also stores items in order, but follows a first-in-first-out order for removal.	<b><u>Queue</u></b>
<b>C</b>	This type of data structure consists of nodes referencing one another in a particular order, and exists in "singly" and "doubly" types.	<b><u>Linked list</u></b> ( <i>prompt <u>list</u></i> )
<b>D</b>	This data structure consists of nodes. The root node points to internal nodes, which eventually point to leaf nodes which point to no other nodes.	<b><u>Tree</u></b>





### Tossup E: Social Studies — U.S. History

Shortly after the Spanish-American War, this country received its independence. However, the Platt Amendment gave the United States a base within its borders, which has come under scrutiny in recent years, as it has been used to harbor suspected terrorists. Name this country with which the U.S. has had strained relations during the rule of Fidel Castro.	<b>Republic of <u>Cuba</u></b>
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### Bonus E: Fine Arts — Music

Answer these questions about some musical instruments that have been adopted by U.S. states as their very own.		
<b>A</b>	In 2007, the Iowa senate honored native son Meredith Wilson by naming this instrument, celebrated in <i>The Music Man</i> , as the state's "premier instrument."	<b><u>Trombone</u></b>
<b>B</b>	Louisiana honors its Cajun heritage with this state instrument played by pushing buttons while squeezing the bellows.	<b>Diatonic <u>accordion</u></b>
<b>C</b>	Missouri, South Dakota, and Oklahoma are among the states that chose this stringed instrument essential to bluegrass and square dance music.	<b><u>Fiddle</u> (<i>prompt on violin</i>)</b>
<b>D</b>	Traditionally played flat on the lap, this zither relative with an hourglass shape is the official state instrument of Kentucky.	<b>Appalachian <u>dulcimer</u></b>