

1. Larry Layton was the only person prosecuted for this event. The man responsible for this event had previously been appointed by Mayor George Moscone as Chairman of the San Francisco Housing Authority. Leo Ryan became the only member of Congress to die in the line of duty when he was murdered prior to this event. The people who died in this event were (*) members of the People's Temple. For 10 points, name this 1978 event in Guyana in which 913 cult members drank cyanide-laced Flavor-Aid in a mass suicide.

ANSWER: <u>Jonestown</u> massacre [or reasonable equivalents mentioning<u>Jonestown</u>]

030-11-29-15102

2. When these entities are extremely weak, their strength is often measure using a device called a SQUID. NMR spectroscopy involves chemical shift when a sample is placed in one of these entities. A current that is perpendicular to one of those entities produces a potential difference known as the Hall Effect. According to Ampere's law their strength is proportional to the electrical current. Their strength, which is a measured in a unit called (*) Teslas, can be determined using the Biot-Savart law. For 10 points, name this type of vector field caused by moving electric charges.

ANSWER: magnetic fields

064-11-29-15103

3. The protagonist of this book becomes President of the Lions Club and is killed by Paul Lazzaro during a speech he gives in Chicago. Other characters in this book include the narrator's friend Bernard V. O'Hare and Eliot Rosewater, who introduces the protagonist to the books of Kilgore Trout. The Tralfamadorians kidnap this novel's protagonist, an optometrist who is (*) "unstuck in time" and named Billy Pilgrim. It is partially based on the author's experiences during the fire-bombing of Dresden. For 10 points, name this novel by Kurt Vonnegut.

ANSWER: Slaughterhouse-Five, or The Children's Crusade: A Duty-Dance with Death

083-11-29-15104

4. This word appears twice in the name of a band whose first album is *Downtown Battle Mountain*. The lines "I'm two quarters and a heart down" and "we're falling apart to halftime" are in a song titled for this word twice. This activity appears in the title of a song featuring Colby O'Donis that was the first single off *The Fame*. That song's speaker asks (*) "what's the name of this club" before telling the listener to "just" do this activity. For 10 points, name this word in the titles of songs by Fall Out Boy and Lady Gaga.

ANSWER: dance [or "Just Dance"; or "Dance, Dance"; or Dance Gavin Dance]

083-11-29-15105

5. This composer of the concert overture "In Autumn" wrote a five-movement Baroque-style suite for string orchestra called "In Holberg's Time." A tympani roll opens this man's Piano Concerto in A minor, his only completed concerto. He included "Anitra's Dance" and "Morning Mood" in a set of two four-movement suites taken from incidental music to an (*) Ibsen play. For 10 points, name this Norwegian composer whose "In The Hall Of The Mountain King" comes from his *Peer Gynt* Suites. ANSWER: Edvard Hagerup **Grieg**

6. These organelles are described in terms of Svedberg units, which are computed through sedimentation. They contain A and P sites, which are the sites of aminoacyl (uh-MEE-no-AY-sill) and peptidyl (PEP-tid-ill) binding. They contain both a namesake kind of RNA and tRNA. They are manufactured in the (*) nucleolus and can be found attached to the rough endoplasmic reticulum. For 10 points, name these sites of protein synthesis.

ANSWER: ribosomes

003-11-29-15107

7. This institution is constructing a satellite museum, with a webbed dome roof, in Abu Dhabi. This museum is home to the Code of Hammurabi, and sculptures found in this museum include the *Apollo Belvedere* and Michelangelo's *Dying Slave*. It is found west of the Tuileries (TOOL-er-ies). Gardens, and was opened to the public in 1793. It was renovated in the 1980s to include an expanded entrance through a skylit (*) underground lobby designed by I.M. Pei. For 10 points, name this Parisian art museum which features the Mona Lisa and a glass pyramid.

ANSWER: The **Louvre** [or Museé du **Louvre**]

082-11-29-15108

8. The narrator of this work notes that his old teacher, Brunetto Latini, seemed to be "one who wins, and not the one who loses." The author begins this work with the line "Nel mezzo del cammin di nostra vita" and describes meeting a leopard, a lion, and a wolf in the dark forest. Afterward, this work describes the fate of Paolo and Francesca, as well as the icy realm of Cocytus, where (*) Satan chews on Judas, Brutus, and Cassius. For 10 points, name this first part of the Divine Comedy, a description of Hell by Dante.

ANSWER: Dante's *Inferno* [prompt on *The Divine Comedy* or La *Divina Commedia*]

080-11-29-15109

9. One symbol that appeared during this event had two overlapping blue circles, a small central red circle, and three puncture marks. Herbert Schwarzkopf was among the first people to investigate this incident that was reported by maid Betty Gow. John Condon, a retired Bronx teacher who went by the alias "Jafsie", served as a key intermediate and eyewitness during it. This event is often referred to as the "Crime of the Century" and led to the execution of (*) Bruno Hauptmann in a New Jersey State Prison. For 10 points, name this event which involved the disappearance of the child of the man who piloted the *Spirit of St. Louis*.

ANSWER: **kidnapping** of Charles **Lindbergh** Jr. (accept equivalents; prompt on "Crime of the Century" before mentioned)

064-11-29-15110

10. Vietnamese king Le Loi was said to receive one of these objects enscribed with the words "The Will of Heaven" from a turtle. One of these objects was found in the body of an eight headed serpent killed by Susano'o. In the epic of Beowulf, Hrunting and Naegling are magic forms of this object. After the wounding of the owner of one of these objects, Bedivere casts that object into a (*) body of water where a hand emerged to catch it. That wounded owner had previously retrieved one of these objects from a stone. For 10 points, name this form of weapon, an example of which is King Arthur's Excaliber. ANSWER: swords

11. This battle was preceded by the landing at Pevesney, and it took place at Senlac Hill. This battle was preceded by the defeat of Harald Hardrata at Stamford Bridge. According to the Bayeux Tapestry, one commander at this battle died after getting struck in the (*) eye by an arrow. Two months after this battle, the victor was crowned king in London. For 10 points, name this 1066 battle in which the forces of Harold II were defeated by the Norman forces under William the Conqueror. ANSWER: Battle of Hastings

030-11-29-15112

12. The highest point of this city is the Hermannskogel. A 20-ton bell made from captured Turkish cannons can be found in this city's St. Stephen's Cathedral. This city's chief park, the Prater, is known for its giant Ferris wheel. This city is home to the Ringstrasse (RING-strah-suh), on which stands the Rathaus. This city is the headquarters for the International Atomic Energy Agency and OPEC, and this city is located on the (*) Danube River. For 10 points, name this capital of Austria. ANSWER: Vienna

030-11-29-15113

13. For spherical objects in the transition region, this interaction has a "crisis" where its multiplier drops dramatically. In the Newtonian (new-TONE-ee-uhn) region, it is equal to one half the area times a constant times density times velocity squared. When the Reynolds number is low, this quantity equals six pi times radius times viscosity times velocity, according to Stokes's law. One task in aerodynamic engineering is lowering the (*) coefficient of it. For 10 points, name this force that opposes motion through a fluid such as air?

ANSWER: drag

001-11-29-15114

14. One of these entities that represents the location of vertices on a graph is the "adjacency" type. One used to identify resemblances between two data points is a similarity type. A collection of second-order partial derivatives of a function may be collected in a Hessian one of these entities. First-order derivatives are collected in the Jacobian one. If one of these entities is (*) invertible, it is row-equivalent to an identity variety, and its determinant is nonzero. Multiplication of these entities is notably not commutative. For 10 points, name this rectangular array of numbers.

ANSWER: matrix or matrices

081-11-29-15115

15. One kingdom of this name was converted to Catholicism in the 1500's by its king Afonso I. A modern nation with this name was first led by Joseph Kasavubu. One personal ruler of this location made use of the Force Publique, which (*) cut off the hands of many unpaid workers in this location. For 10 points, give the name of that state ruled by Leopold II of Belgium, which also names two African countries separated by a same-named river that passes through Brazzaville and Kinshasa.

ANSWER: Congo [or Kingdom of Kongo; or Democratic Republic of Congo; or Congo Free State; or Belgian Congo; or Republic of the Congo; or Republique Democratique du Congo; or État Indépendant du Congo; or Republique du Congo]

16. He painted Guillaime Apollinaire as a red-jumpsuited strongman and himself as a harlequin in his Family of Saltinbanques. Featureless black figures comprise his Don Quixote, while another of his works depicts a mother crying over her dead child on the left while a disfigured horse dominates the center. Parisian prostitutes in (*) African masks appear in this artist's Demoiselles (deh-mwah-ZELZ) d'Avignon. For 10 points, name this painter whose Blue Period works preceded his co-founding of Cubism and creation of 1937's Guernica.

ANSWER: Pablo Ruiz y Picasso

019-11-29-15117

17. After World War II, this man was sent to China to try to reach an agreement between Communist and Nationalist forces. One program created by this man was announced during a speech at Harvard and led to the creation of the OECD. This man was chief of staff of the U.S. army during World War II. He developed a program which was a follow up to the U.S. policy of (*) supplying Turkey and Greece with economic aid. For 10 points, name this Secretary of State under Harry Truman who names a plan that delivered American humanitarian aid to Europe following World War II. ANSWER: George Catlett Marshall

064-11-29-15118

18. In one poem, this man calls his love a "pit of debris" and repeats the phrase "deserted like the dwarves at dawn;" that poem by this man repeats the phrase, "in you everything sank!" This man also lamented his lost love in "Tonight I can write the saddest lines." This poet included (*) "The Heights of Macchu Picchu" in his *Canto General* (hen-eh-RAL). For 10 points, name this Chilean poet of *Twenty Love Poems and a Song of Despair*.

ANSWER: Pablo **Neruda** [or Neftali Ricardo **Reves** Basoalto]

080-11-29-15119

19. The *Kebra Nagast* says this Biblical figure was the male progenitor of a line that ended in the reign of Haile Selassie. One of this figure's books contains the line "Please, catch for us the foxes in the vineyard" "the little foxes." The seven hundred wives of this figure "turned his heart after other gods," except for Naamah. This figure was the last ruler of a united Israel, wrote (*) *Ecclesiastes* and *Song of Songs*, and was visited by the Queen of Sheba. For 10 points, name this wise ruler of Israel, the son of David.

ANSWER: **Solomon** [or **Schlomo**; or **Jedidah**]

020-11-29-15120

20. This character looks upon a woman who has stolen the curtains and shirt from a dead man's room. He then sees Ignorance and Want emerge from a cloak. Earlier, he sees a door-knocker transform into a human figure, which drags a belt made of chains and locks. He recalls his relationship with Belle and a party hosted by Fezziwig after seeing the ghost of (*) Jacob Marley, then orders a large turkey to be sent to the Cratchit family. For 10 points, name this character who is visited by some time-specific ghosts in Charles Dickens's *A Christmas Carol*.

ANSWER: Ebenezer **Scrooge** [or **Ebenezer**]

019-11-29-15121

21. This object is orbited by Mayall II, which is a globular cluster. Supernova 1885A occurred here. Hubble discovered the first Cepheid variables in this region which has an apparent double nucleus. It is approximately 250,000 (*) light years across and is expected to collide with the Milky Way in several billion years. This member of the local group is item 31 in the Messier catalog. For 10 points, name this closest spiral galaxy to the Milky Way, named for a mythological princess from Greek mythology. ANSWER: Andromeda galaxy [or M31 before "31"]

22. In this market structure, the average revenue curve is equal to the demand curve, and thus the only way to increase revenue is to lower price. When the barriers to entry which create this structure manifest as extremely high infrastructure cost, this structure is said to be "natural;" examples include (*) water utilities and telecommunications. For 10 points, identify this microeconomic market structure in which a good has only one seller.

ANSWER: monopoly

019-11-29-15123

23. In a poem by this man, Mary and Warren discuss an unreliable farm hand named Silas. Another poem by this man, published in *North of Boston*, describes apple trees that will never "eat the cones" of pine trees. In one poem, this man described the world ending in either fire or ice. Another work states that "good fences make good neighbors." This poet of (*) "Mending Wall" wrote a work in which the speaker chose a path that was "grassy and wanted wear" because it was the one "less traveled by." For 10 points, name this American poet of "The Road Not Taken."

ANSWER: Robert Frost



- 1. One of this author's poems includes the lines "My hair is grey, but not with years/Nor grew it white/In a single night." For 10 points each:
- [10] Identify this poet who twisted a line from Alexander pope into "Eternal Spirit of the chainless Mind" in that poem, "The Prisoner of Chillon." His collection *Hebrew Melodies* includes "The Destruction of Sennacherib" and "She Walks in Beauty."

ANSWER: George Gordon **Byron**, 6th Baron Byron [or George Gordon **Noel**, 6th Baron Byron] [10] The title character of this long Byron work is disappointed that the wives of Suvorov and Potemkin are unattractive, making them two rare women who aren't pining for him.

ANSWER: **Don Juan**

[10] Byron produced *Mazepa* during his stay at the Villa Diadoti with the Shelleys and John Polidori, who wrote a short story about this kind of mythical being, another example of which is brought down by the crack team of Quincey Morris, Jonathan Harker, Arthur Holmwood, and Abraham van Helsing.

ANSWER: vampires

020-11-29-15201

- 2. The polymeric type of these substances was modeled by Flory and Huggins. For 10 points each:
- [10] Name these homogeneous mixtures of two or more substances. Often in these mixtures, one substance is dissolved homogeneously in another.

ANSWER: solutions

[10] These mixtures are made of a dispersed and a continuous phase. Their dispersed phase particles are typically larger than those in solutions but smaller than those in suspensions.

ANSWER: colloids

[10] This effect, in which shorter-wavelength light is scattered by dispersed phase particles, can be used to determine the size and density of unknown particles in a colloid.

ANSWER: Tyndall effect

024-11-29-15202

- 3. The protagonist of this novel meets a girl pregnant with his son's child when he goes to Shantytown. For 10 points each:
- [10] Name this novel, in which Stephen Kumalo travels to Johannesburg in order to find his son Absalom and his sister Gertrude.

ANSWER: <u>Cry, the Beloved Country</u>

[10] Cry, the Beloved Country was written by Alan Paton, an author from this country, which experienced apartheid until the 1990's.

ANSWER: Republic of South Africa

[10] Stephen Kumalo eventually learns that his son Absalom has murdered this white man, who writes "The Real Causes of Native Crime."

ANSWER: <u>Arthur</u> Jarvis [or Arthur <u>Jarvis</u>]

- 4. In 1979, this country was plunged into turmoil when President Hazifullah Amin attempted to impose an atheistic communist government. For 10 points each:
- [10] Name this Middle-Eastern country that was invaded by the Soviet Union and occupied for nearly a decade. It later come under the control of the Taliban.

ANSWER: Islamic Republic of Afghanistan [or Jomhuri-ye Eslami-ye Afghanestan]

[10] The Islamic rebel groups that fought the Soviets were collectively known by this name. They were supported by American funds.

ANSWER: Mujahideen

[10] This Soviet Premier ordered the initial intervention in Afghanistan, although he did not oversee the withdrawal of troops due to his 1982 death.

ANSWER: Leonid Ilyich **Brezhnev**

080-11-29-15204

5. Answer the following about world exhibitions and architecture, for 10 points each.

[10] This City's World's Fair of 1893 featured the White City and the original Ferris Wheel.

ANSWER: Chicago

[10] This man designed the Palace of the Fine Arts for the 1904 St. Louis World's Fair. He also designed the Woolworth Building and the U.S Supreme Court Building.

ANSWER: Cass Gilbert

[10] Joseph Paxton designed this pioneering steel-and-glass building for London's Great Exhibition of 1851. It burned down in 1936.

ANSWER: The **Crystal Palace**

001-11-29-15205

6. He was lynched in Milan in 1945 after his Nazi-engineered Republic of Salo fell. For 10 points each:

[10] Name this Fascist who seized power in the March on Rome and led Italy into World War II.

ANSWER: Benito Amilcare Andrea Mussolini

[10] In 1935, Mussolini ordered an invasion of Ethopia, attempting to avenge the 1896 humiliation at this battle where Italian forces were defeated by Menelik II's soldiers.

ANSWER: Battle of **Adowa**

[10] Among the lands that Italy occupied during World War II was this country, where Mussolini's army deposed King Zog. Later, this country became an extreme Communist state under the rule of Enver Hoxha.

ANSWER: Republic of **Albania** [or Republika e **Shqiperise**; or **Shqiperia**]

019-11-29-15206

- 7. This man recently wrote an opinion piece in the Wall Street Journal calling for PBS to be privatized. For 10 points each:
- [10] Name this junior Senator from South Carolina.

ANSWER: James Warren "Jim" **DeMint**

[10] Jim DeMint is aligned with this recent political movement calling for a decrease in government. Its name refers to an event taking place in Boston in the lead up to the American Revolution.

ANSWER: **Tea Party**

[10] Some political commentators believe this former Republican Speaker of the House from Georgia will run for president. He was a co-author of the "Contract with America."

ANSWER: Newton Leroy "Newt" Gingrich

8. The Kiel Canal connects this sea to the North Sea. For 10 points each:

[10] Name this eastern European sea found along the coasts of Latvia, Lithuania and Estonia.

ANSWER: Baltic Sea

[10] Among the inlets of the Baltic Sea is this gulf named for the capital of Latvia.

ANSWER: Gulf of Riga

[10] At the northern of the Baltic Sea lies this gulf separating Sweden and Finland.

ANSWER: Gulf of **Bothnia**

064-11-29-15208

9. Languages of this type can be decided by finite state machines, for 10 points each:

[10] Name this property of languages whose strings can be made to match a namesake type of expressions.

ANSWER: regular [or regular expressions; or regular language]

[10] Many programming languages' regular expressions are compatible with this language created by Larry Wall. Array names in this language begin with an at symbol.

ANSWER: Perl

[10] In a Perl and Java, a backslash s in a regular expression matches this type of character. Examples include spaces and tabs.

ANSWER: whitespace

001-11-29-15209

10. Answer the following about the literary career of Mikhail Bulgakov, for 10 points each.

[10] Bulgakov is by and large best known for penning this novel in which the devil in the guise of Woland arrives in Moscow and wreaks havoc.

ANSWER: The <u>Master and Margarita</u> [or <u>Master i Margarita</u>]

[10] Bulgakov produced a stage version of "Dead Souls," a story by this earlier Ukrainian-born author who wrote "Old World Landowners" and "The Overcoat."

ANSWER: Nikolai Vasilievich Gogol

[10] Bulgakov's *Country Doctor's Notebook* has nothing to do with "The Country Doctor" by this author, who also wrote "The Metamorphosis."

ANSWER: Franz Kafka

020-11-29-15210

11. This layer contains unusually hot regions known as namesake "plumes." For 10 points each:

[10] Name this layer of the Earth between the core and the crust.

ANSWER: mantle

[10] The upper part of the mantle abuts this discontinuity between the mantle and the crust.

ANSWER: Mohorovicic discontinuity

[10] This magnesium iron silicate mineral, and its high-pressure variants, make up more than half of the mantle.

ANSWER: olivine

12. Numerous domestic protests took place during the Vietnam War. For 10 points each:

[10] A 1970 protest at this Ohio university led to the killing of four students by National Guard members.

ANSWER: **Kent State** University

[10] In 1968, this woman led a protest in Washington, D.C. Earlier, she served as the first woman in Congress, where she was the only member to vote against U.S. entry in World War II.

ANSWER: Jeanette Pickering Rankin

[10] This co-founder of the Yippy movement was arrested as one of the Chicago Eight during the 1968 DNC in Chicago. Earlier, he led a 1967 protest against the Vietnam War in which he attempted to levitate the Pentagon.

ANSWER: Abbie Hoffman

064-11-29-15212

13. The main characters of this work kill a creature called the Bull of Heaven. For 10 points each:

[10] Name this Mesopotamian epic about a king of Uruk.

ANSWER: Epic of Gilgamesh

[10] The Bull of Heaven was sent by this Babylonian god of fertility and lover of Tammuz.

ANSWER: Ishtar

[10] Later in the work, Gilgamesh meets this man who had earlier survived the great flood.

ANSWER: **Utnapishtim**

064-11-29-15213

14. In one novel in which he appears, this character narrates a story in which another character abandoned the *Patna* and ended up on Patusan. For 10 points each:

[10] Name this recurring character who recounts another tale while onboard the Nellie.

ANSWER: Charles Marlow

[10] Marlow was created by this English author of *Lord Jim* and *Nostromo*.

ANSWER: Joseph Conrad [or Józef Teodor Konrad Korzeniowski]

[10] Marlow serves as the narrator and main character of this Conrad work about a trip to the Congo featuring the death of Kurtz after he speaks of "the horror."

ANSWER: *Heart of Darkness*

023-11-29-15214

15. This man used the alteregos Florestan and Eusebius in his music. For 10 points each:

[10] Name this composer of the cantata *The Paradise and the Peri*, the *F-A-E Sonata*, and the *Spring Symphony*.

ANSWER: Robert Schumann

[10] This third symphony by Schumann is named after a river in Europe.

ANSWER: Symphony No. 3 in E-flat Major, Op. 97, "Rhenish"

[10] Schumann wrote music for "Scenes from" this work. Gounod wrote an opera based on it and it was the basis for Schubert's *Gretchen at the spinning wheel*

ANSWER: Goethe's Faust

- 16. This driver was named Rookie of the Year in 2000 and currently drives the #17 Ford for Roush Fenway. For 10 points each:
- [10] Name this racer, who won the 2009 Daytona 500 and whose clinching of the 2003 Sprint Cup championship while winning only one race led the to the "chase for the cup" being implemented.

ANSWER: Matt Kenseth

[10] Matt Kenseth is a driver for this race sanctioning body, which operates the Sprint Cup and Nationwide series among other widely attended events.

ANSWER: NASCAR [or the National Association for Stock Car Auto Racing, Inc.]

[10] As a rookie in 2000, Kenseth won this race, held in Charlotte, which is the longest race in NASCAR.

It is held on the evening before Memorial Day, just hours after the Indianapolis 500.

ANSWER: the **Coca-Cola 600** [prompt on partial answer]

019-11-29-15216

17. In the wake of this event, the Hagia Sophia was renovated as the Ayasofya Mosque. For 10 points each: [10] Identify this 1453 military action, which heralded the death of Constantine XI and the end of the Byzantine Empire.

ANSWER: the Ottoman <u>conquest of Constantinople</u> [or <u>fall of Constantinople</u> or <u>siege of Constantinople</u> or other equivalents]

[10] This Ottoman sultan led the siege of Constantinople and went on to conquer the Byzantine rump states of Morea and Trebizond.

ANSWER: Mehmet II [prompt on Mehmet]

[10] These elite Ottoman troops were a deciding factor in the siege. They were generally recruited from Christian families in the Balkans through the *devisherme* system.

ANSWER: Janissaries

019-11-29-15217

- 18. When this occurs with an electron, photons in the gamma ray frequency are produced.
- [10] Name this event that occurs when a particle and its antiparticle collide.

ANSWER: annihilation

[10] This is the antiparticle of an electron.

ANSWER: **positron**

[10] This is the process by which photons interacting with atomic nuclei create both an electron and positron.

ANSWER: pair production

001-11-29-15218

- 19. The terms of their labor were improved by the Robot Patent in Austria. For 10 points each:
- [10] Name these people who were bound to the land and had to pay rent in cash or kind to lords in the European feudal system.

ANSWER: serfs

[10] Serfs often worked on these lands, which were given by more powerful rulers to their vassals in exchange for military service.

ANSWER: fiefs

[10] This part of a fief or other manor was used to support the lord's household directly and was not rented out to serfs.

ANSWER: the **demesne** (deh-MAIN)

20. Amedee Ozenfant pioneered a variation of this art movement known as "Purism". For 10 points each:

[10] Name this avant-garde art movement broken up into "analytic" and "synthetic" periods, whose practitioners include Juan Gris and Georges Braque.

ANSWER: cubism

[10] This 1907 Pablo Picasso painting of five nude prostates is considered to be an important forerunner of Cubism.

ANSWER: Les Demoiselles d'Avignon

[10] A color-saturated offshoot of Cubism, Orphism, was pioneered by this husband and wife team of Sonia Terk and Robert, whose works include *Windows Open Simulaneously* and *Eiffel Tower*.

ANSWER: **Delaunay**

082-11-29-15220

21. Part of the story of this holiday includes an insomniac king lulled to sleep by reading the court record, leading that king to reward Mordechai and save him from Haman. For 10 points each:

[10] Name this Jewish holiday celebrated on the 14th of Adar.

ANSWER: Purim

[10] This wife of Ahasuerus foils Haman's plot by exposing Haman's scheme and her Jewish heritage, leading to Haman being hanged.

ANSWER: Esther

[10] Cities that were walled during the time of Joshua celebrate Purim on the 15th, as does this holy city of Judaism, home to the former temple wall referred to as the "Wailing Wall."

ANSWER: Jerusalem