



Question #1: Social Studies

10 points

After seeing the effects of torture in this country, **Frantz Fanon** [frahts fah-naw] joined its National Liberation Front. This country gained independence from the Évian Accords, after which many Muslims known as *harkis* who had supported Europeans were slaughtered. The popularity of the Islamic Salvation Front in this country led to a brutal civil war in the 1990s that ended with the rise of **Abdelaziz Bouteflika** [abd-ah-zeez boot-flee-kah]. This country's first president was Ahmed Ben Bella. Name this country in northern Africa which from 1954 to 1962 fought for independence from France.

(People's Democratic Republic of) **Algeria** [or al-Jumhuriyah al-**Jaza'**iriyah ad-Dimuqratiyah ash-Sha'biyah]

Question #2: Literature

10 points

Berlin and Kay studied the “basic” words for these concepts in 20 world languages in the 1960s, theorizing that languages acquired these terms in eight stages of distinction. Roger Brown and Eric Lenneberg started a tradition of using words for these concepts to test theories of linguistic relativity. The Japanese word “**aoi**” [“ow”-ee] describes concepts of this type that have two different basic English names. Many English words for these concepts are descriptive analogies to real-world objects, such as “rose”, “emerald”, and “violet”. Name this type of concept that can be denoted in Spanish by the words “**rojo**” [ROH-hoh] and “**azul**” [ah-ZOOL].

colors [accept any reasonable answer containing **color**]



Question #3: Science

10 points

<p>As an adjective, this term describes neurons found in hominids and large sea animals that were discovered by Constantin von Economo. As a noun, this term can refer to the sensory receptors that encourage muscle contraction through the stretch reflex. This term also refers to structures that attach to kinetochores [kih-“NET-oh-cores”] on chromatids [KROH-muh-tidz], and which are used in mitosis [my-TOH-siss] to separate sister chromatids. Give this term used for those “fibers” that are named for their shape resembling a rod used to spin wool.</p>	<p><u>spindle</u>(s)</p>
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Question #4: Miscellaneous

10 points

<p>This person is the namesake of an award for “best journalistic effort by an individual with three years professional experience or less” given by The New York Press Club. As a young reporter for the <i>Pittsburgh Dispatch</i>, this person wrote <i>Six Months in Mexico</i>. This person then got a job at the <i>New York World</i> and went undercover at Blackwell’s Island in a series of articles that led to more money being spent at the Department of Public Charities and Corrections. Two years later, this journalist went on a highly publicized world record-breaking trip. Name this woman who wrote <i>Ten Days in a Mad-House</i> and <i>Around the World in Seventy-Two Days</i>.</p>	<p>Nellie Bly [or Elizabeth Jane Cochran]</p>
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Question #5: Mathematics

10 points

<p>When there are multiple ways for data to have this quality, the Bonferroni correction should be used. A determination as to whether this quality exists commonly uses the number of degrees of freedom and the t-value. Data has this quality when its p-value is less than a pre-selected alpha value. The number assigned to this quality is sometimes 1 minus the confidence level. The level of this quality is determined by a hypothesis test. Name this description of data that causes a rejection of the null hypothesis.</p>	<p>statistically significant or statistical significance</p>
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Question #6: Literature

10 points

<p>This poem mentions the “matron and maid”, the “speechless babe”, “the gray-headed man”, and “hoary seers of ages past”. This poem speaks of the “continuous woods / Where rolls the Oregon” and the “Barcan wilderness”, saying that “the dead reign there alone.” This poem tells its reader “To be a brother to the insensible rock” and that the oak will “pierce thy mould”. This poem invites its reader to “join / The innumerable caravan” and to “[lie] down to pleasant dreams” during the “last bitter hour”. Name this poem about death written by William Cullen Bryant.</p>	<p>“Thanatopsis” [than-uh-“TOP”-siss]</p>
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Question #7: Mathematics

10 points per part

The set of parametric equations x equals $a \cos t$ and y equals $a \sin t$ and z equals bt generates a helix.	
1	The helix can be drawn on the surface of one of these three-dimensional surfaces. The helix generated by the equation given earlier is on one of these surfaces with radius equal to a and with infinite height.
2	This property of a curve at a point is the reciprocal of the radius of the osculating [AHSS-kyoo-lay-ting] circle at that point. For the helix equation, this value equals a over the quantity a squared plus b squared.
3	This measure gives a curve's rate of twist. For the helix equation, this value equals b over the quantity a squared plus b squared.

(right) (circular) cylinder

curvature

torsion

Question #8: Mathematics

10 points per part

Given a set of parametric equations, name the shape of its graph if t goes from negative infinity to infinity. A one-word answer is sufficient for each part.	
1	[Read each part slowly.] x equals the tangent of t and y equals the secant of t
2	x equals $3t$ plus 1 and y equals $4t$ minus 3
3	x equals the cosine of $k t$ and y equals the sine of $n t$, where k and n are constants not equal to each other

hyperbola [or hyperbolic]

line [or linear]

Lissajous [leess-uh-zhoo] curve or **Lissajous** figure or **Bowditch** curve



Question #9: Social Studies

10 points per part

The five-factor model is one way in which psychologists seek to understand this concept.		
1	Name this usually-stable collection of traits and behaviors that define an individual.	<u>personality</u>
2	Kevin Leman and Frank Sulloway have written that this factor has a major impact on personality. Kevin Leman’s book on this topic is subtitled <i>Why You Are the Way You Are</i> .	<u>birth order</u> [accept any reasonable description related to the idea of the order in which children are born]
3	The inferiority complex was central to this Austrian psychologist’s conception of personality development.	Alfred <u>Adler</u>

Question #10: Social Studies

10 points per part

Defense mechanisms are ways that people protect themselves from conflict or anxiety.		
1	Much work on defense mechanisms was carried out by this psychologist who pioneered child psychoanalysis and worked with Melanie Klein.	<u>Anna Freud</u> [prompt on <u>Freud</u>]
2	This defense mechanism is defined as falsely denying a quality in oneself while attributing that quality to other people.	<u>projection</u> [or <u>projecting</u>]
3	This defense mechanism consists of acting in an exaggeratedly opposite way to undesirable emotions.	<u>reaction formation</u>



Question #11: Literature

10 points per part

This character is the subject of an epic that begins with his father Dasharatha [dahsh-ah-RAH-trah], who has a child with each of his three wives.		
1	Name this avatar of Vishnu who rescues his wife Sita from Ravana.	Rama [prompt on <i>Ramayana</i>]
2	The <i>Ramayana</i> was originally written in this language.	Sanskrit
3	This man helps Rama find his wife. In exchange, Rama kills this man's younger brother Vali so that this man can be king.	Sugriva [soo-GREE-vah]

Question #12: Literature

10 points per part

This Norse god used an object that was very similar to the Ukonvasara [OO-kun-VAH-sah-rah] from Finnish mythology.		
1	Name this son of Odin, the god of thunder.	Thor
2	This is the name of Thor's hammer.	Mjöllnir [mee-YOHL-neer]
3	In one poem, Thor borrows a cloak made of these objects so that he can disguise himself as the goddess Freyja [FRAY-uh].	falcon feathers



Question #13: Fine Arts

10 points per part

Identify these positive jazz songs:		
1	Louis Armstrong recorded the most popular version of this song. It begins “I see trees of green, red roses too; I see them bloom for me and you.”	“ <u>What a Wonderful World</u> ”
2	Irving Berlin wrote this song for a Rodgers and Hart musical, and it became a title song in a Bing Crosby movie. The title thing is “smiling at me”, and the second verse is “Bluebirds singing a song, / Nothing but bluebirds all day long.”	“ <u>Blue Skies</u> ”
3	This Harold Arlen and Ted Koehler song is sometimes combined with “Happy Days Are Here Again”. Its lyrics state that you should “Pack up your troubles and just” do this.	“ <u>Get Happy</u> ”

Question #14: Fine Arts

10 points per part

The ensemble Sphere took its name from this musician’s middle name.		
1	Name this musician and composer of the songs “Round Midnight” and “Straight, No Chaser”.	Thelonious (Sphere) <u>Monk</u>
2	Like Dave Brubeck and Duke Ellington, Monk played this instrument.	<u>piano</u> [accept <u>keyboards</u>]
3	Monk wrote this 1947 song to honor another pianist. A variety of stories explaining why Monk wrote this song claim that the pianist was hit over the head.	“ <u>In Walked Bud</u> ”



Question #15: Science

10 points

This person outlined a technique for finding reaction order in his text *Études de dynamique chimique* [ay-tood deh dee-nah-meeek shee-meeek]. A rule named for this person and Joseph Achille Le Bel [zhoh-seff ah-sheel leh bel] states that the number of stereo*isomers of an organic compound is a power of 2. A formula named for this person gives the derivative of the equilibrium constant with respect to temperature. The ratio of the actual concentration of a dissolved substance to the concentration predicted by mass is the “factor” named for this scientist. The Arrhenius [ah-REN-yooss] equation was based on this chemist’s work with equilibrium constants. Name this Dutch recipient of the first Nobel Prize in Chemistry.

Jacobus Henricus van ’t Hoff (Jr.) [prompt on Hoff]

Question #16: Social Studies

10 points

In this city there is a pair of waterfalls where the Rideau [rid-oh] River ends. Until 1855, this city was named for the engineer who oversaw construction of the Rideau Canal, Colonel John By. In 2001 this city absorbed its surrounding Carleton County. The Peace Tower clocktower is at the front of Centre Block on this city’s Parliament Hill. A famous residence in this city has the address 24 Sussex Drive. This city, whose namesake river meets the St. Lawrence River in Montreal, is the second most populous in Ontario. Name this capital city of Canada.

Ottawa, Ontario



Question #17: Fine Arts

10 points

A marble sculpture by this artist shows a woman with her right foot just off the ground and with a floral wreath around her wrist rather than on her head. That work is *Dancer with Finger on Chin*. Another sculpture by this artist, which shows a woman reclining on a couch and holding an apple near her thigh, is called *Venus Victrix* but actually shows Napoleon's sister Pauline Bonaparte. Name this Neoclassicist who portrayed a woman just after she had been revived by a god in *Psyche [SY-kee] Revived by Cupid's Kiss*.

Antonio Canova

Question #18: Literature

10 points

In a short play by this author, the Admirer and Girl-Admirer anxiously await the arrival of the leader only to find out the leader has no head. In another play by this writer, a girl in a tutoring session has memorized her products, but a toothache distracts her from linguistics and the Professor stabs her. This playwright created a couple that realizes they met on a train from Manchester to London, the Martins, who host Mr. and Mrs. Smith, who claim that the title figure always styles her hair the same way. Name this absurdist playwright of *The Lesson* and *The Bald Soprano*.

Eugène Ionesco [or Eugen Ionescu]



Question #19: Social Studies

10 points

This person's autobiography, which was told to Antoine LeClaire and edited by J. B. Patterson, contradicts John Shaw's version of the Battle of the Sink Hole. This person fought against the United States after disputing the Treaty of St. Louis, and he called his group the British Band. This leader successfully fled the Battle of Wisconsin Heights, but his forces were slaughtered after he left the Battle of Bad Axe. Name this Sauk leader who in 1832 was the namesake of a war involving Winfield Scott, Jefferson Davis, and Abraham Lincoln.

Black Hawk [or Black Sparrow Hawk or Makataimeshekiakiak]

Question #20: Science

10 points

The single-scattering form of this quantity equals the ratio of the scattering coefficient to the extinction coefficient. George Phillips Bond is the namesake of a type of this quantity equal to the phase integral times the geometric form of this quantity. Some of the earliest known features of Mercury and Mars were named for this quantity because they were identified due to having unusual values for it. The Bond type of this quantity is always less than one, but the geometric type is greater than one for objects such as Enceladus [en-SELL-uh-duss]. Name this astronomical measure of how reflective a surface is.

albedo [al-BEE-doh]



Question #21: Mathematics

10 points per part

Find these probabilities when rolling fair, six-sided dice. Give fully simplified answers.		
1	Find the probability of getting a 2 <i>or</i> a 3 when you roll one die.	<u>1/3</u> or <u>0.3 repeating</u>
2	Find the probability of getting a <i>sum</i> of 2 or 3 when you roll <i>two</i> dice.	<u>1/12</u> or <u>0.083 repeating</u>
3	Find the probability of getting a sum of 3 when you roll <i>three</i> dice.	<u>1/216</u>

Question #22: Mathematics

10 points per part

Consider the constraints [read slowly] $2x$ plus y is less than or equal to 10 [pause] and x plus $2y$ is less than or equal to 8.		
1	Find the point of intersection of the lines $2x$ plus y equals 10 and x plus $2y$ equals 8.	<u>(4, 2)</u> or <u>$x = 4$ and $y = 2$</u>
2	Evaluate the expression $4x$ plus y at the point "4 comma 2".	<u>18</u>
3	Find the largest possible value of $4x$ plus y given the stated constraints and that x and y are both non-negative. Make sure you give the value rather than the point at which it occurs.	<u>32</u>



Question #23: Science

10 points per part

Bleeding stops when a clot forms from fibrin and these things.		
1	Name these components of blood that are not plasma, red blood cells, or white blood cells.	platelets [or thrombocytes]
2	The “factor” named for this person is a protein that helps platelets adhere to collagen [KAH-luh-jin]. A bleeding disease also named for this person is due to problems with that protein.	Erik Adolf von Willebrand [fawn VIL-eh-brahnd] [accept von Willebrand factor; prompt on partial last name]
3	These bone marrow cells are responsible for creating platelets.	megakaryocytes [“mega-CARRY-oh-sites”]

Question #24: Science

10 points per part

The first paper in the first issue of the journal <i>Genetics</i> was written by Calvin Bridges and described this problem.		
1	Name this failure of chromosomes or chromatids [KROH-muh-tidz] to separate properly that results in aneuploidy [AN-yoo-ploy-dee].	nondisjunction
2	Nondisjunction can cause this “syndrome” in which a person has one X chromosome and no Y chromosomes.	Turner syndrome [prompt on monosomy X or 45. X monosomy]
3	Nondisjunction is often caused by problems with this protein complex that holds sister chromatids together until anaphase [“AN-uh-phase”].	cohesin [koh-HEE-sin]



Question #25: Literature

10 points per part

The last part of this novel turns on what happened to Robbie Turner at Dunkirk during World War II.		
1	Name this novel in which Briony Tallis accuses Robbie Turner of rape.	<i><u>Atonement</u></i>
2	This British author wrote <i>Atonement</i> .	Ian <u>McEwan</u>
3	In <i>Atonement</i> , Briony Tallis reads this author's novel <i>The Waves</i> . Critics claim that the dinner scene in <i>Atonement</i> is a parody of this author's <i>To the Lighthouse</i> .	(Adeline) Virginia <u>(Stephen) Woolf</u> [accept either underlined name]

Question #26: Literature

10 points per part

In this novel, a vacuum cleaner salesman gets a job working for British intelligence so he can spend more money on his daughter Milly.		
1	Name this novel set in the regime of Fulgencio Batista [fool-HEN-see-oh bah-TEES-tah]. Its author worked for British intelligence in Sierra Leone during the Second World War.	<i><u>Our Man in Havana</u></i>
2	This Catholic author wrote <i>Our Man in Havana</i> as well as <i>The Power and the Glory</i> .	(Henry) Graham <u>Greene</u>
3	Graham Greene also wrote this novel about Alden Pyle in Vietnam.	<i>The <u>Quiet American</u></i>



Question #27: Social Studies

10 points per part

The real name of the plaintiff in this Supreme Court case was Norma McCorvey, and the defendant was the Dallas County District Attorney.		
1	Name this 1973 case that established the right to obtain an abortion. It was decided alongside <i>Doe v. Bolton</i> .	<u>Roe v. Wade</u> [accept either underlined name]
2	<i>Roe v. Wade</i> was one of several decisions that weakened an 1873 obscenity law named after this Congressman.	Anthony <u>Comstock</u>
3	This 1965 decision also weakened the Comstock Act, voiding a state law against contraception.	<u>Griswold v. Connecticut</u> [prompt on <u>Connecticut</u>]

Question #28: Social Studies

10 points per part

Near the beginning of this President's second term, he was shot by anarchist Leon Czolgosz [CHAWL-gawsh] while attending the Pan-American Exposition in Buffalo.		
1	Name this president who was succeeded by Teddy Roosevelt in 1901.	William <u>McKinley</u>
2	McKinley supported the annexation of Hawaii and left this lawyer in charge of it when Hawaii became a U.S. territory.	Sanford (Ballard) <u>Dole</u>
3	The congressional resolution annexing Hawaii was named for this congressman. He later authored the Reclamation Act that funded irrigation projects in the West.	Francis G(riffith) <u>Newlands</u>



Question #29: Science

10 points

This phenomenon is used in junctions in magnetic random access memory cells and multi-junction solar cells. The ability of superconducting Cooper pairs to take part in this phenomenon was predicted by Brian Josephson. During the 1980s, **Gerd Binnig** [gairt binnik] and Heinrich Rohrer developed a microscope based on this phenomenon. George **Gamow** [GAM-awf] explained alpha particles escaping from a nucleus using this phenomenon. Name this quantum effect in which a particle passes through a barrier despite not having enough energy to do so.

quantum tunnelling

Question #30: Social Studies

10 points

This event started with criticism over the failure to repay a loan to **Onorato Caetani** [“oh-no”-RAH-toe kay-TAH-nee] and a meeting at his court in Fondi, at about the same time that the War of the Eight Saints ended. Meetings in Pisa that were intended to end this event ended up exacerbating it. This event was effectively ended when Martin V was selected by the Council of Constance in 1417, though some people continued to support Benedict **XIII** [13], who was labelled an antipope. Name this period when three people claimed to be the Pope.

Western Schism [or Papal Schism or Great Schism]



Question #31: Mathematics

10 points

The tree named after this person looks very similar to an H tree. A picture generated by this person's work has a circle with a radius of $\frac{1}{4}$ centered at $(-1, 0)$ ["negative one comma zero"]. That circle touches a cardioid, and they both touch smaller circles. This person used the formula " z squared plus c " to generate that picture, with different colors representing the number of times that equation must be used before diverging. Name this 20th-century mathematician who wrote about self-similarity in his book *The Fractal Geometry of Nature*.

Benoit (B.) Mandelbrot
[ben-wah man-del-brawt]

Question #32: Literature

10 points

This author created a character who is sometimes mistakenly called Spink-Bottle and is obsessed with newts. That character, Gussie Fink-Nottle, is engaged to marry Madeline Bassett, whose father Watkyn owns **Totleigh** ["TOT"-lee] Towers. Gussie exchanges identities with one of this author's characters in *The Mating Season*. Several of those characters try to obtain an antique cow creamer in this author's *The Code of the Woosters*, which is about Bertie Wooster and his **valet** [VAL-it]. Name this English author who also wrote *Right Ho, Jeeves*.

P(elham) G(renville)
Wodehouse



Extra Question #1: Fine Arts

10 points

Rafael Kubelik, a countryman of this composer, said that the trumpets opening the final movement of this composer's eighth symphony are a call to dance. Most of this composer's symphonic poems were inspired by Karel Jaromír Erben's ["Carl" YAR-oh-meer ER-ben'z] poems, including *The Water Goblin* and *The Noon Witch*. Adolf Heyduk's ["HI-duke's"] poems inspired this composer's *Gypsy Songs*, which include "Songs My Mother Taught Me". This composer's interest in American spiritual music influenced his last symphony. Name this Czech composer of *From the New World*.

Antonín (Leopold)
Dvořák [ahn-toh-NEEN
d'VOR-zhahk]

Extra Question #2: Mathematics

10 points

This term refers to the axiomization possible under Von Neumann-Bernays-Gödel [vawn NOY-mun bur-NAYSS "girdle"] set theory but not Zermelo-Fraenkel set theory. The type of set named for Dedekind and this concept does not have any proper subsets that have the same cardinality as the original set. If this adjective describes the radius of a set, the set is bounded. This adjective describes a set whose cardinality is an integer. This adjective is sometimes used as an alternative to "discrete" in describing a branch of mathematics. Name this adjective referring to objects that do *not* go on forever.

finite(ly) [do not accept
"infinite"]



Extra Question #3: Science

10 points

Soreness in this part of the body is called **stomatitis** [stoh-muh-“TIE”-tiss] and often comes from an **aphthous** [AF-thuss] ulcer. This is the most common place in humans to find the bacteria *Streptococcus mutans* [strep-toh-“COCK-us MUTE”-anz]. The top and bottom of this body part each have an **alveolar** [al-vee-OH-lur] ridge. The top of this body part is comprised of the hard palate and soft palate, the latter of which has a projection called the **uvula** [OOV-yoo-luh]. The **gingiva** [JIN-jih-vuh] in this body part are commonly called the gums. Name this part of the body that contains teeth.

mouth [or oral cavity or buccal cavity]

Extra Question #4: Social Studies

10 points

In a confrontation on Pennsylvania Avenue, this person beat Congressman William Stanbery with a cane. This person resigned as governor of Tennessee following a very public divorce, then married Tiana Rogers when he joined the Cherokee nation. He was removed as governor of a different state for refusing to support the Confederacy. This person’s ankle was wounded during a decisive victory that took his troops 18 minutes: the defeat of Santa Anna at San **Jacinto** [juh-SIN-toh]. Name this leader of Texas who is the namesake of its most populous city.

Sam(uel) Houston



Extra Question #5: Literature

10 points

One poem by this writer is named for somebody who lost a singing contest against Corydon in one of Virgil's *Eclogues*. That poem makes references to an earlier work this poet based on a Joseph Glanvill story, whose protagonist is a poor scholar who leaves Oxford. This writer of "Thyrsis" [THUR-siss] and "The Scholar-Gipsy" wrote another poem in which pebbles "Begin, and cease, and then again begin". That poem by this author ends by comparing the world to "a darkling plain ...Where ignorant armies clash by night". Name this English poet of "Dover Beach".

Matthew Arnold



Extra Question #6: Social Studies

10 points per part

Voltaire famously said that the three words in the name of this entity were all incorrect.		
1	Give this term for the territories that were ruled by Charlemagne and many Habsburgs.	<u>Holy Roman Empire</u>
2	This son of Charlemagne was the co-emperor near the end of Charlemagne’s life and took over when Charlemagne died.	<u>Louis the Pious</u> or <u>Louis the Fair</u> or <u>Louis the Debonaire</u> or <u>Louis I</u> [prompt on <u>Louis</u>]
3	This son of Henry the Fowler revived the concept of the Holy Roman Empire when he was crowned by the Pope in 962.	<u>Otto I</u> or <u>Otto the Great</u> [prompt on <u>Otto</u>]

Extra Question #7: Social Studies

10 points per part

This explorer started Santa María de la Antigua, the first permanent city started by a European in the Americas.		
1	Name this Spanish explorer who stood on a peak in Darién [dar-ee-EN] to become the first European to see the American coast of the Pacific Ocean.	Vasco Núñez de <u>Balboa</u> [vahss-koh NOON-yez day bahl-BOH-ah]
2	Balboa was beheaded after being accused of trying to gain power from this man, his father-in-law.	Pedro <u>Arias</u> Dávila or <u>Pedrarias</u> [prompt on <u>Dávila</u>]
3	Pedro Arias Dávila started the city that is now the capital of this country. Arnulfo Arias [ar-NOOL-foh AR-ee-ahss] led this country three times in the 20th century, and his widow led it at the beginning of the 21st century.	(Republic of) <u>Panama</u> [or (República de) <u>Panamá</u>]



Extra Question #8: Science

10 points per part

This organization's headquarters is on the border of France and Switzerland.		
1	Name this group whose Large Hadron [HAYD-rah] Collider isolated the Higgs boson [BOH-zahn].	CERN [or European Organization for Nuclear Research or Conseil Européen pour la Recherche Nucléaire]
2	This engineer, who started working at CERN in 1989, is credited for inventing the World Wide Web with Robert Cailliau [kyl-yao].	(Sir) Tim(othy John) Berners-Lee
3	CERN produced anti-hydrogen, which scientists hope will help solve this problem about why there is more matter than antimatter.	baryon ["BARE"-ee-ahn] asymmetry [or matter asymmetry]

Extra Question #9: Science

10 points per part

This unit is the SI base unit of luminous intensity.		
1	Identify this unit whose name is the Latin word for the common item originally used to define it.	candela [kan-DEL-uh] [prompt on candle]
2	This unit of luminous flux is derived by multiplying the intensity, in candelas, by the solid angle, in steradians [steh-RAY-dee-unz], through which the light passes. Dividing this unit by a square meter gives a lux.	lumen
3	The candela used to be defined using one of these idealized objects that absorbs all electromagnetic radiation.	black body /ies [or Planck radiators]