



### Question #1: Social Studies

10 points

This president's criticism of currency stabilization during his first year in office prevented any agreements at the London Economic Conference despite the efforts of Secretary of State Cordell Hull. Long before President Nixon took the final step, this president took the United States off the gold standard. The Banking Act establishing the Federal Deposit Insurance Corporation and the National Industry Recovery Act were signed at the end of this president's Hundred Days to help the U.S. get out of the Great Depression. Name this president whose domestic policy was the New Deal.

Franklin Delano  
Roosevelt [prompt on  
Roosevelt; accept FDR]

### Question #2: Science

10 points

One animal in this class can entrench itself between rocks by inflating its lungs; that animal is the chuckwalla. These animals' skin is formed from pleated sheets of alpha- and beta-keratin. The first known animal of this class was the *Hylonomus* ["hi"-LAH-nuh-muss], which lived in the Carboniferous [kar-buh-NIF-uh-russ] period, and the Mesozoic [meh-so-ZOH-ik] era is called the "Age of" these animals. Most of the surviving animals in this class are in the order *Squamata* [skwah-MAH-tuh]. These animals were the first amniotes [AM-nee-"oats"], meaning that they laid eggs on land before birds. Name these vertebrates with dry and scaly skin, among which are dinosaurs and snakes.

reptiles or Reptilia



### Question #3: Literature

10 points

This work's narrator compares the sound of a train to the scream of a hawk and calls the train a "traveling demigod, this cloud-compeller." The slave Cato Ingraham is a neighbor of this book's narrator, who is visited by the poet William Ellery Channing. The narrator works barefoot while weeding his bean-field, and he spends 28 dollars and 12 and a half cents to build a house on a plot of land described in the section "Where I Lived, and What I Lived For". The narrator of this book "went to the woods...to live deliberately". This nonfiction book is set near Concord, Massachusetts. Name this memoir about life on a pond by Henry David Thoreau [thuh-ROH].

Walden; or, *Life in the Woods*

### Question #4: Fine Arts

10 points

This sculptor's depictions of Saints Petronius and Proclus [PROH-kluss] are at the Arca di San Domenico [doh-MEH-nee-koh] in Bologna [boh-LOHN-yah]. This sculptor showed the baby Jesus almost ready to take a step away from Mary, who is holding his hand, for a sculpture now located at Church of Our Lady in Bruges [broozh], Belgium. This person's work for the tomb of Pope Julius II shows Moses with horns on his head. This artist's work on display at the Galleria dell'Accademia [gahl-lair-EE-ah del-ah-kah-DAY-mee-ah] in Florence shows David holding his slingshot over his shoulder. Name this High Renaissance artist who painted the ceiling of the Sistine [SIS-teen] Chapel.

Michelangelo (di Lodovico) Buonarroti (Simoni) [accept either underlined name]



**Question #5: Mathematics**

10 points

The sum of powers of one-fourth is used to find the area inside this shape in an **Archimedes** [ar-kuh-MEE-dees] book about *The Quadrature of* this shape. This shape is generated in polar coordinates by graphing  $r$  equals a number divided by the quantity 1 plus the cosine theta. Parallel rays entering this shape all reflect to the same point, which is why three-dimensional versions of it are used as microphones or satellite dishes. This shape is generated by slicing a cone parallel to the slant surface. Name this shape generated by the equation  $y$  equals  $x$  squared.

parabola [prompt on paraboloid or conic section]

**Question #6: Social Studies**

10 points

The land for this state's early Wright Flying School became Maxwell Air Force base. The Army **Materiel** [muh-teer-ee-EL] Command center is headquartered in this state's Redstone Arsenal, which is also home to NASA's Marshall Space Flight Center. This state's metal production caused one of its cities to be nicknamed "the Pittsburgh of the South" and the annual football game between its two largest universities to be called the Iron Bowl. This state's namesake river flows through Selma before emptying into the Gulf of Mexico at **Mobile** [MOH-bul]. Name this American state whose most populous city is Birmingham.

Alabama



**Question #7: Science**

*10 points per part*

These objects are called “short-period” if they orbit in less than 200 years, or “long-period” if they take more.		
<b>1</b>	Name this type of object in space. Edmond Halley made calculations related to one of them.	<u>comets</u>
<b>2</b>	Scientists believe that long-period comets originate in this region named for a Dutch scientist.	(Öpik-)Oort Cloud
<b>3</b>	This NASA spacecraft blasted a crater on the comet Tempel 1 in 2005 to study its <b>ejecta</b> [ee-JEK-tuh].	<i>Deep Impact</i>

**Question #8: Science**

*10 points per part*

This moon has craters named for Voltaire and Jonathan Swift.		
<b>1</b>	Name this moon of Mars that is smaller and more distant than Phobos.	<u>Deimos</u>
<b>2</b>	This most-distant major moon of Saturn is known for its distinctive equatorial ridge and two-tone coloring. It is Saturn’s third-largest moon.	<b>Iapetus</b> [“eye-APP”-ih-tuss]
<b>3</b>	<b>Nereid</b> [NAIR-ee-id] is the outermost major moon of this planet. This planet’s largest moon by far is Triton.	<u>Neptune</u>



**Question #9: Literature**

*10 points per part*

In this novel, mastodons are found on the coast of the <b>Lidenbrock</b> ["LIE"-den-brahk] Sea.		
<b>1</b>	Name this early science fiction novel in which Axel and his professor uncle voyage into an Icelandic volcano and find life along the subterranean <b>Hansbach</b> [HAHNZ-bahk] River.	<u><i>Journey to the Center of the Earth</i></u> [or <u><i>Voyage au centre de la Terre</i></u> ]
<b>2</b>	This French author wrote <i>Journey to the Center of the Earth</i> , as well as other adventure works like <i>Around the World in Eighty Days</i> and <i>Twenty Thousand Leagues Under the Sea</i> .	<b>Jules (Gabriel) Verne</b> [zhool vairn]
<b>3</b>	In <i>Twenty Thousand Leagues Under the Sea</i> , Pierre Arronax and Ned Land end up aboard this submarine built by Captain Nemo.	<u><i>Nautilus</i></u>

**Question #10: Literature**

*10 points per part*

The protagonist of this novel sings “Amazing Grace” and “Heartbreak Hotel” to herself because those songs were outlawed.		
<b>1</b>	Identify this novel about <b>Offred</b> ["of Fred"]. It is set in the Republic of Gilead.	<i>The <u>Handmaid’s Tale</u></i>
<b>2</b>	This Canadian author wrote <i>The Handmaid’s Tale</i> .	Margaret (Eleanor) <u><b>Atwood</b></u>
<b>3</b>	Serena Joy, the wife of the Commander, shows Offred a picture of this person, whom Offred had last seen in a grocery store.	Offred’s <u><b>daughter</b></u> or her <u><b>child</b></u>



**Question #11: Mathematics**

*10 points per part*

John Tukey used this term to mean values that are under the first quartile by more than 1.5 times the interquartile range, or more than the third quartile by more than 1.5 times the IQR.		
<b>1</b>	Give this term that, in general, means a value in a data set that is very different from most of the data.	<b>outlier(s)</b>
<b>2</b>	Outliers are often plotted as points on these diagrams showing the five-number summary.	<b>box(-and-whisker) plots</b>
<b>3</b>	Box plots often have a segment in the middle to represent this property of the data set. In a large data set, half the data is greater than this value and half of it is less than this value.	<b>median</b> [accept <b>50th percentile</b> or <b>second quartile</b> ]

**Question #12: Mathematics**

*10 points per part*

This property states that changing the order of the operands does not change the result.		
<b>1</b>	Name this property that, in the context of addition, means that $x$ plus $y$ always equals $y$ plus $x$ , no matter what $x$ and $y$ are.	<b>commutative</b> property (of addition) or <b>commutativity</b> (of addition)
<b>2</b>	If a group—which is a type of algebraic structure—is commutative, then it is known by this adjective derived from the name of a Norwegian mathematician.	<b>abelian</b> [uh-BEE-lee-un] group [prompt on Niels Henrik <b>Abel</b> [AH-bul]]
<b>3</b>	A property similar to the commutative property, but for relations, is known by this term. For equality, this property states that if $x$ equals $y$ , then $y$ equals $x$ .	<b>symmetric</b> property (of equality) or <b>symmetry</b> (of equality)



**Question #13: Social Studies**

*10 points per part*

A law passed in 2009 to deter this type of crime was the first federal law to give explicit civil rights protections to transgender people.		
<b>1</b>	Give this term for a crime motivated by bias against certain types of people.	<b><u>hate</u></b> crimes
<b>2</b>	The 2009 law was named for James Byrd Jr., who was murdered by white supremacists, and this gay University of Wyoming student who was brutally murdered in 1998.	Matt(hew Wayne) <b><u>Shepard</u></b>
<b>3</b>	The Matthew Shepard Act requires this law enforcement agency to keep statistics on hate crimes. When the bill was passed, this agency was headed by Robert Mueller.	<b><u>Federal Bureau of Investigation</u></b>

**Question #14: Social Studies**

*10 points per part*

Identify these sources of federal government revenue:		
<b>1</b>	This type of tax on individuals and corporations provides the majority of government revenue. This tax is allowed by the 16th amendment to the Constitution.	<b><u>income</u></b> tax(es)
<b>2</b>	This type of tax, whose opponents call it the “death tax”, is paid on very large inheritances. During the 21st century, there has been relatively little revenue from this tax due to increasing exemptions and lowered rates.	<b><u>estate</u></b> tax
<b>3</b>	In addition to <b>FICA</b> [FY-kuh] and self-employment taxes, employers pay a payroll tax of about \$40 per employee per year into this system.	Federal <b><u>Unemployment</u></b> [accept <b><u>FUTA</u></b> or Federal <b><u>Unemployment Tax Act</u>]</b>



**Question #15: Science**

10 points

These geographic things can have layers called the **hypolimnion** [“hi”-poh-LIM-nee-ahn] and **epilimnion** [EP-ih-LIM-nee-ahn] which sometimes mix, allowing oxygen to spread. Gases such as carbon dioxide may suddenly release from solution in these things, a phenomenon called limnic eruption. Some of these things are named for resembling fingers and often have moraine sediment at one end. A meandering river diverting into a new riverbed creates a ‘U’-shaped type of this feature called an oxbow. Name these bodies of water which are surrounded by land and larger than ponds.

lakes

**Question #16: Literature**

10 points

In this novel, a mother tells her daughter a story about the birds deceiving Tortoise before the daughter joins **Chielo** [CHEH-loh] in a sacred cave. During a week celebrating **Ani** [AH-nee], a priest orders the protagonist of this novel to sacrifice a goat and a hen for beating his wife. During a locust swarm, the protagonist of this novel is told that the Oracle has declared his adopted son must die, so he kills that son, **Ikemefuna** [ih-keh-MAY-foo-nuh], and hangs himself after returning from exile to his village, **Umuofia** [oo-MOE-fee-yuh]. Name this novel about **Okonkwo** [oh-“CON”-kwoh] written by **Chinua Achebe** [chin-OO-ah eh-CHEH-bay].

*Things Fall Apart*



**Question #17: Miscellaneous**

10 points

<p>A very pure version of this crop, grown in <b>Barbados</b> [“bar-BAY-dose”], is called Plantation Reserve. This crop can be distilled and fermented into a drink called <b>cachaça</b> [kah-SHAH-sah]. This crop is the main source of <b>bagasse</b> [buh-GAS], which also comes from sorghum and grapes, and is burnt after this crop is collected to harness steam energy. British taxes on this crop in 1733 and 1764 were very unpopular in the American colonies. This crop was often grown in the Caribbean and sold to people in New England as part of the triangular trade. Name this crop that comes from a cane plant in the <i>Saccharum</i> [SAK-uh-rum] genus [JEE-nus].</p>	<p>cane <u>sugar</u> or <u>molasses</u> or <u>sugar</u> cane</p>
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**Question #18: Social Studies**

10 points

<p>In this country the leaders of the Green Forest Rebellion eventually defeated the leaders of the Red Eyebrow Rebellion. This country went through a chaotic period when plots to kill a group called the Ten Attendants, or the Ten <b>Eunuchs</b> [YOO-nuks], backfired during the Yellow Turban Rebellion, which led to this country’s Three Kingdoms Era. The 10th century in this country is called the Five Dynasties and Ten Kingdoms period. Name this country where, during the early 15th century, many valuable blue and white vases were produced during the reign of the Ming dynasty.</p>	<p><u>China</u> [accept <u>Cathay</u>]</p>
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**Question #19: Science**

10 points

<p>Precious metals are separated from this metal using zinc in the Parkes process. Peukert's [POY-kurt's] law describes the efficiency of batteries that use this element and an acid. Traditionally, this element was a fundamental part of flint glass, though it is used less often now. Glass with this element in it is sometimes used to watch X-ray imaging, and patients often protect themselves wearing aprons that incorporate this element. Childhood exposure to this element is linked to violent behavior and lower IQs. Name this element whose use in old pipes inspired its Latin name, "plumbum".</p>	<p><u>lead</u></p>
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**Question #20: Literature**

10 points

<p>The main character of this play tells his daughter "Here cease more questions: Thou art inclined to sleep." This play continues when that character's servant enters and states "All hail, great master!" and reports that Ferdinand said "Hell is empty and all the devils are here." Before the events of this play, that servant had been trapped in a tree by the witch Sycorax ["SICK-or-axe"], who is the mother of Caliban [KAL-ih-ban]. In this play, Ferdinand, who is the Prince of Naples, falls in love with Miranda, who is Prospero's daughter. Identify this William Shakespeare play in which Ariel causes the title storm.</p>	<p><i>The <u>Tempest</u></i></p>
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**Question #21: Mathematics**

*10 points per part*

Given these systems of equations, solve for $x$ . You don't need to find the values of any of the other variables.		
<b>1</b>	$3x$ plus $2y$ equals 10, and $5x$ minus $2y$ equals 14	$x = \underline{3}$ [and $y = 1/2$ ]
<b>2</b>	$y$ equals $3x$ plus 5, and $y$ equals $4x$ plus 9	$x = \underline{-4}$ [and $y = -7$ ]
<b>3</b>	$y$ equals $x$ squared plus $2x$ plus 5, and $y$ equals $x$ squared plus $6x$ plus 3	$x = \underline{1/2}$ or $\underline{0.5}$ [and $y = 25/4$ or $6.25$ ]

**Question #22: Mathematics**

*10 points per part*

Suppose $y$ is directly proportional to $x$ , and when $x$ equals 4, [pause] $y$ equals 20.		
<b>1</b>	What is the value of $y$ if $x$ equals 10?	$y = \underline{50}$
<b>2</b>	What is the constant of variation in this situation? That is, what is the value of the constant $k$ in the equation " $y$ equals $kx$ "?	$k = \underline{5}$
<b>3</b>	In another situation, $w$ is directly proportional to $p$ and inversely proportional to $z$ . If $w$ equals 12 when $p$ equals 4 and $z$ equals 3, then what is the value of $w$ when $p$ equals 8 and $z$ equals 1?	$w = \underline{72}$



**Question #23: Social Studies**

*10 points per part*

All of this country’s kings since the first one have been sons of that first king.		
<b>1</b>	Name this Middle Eastern country, united in 1932, whose King Abdullah died in 2015 and was replaced by King Salman.	(Kingdom of) <b>Saudi Arabia</b> [or al-Mamlakah al- <b>Arabiyah</b> as- <b>Suudiyah</b> ]
<b>2</b>	In 1973, the price of oil shot up because Saudi Arabia used <b>OPEC</b> [ <b>OH-pek</b> ] to organize an embargo against selling oil to countries that supported Israel in this war.	<b>Yom Kippur</b> War [or <b>milkhemet yom ha-<u>kipurim</u></b> or <b>Ramadan</b> War or <b>October</b> War]
<b>3</b>	For most of the 1980s, Saudi Arabia refused to have diplomatic relations with this country because of its peace deal with Israel.	(Arab Republic of) <b>Egypt</b> [or Gumhuriyat <b>Misr</b> al- <b>Arabiyah</b> ]

**Question #24: Social Studies**

*10 points per part*

The <b>Bayeux</b> [ <b>“by-you”</b> ] Tapestry depicts the death of Harold Godwinson during this battle.		
<b>1</b>	Name this 1066 battle, a major part of the Norman conquest of England.	Battle of <b>Hastings</b>
<b>2</b>	Shortly after the Battle of Hastings, this person was crowned as king of England.	<b>William I</b> or <b>William the Conqueror</b> or <b>William the Bastard</b> [prompt on <b>William</b> ]
<b>3</b>	Just before the Battle of Hastings, this King of Norway invaded England but was killed at the Battle of Stamford Bridge.	Harald <b>Hardrada</b> ( <b>Sigurdsson</b> ) [accept either underlined name or <b>Harald III</b> ; prompt on <b>Harald</b> ]



**Question #25: Science**

10 points per part

<p>These organisms are classified as <b>Monera</b> [moh-“NEAR”-uh] in the five-kingdom system and are their own domain in the three-domain system.</p>		
<b>1</b>	Name these organisms that are often shaped like rods, spheres, or spirals.	(eu) <b>bacteria</b> [accept <b>bacterium</b> ]
<b>2</b>	The root systems of many <b>legumes</b> [LEG-yoomz] contain <b>Rhizobia</b> [“rye”-ZOH-bee-uh] bacteria, which help the legumes by combining this atmospheric gas with hydrogen.	<b>nitrogen</b> [or <b>N<sub>2</sub></b> ]
<b>3</b>	While some bacteria are obligate <b>aerobes</b> [“AIR”-ohbz] or obligate <b>anaerobes</b> [“AN-uh-robess”], others fit into this classification because they use aerobic respiration if oxygen is present and anaerobic respiration if oxygen is not present.	<b>facultative</b> [FAK-uh-tay-tiv] anaerobes or <b>facultative</b> aerobes

**Question #26: Science**

10 points per part

<p>This class of hormones amplifies the effects of <b>progesterone</b> [pro-JESS-tuh-rohn].</p>		
<b>1</b>	Name this prominent class of female steroid sex hormones that includes <b>estradiol</b> [ess-truh-“DIE-all”].	<b>estrogens</b>
<b>2</b>	In women, this is the primary permanent organ that produces estrogen. The <b>adrenal</b> [uh-DREE-nul] glands also produce estrogen.	<b>ovary</b> /ies
<b>3</b>	Estrogen production takes place in these <b>somatic</b> [soh-MAT-ik] cells in the ovary also known as <b>follicular</b> [fuh-LIK-yuh-lur] cells.	<b>granulosa</b> [gran-yoo-LOH-sah] cells



**Question #27: Fine Arts**

*10 points per part*

Spider-Man actor Tom Holland is also famous for having played the title character in this musical.		
<b>1</b>	Name this Tony-award winning British musical about a boy who finds that he is a talented ballet dancer in the midst of a 1984 coal miner's strike.	<b><i>Billy Elliot</i></b> <i>(the Musical)</i>
<b>2</b>	In the musical, Billy Elliot is asked what it feels like when he dances, and he responds with this song. This song begins "I can't really explain it, I haven't got the words."	<b>"Electricity"</b>
<b>3</b>	This 1970s pop star composed the music for <i>Billy Elliot</i> , as well as for <i>Aida</i> and some of <i>The Lion King</i> .	Elton (Hercules) <b>John</b> [or Reginald Kenneth <b>Dwight</b> ]

**Question #28: Fine Arts**

*10 points per part*

Name these musicals involving Nazis:		
<b>1</b>	In this musical, <b>Fräulein</b> [frao-"line"] Schneider decides not to marry <b>Herr Schultz</b> ["hair" shults] because he is Jewish.	<b><i>Cabaret</i></b>
<b>2</b>	This Mel Brooks musical is about the title characters' attempt to put on an intentionally offensive show, <i>Springtime for Hitler</i> .	<i>The <b>Producers</b></i>
<b>3</b>	This Rodgers and Hammerstein musical tells the story of the von Trapp family children, who escaped the Nazis by going to Switzerland. "Sixteen Going on Seventeen" and "My Favorite Things" are among the most famous songs in this show.	<i>The <b>Sound of Music</b></i>



**Question #29: Social Studies**

*10 points*

<p>During this war, Henry Hopkins Sibley attempted to establish a supply line, but his troops retreated after the Battle of Glorieta Pass. This war featured three Battles of Winchester, including the defeat of Jubal [JOO-“ball”] Early by Philip Sheridan. After this war, Henry Wirz was executed for war crimes because of conditions at Andersonville Prison. During this war’s Peninsula Campaign, there was criticism of the cautiousness of opposing generals Joseph Johnston and George McClellan. Name this war whose sides were led by Generals Robert E. Lee and Ulysses Grant.</p>	<p>(U.S. or American) <u>Civil</u> War</p>
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**Question #30: Mathematics**

*10 points*

<p>In Thales’ [THAY-leez’] theorem, this type of segment is the hypotenuse of a right triangle. This quantity gives the distance between antipodal [an-TIP-uh-dul] points on a circle or sphere. The perimeter of a semicircle equals the length of this kind of segment times the quantity one plus one-half pi. This kind of segment is the longest possible chord for a circle. It also equals the circumference divided by pi. Name this segment that is twice as big as the radius.</p>	<p><u>diameter</u>(s)</p>
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**Question #31: Literature**

10 points

<p>One character in this novel asks for credit to buy sugar with her coffee, which the clerk pays for himself; earlier, that character had threatened an officer with a skillet. This novel's protagonist hides in a cave after retaliating for the murder of Jim. To save 40 dollars, the central family in this novel does not report Granpa's death in Ivy and Sairy Wilson's tent. Rose of Sharon has a stillborn child in this novel, and the central family picks peaches and cotton after arriving in California. Name this novel by John Steinbeck about Tom Joad's family's migration during the Dust Bowl.</p>	<p><i>The <u>Grapes of Wrath</u></i></p>
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**Question #32: Science**

10 points

<p>This quantity is not mass, but Einstein related it to energy in his thought experiment about a box. This quantity can be paired with energy in Heisenberg's uncertainty principle even though it doesn't have an operator. In special relativity theory, this quantity is multiplied by the Lorentz factor, which represents the dilation of this quantity. Velocity is the derivative of position with respect to this quantity, so average velocity is the change in position divided by the change in this quantity. Name this quantity that, in Minkowski space, comprises the fourth dimension.</p>	<p><u>time</u></p>
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### Extra Question #1: Social Studies

*10 points*

This country gave more power to an elected House of Representatives in the Constitutional Reform of 1848 overseen by J. R. Thorbecke. In 1840, William I abdicated this country's throne after losing control of Belgium. The ruler of this country also ruled Luxembourg until this country was headed by a queen in 1890, which broke Luxembourg's laws. In 1945, the International Court of Justice was established in this country at The **Hague** [hayg]. Name this country that was taken over by the Nazis in the Rotterdam Blitz.

The **Netherlands** or **Nederland** [prompt on **Holland**]

### Extra Question #2: Mathematics

*10 points*

All but three known **Sierpiński** [ser-PIN-skee] numbers of the first kind are this type of number. By definition, Sierpiński numbers of the second kind generate this type of number. **Euclid** [YOOK-lid] said that these numbers are “measured” by another number. The first nineteen superabundant numbers are also the first nineteen numbers that are “highly” this type of number, meaning they have more factors than any smaller number. Name these numbers that have factors other than one and themselves, which means that they are not prime.

**composite** numbers or **composites** [accept **plane** numbers]



### Extra Question #3: Literature

10 points

<p>The Mayan god <b>Chaac</b> [chahk] used these objects made from jade to produce thunder and rain. In Chinese myth, <b>Pangu</b> [pan-goo] used one of these objects to separate yin and yang. Hephaestus used one of these objects to help Athena be born from Zeus' head. According to American legend, one of these objects was dragged to create the Grand Canyon. In the same legend, Babe the Blue Ox is the same height as 42 of the handles of these objects. Name this object that was carried by Paul Bunyan, who was a lumberjack.</p>	<p><b>axe</b> [accept more specific answers]</p>
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### Extra Question #4: Fine Arts

10 points

<p>This composer's Piano <b>Concerto</b> ["con-CHAIR-toe"] in G major was premiered by Marguerite Long and opens with a whip crack. This composer's other piano concerto, which has a contrabassoon solo, was commissioned by Paul <b>Wittgenstein</b> [VIT-gun-shtyn], who lost his right arm in World War I. Another piece by this composer begins with a snare drum and adds flutes and then clarinets as it builds to eventually include the entire orchestra. Name this early-20th-century French composer who wrote <i>Boléro</i>.</p>	<p>(Joseph-)Maurice <b>Ravel</b> [rah-VEL]</p>
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**Extra Question #5: Science**

*10 points*

<p>A diabetes treatment using these cells is called educator therapy. These cells usually undergo obligatory asymmetric replication, which means that they divide into two distinguishable cells. One of the processes used to create these cells is de-differentiation. <b>Mesenchymal [MEZ-en-KY-mul]</b> cells and muse cells are both of this type. These cells are often collected from <b>amniotic [am-nee-AH-tik]</b> fluid or umbilical cord blood, and their collection from <b>blastocysts [“BLAST-oh-cysts”]</b> to get the embryonic types of these cells has been controversial. Name these cells classified by their potency, such as <b>oligopotent [OH-lih-goh-“potent”]</b> or <b>pluripotent [PLUR-ih-“potent”]</b>, which is their ability to differentiate into specialized cells.</p>	<p><u>stem</u> cells</p>
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### Extra Question #6: Literature

*10 points per part*

This poet claimed to “sound [his] barbaric yawp over the roofs of the world”.		
<b>1</b>	Name this American poet who wrote “Song of Myself” and “O Captain! My Captain!”.	Walt(er) <u>Whitman</u>
<b>2</b>	In “Song of Myself”, the writer ponders a child questioning “what is” this substance before deciding it is the “beautiful uncut hair of graves”. In a Carl Sandburg poem, this substance states “I cover all.”	<u>grass</u>
<b>3</b>	In the second-to-last section of “Song of Myself”, Whitman acknowledges his self-contradictions, stating, “I am large. I contain” this word.	<u>multitudes</u>

### Extra Question #7: Literature

*10 points per part*

This boy’s birth was celebrated with pistol shots after the suggestion of exploding a barrel of gunpowder was deemed insensitive to the mother.		
<b>1</b>	Identify this orphan son of Cherokee Sal who was cared for by Stumpy. Kentuck, who started bathing and washing his clothes to spend time with this boy, died with him in a flood.	<u>Thomas Luck</u> [accept either]
<b>2</b>	In this other short story by the same author, John Oakhurst uses a 2 of clubs to mark his own dead body. He had encountered a “streak of bad luck” in being snowed in with Mother Shipton, Piney Woods, and The Innocent.	“The <u>Outcasts of Poker Flat</u> ”
<b>3</b>	Who wrote “The Outcasts of Poker Flat” and the story from part 1, “The Luck of Roaring Camp”?	Bret <u>Harte</u>



**Extra Question #8: Science**

*10 points per part*

Most lists name six of these objects, though some also include the gear drive and/or the hydraulic press.		
<b>1</b>	Give this two-word phrase for a group of mechanical devices, such as pulleys, that redirect forces.	<b><u>simple machines</u></b>
<b>2</b>	This two-word phrase refers to the ratio of output force to input force for a simple machine.	(actual) <b><u>mechanical advantage</u></b>
<b>3</b>	This simple machine is sometimes used to separate objects. This machine transfers force applied to one side into forces from two other sides.	<b><u>wedge</u></b>

**Extra Question #9: Science**

*10 points per part*

The potential energy stored in one of these objects equals $\frac{1}{2}$ times its stiffness constant times the square of its displacement from equilibrium.		
<b>1</b>	Name this type of object that can be stretched and compressed, and is often used to demonstrate Hooke's law.	<b><u>springs</u></b>
<b>2</b>	This three-word phrase is used to describe objects, like springs, in which the restoring force toward equilibrium is directly proportional to the displacement from equilibrium.	<b><u>simple harmonic oscillators</u></b> or <b><u>simple harmonic oscillation</u></b> [accept <b><u>simple harmonic motion</u></b> ; accept <b><u>SHO(s)</u></b> or <b><u>SHM</u></b> ]
<b>3</b>	This adjective describes simple harmonic oscillators impacted by an outside force, which is often used to overcome damping.	<b><u>driven</u></b>