Tossups

1. According to Aristotle, the use of these objects was started by Hermodike [hur-MAH-duh-kay] II, who was the wife of King Midas. The use of these objects spread when Persia conquered Lydia [LID-ee-uh]. The Saint-Gaudens [san gaw-dan] double eagle is a valuable example of one of these objects that was produced in the U.S. from 1907 to 1933. Current examples of these things in Europe depict Europe on the back and national symbols on the front. Ancient examples of these objects were often made of electrum, gold, or silver; and modern examples are generally made of zinc, copper, and nickel. Name these usually round objects that are used as money.

Answer: **coin**s [prompt on **money** or **currency**]

2. One character in this novel asks "What was the use of doing great things if I could have a better time telling her what I was going to do?". Soon after that, the speaker in this novel describes his infatuation with a woman who promised to wait for him when they were at Camp Taylor, but who then married a wealthier man. Soon after that, this novel's narrator describes the death of Myrtle Wilson when she runs in front of a car that she thought was being driven by Tom Buchanan. Name this novel that is set in West Egg on Long Island, is narrated by Nick Carraway, and was written by F. Scott Fitzgerald.

Answer: *The* ***Great Gatsby***

3. If the work done during an isothermal ["ICE-oh-thermal"] process is expressed without using pressure, the work is proportional to the log of a ratio of two values of this quantity. The heat capacity ratio is the ratio of heat capacity when pressure is constant divided by heat capacity when this quantity is constant. This quantity does not change in an isochoric ["ice"-oh-KOR-ik] process. Enthalpy can be defined as internal energy plus the product of pressure and this quantity. This quantity is multiplied by pressure in the ideal gas law. In three dimensions, density equals mass divided by this quantity. Name this quantity that can be measured in liters or cubic meters.

Answer: **volume**

4. When the Sex Pistols lead singer Johnny Rotten went on this person's TV show, this person called drummer Robert Williams a "nudnik". One of this person's sayings is "On your best day, you're not as smart as I am on my worst day." This person also wrote books titled *Don't Pee on My Leg and Tell Me It's Raining* and *Keep It Simple, Stupid.* This person and her daughter started the charity Her Honor Mentoring. This person was rejected when she tried to replace Joseph Wapner [WAHP-nur], but her show ended up having a longer run than his, lasting from 1996 to 2021. Name this person who adjudicated real-life small-claims disputes on her show.
Answer: Judge (Judith) "**Judy**" **Sheindlin** [accept either underlined name]

5. Helen Stoner told this character that he can "see deeply into the manifold wickedness of the human heart" after hearing about him from Mrs. Farintosh. Helen's sister had earlier said "It was the band! The speckled band!" in a story featuring this character. In another story, this person taps on the pavement in front of a pawnshop and helps Jabez Wilson after Wilson was encouraged to answer an unusual want ad by Vincent Spaulding. In that story, "The Red-Headed League", it turns out that Spaulding was actually working for this person's enemy, Professor Moriarty. Name this character who is described by Dr. John Watson in stories by Arthur Conan Doyle.
Answer: **Sherlock** **Holmes** [accept either] (The first story mentioned is "The Adventure of the Speckled Band".)

6. The voltage across an inductor equals the opposite of inductance times the derivative of this quantity with respect to time. In the Biot-Savart [bee-oh sah-var] law, this scalar quantity is multiplied by magnetic permeability and by a cross product of two vectors in the numerator of an integral to find magnetic field. In Ampère's force law, two values of this quantity are multiplied together. The power dissipated by a circuit element equals this quantity times the electric potential difference. This quantity equals electric potential difference divided by resistance according to Ohm's law. Name this quantity, equal to charge per unit time, that is measured in amperes.
Answer: (electric) **current** [prompt on I]

7. Before this person became famous, he was beaten up in a Rock Hill, South Carolina Greyhound Bus station. In 1966, Stokely Carmichael replaced this person as the head of the Student Nonviolent Coordinating Committee. While representing the SNCC, this person gave a speech at the Civil Rights March on Washington, where he said "that there won't be a cooling-off period." This person led the first attempted march across the Edmund Pettus Bridge on a day which became known as Bloody Sunday, when he and his followers were beaten by police. A proposed voting rights act is named after this person. Name this congressman from Georgia who died in 2020.
Answer: John (Robert) **Lewis**

8. Characters in this musical sing "We're very upset; / We never had the love that every child oughta get." At the end of this musical, the female lead reprises a song with the lyrics "There's a time for us, someday a time for us." The part she sings at the end of this musical is "Hold my hand and I'll take you there, / Somehow, Someday, Somewhere." In addition to "Gee, Officer Krupke", this musical includes the song "America", which is sung by Anita and several other Puerto Rican immigrants. Name this Leonard Bernstein musical about the rivalry between the Sharks and the Jets, two gangs in New York City.
Answer: _**West Side Story**_

9. The person who developed this process described offering his son to the Swedish royal family in the book *Dancing Naked in the Mind Field*. This process takes about five minutes, during which the temperature changes from about 200 to 130 to 160 degrees Fahrenheit. The third step of this process uses annealed primers. The first step of this process causes nucleic acid denaturation by using the substance *Taq*, spelled "T-A-Q". This method has made it easier to test for HIV and COVID. Name this method developed by Kary Mullis that makes it much easier to make many copies of DNA samples.
Answer: **PCR** [accept **polymerase chain reaction**]

10. This city borders Tsuut'ina [tsoo-TIN-uh] Nation near this city's Fish Creek Provincial Park. This city is at the confluence of the Elbow and Bow rivers, the latter of which contains an island containing Prince's Island Park. This city's Studio Bell National Music Center hosts the Canadian Music Hall of Fame. This city is about 80 miles east of Lake Louise and Banff National Park. There are still several structures remaining from when this city hosted the 1988 Winter Olympics. This city's Saddledome hosts several events in its annual rodeo, which is called the Stampede. Name this city in Alberta that is more populous than Edmonton.

Answer: **Calgary**, Alberta

11. One poem by this writer begins with the phrase "Pine trees of old" and goes on to describe the building of the ship *Argo* and the relationship between Peleus [PELL-ee-uss] and Thetis [THEE-tiss]. Another poem by this writer states "I hate and I love. Why I do this, perhaps you ask. I know not, but I feel it happening and I am tortured." Though one of this writer's poems is about a stolen napkin, most of his invective poems are explicitly sexual. Many of this poet's works are about a married woman whose real name was Clodia and who had an affair with this poet. Name this ancient Roman poet who wrote the Lesbia poems.

Answer: (Gaius Valerius) **Catullus** [**kuh-TUL-uss**]

12. This person was the mayor of Panama City from 1519 to 1523. From there, this person got support from Hernando de Luque [LOO-kay] and Diego de Almagro, though after running into hardship this person continued on as the leader of the Famous Thirteen. This person ordered his best-known attack after Vincente de Valverde told him about somebody throwing a Bible on the ground and refusing to accept Charles V as his sovereign. Along with his half-brother Hernando [air-NAHN-doh], this person was successful at the Battle of Cajamarca [kah-hah-MAR-kah], which is where Atahualpa [ah-tah-WAHL-pah] was captured. Name this leader of the Spanish conquest of Peru who defeated the Incan Empire.

Answer: Francisco **Pizarro** (González)

13. Henry Ernest Dudeney showed that four pieces of an equilateral triangle could be arranged into this shape. The group of symmetries of this type of quadrilateral is a dihedral ["die"-HEE-drul] group. This is the most specific name for the shape of the graph of the equation "the absolute value of x, end quantity, plus the absolute value of y, end quantity, equals one". In this type of quadrilateral, the diagonals are both congruent and perpendicular bisectors of each other. This shape is a regular quadrilateral. Name this quadrilateral that has both four congruent sides and four congruent angles.

Answer: **square**s [prompt on **regular** quadrilateral]

14. This person told a messenger "Don't let this upset you; the sword devours one as well as another." That message was sent from this person to Joab after this person played a role in the death of Uriah [yur-"EYE"-uh] the Hittite. Joab would eventually help kill this person's third son after that son rebelled against this person. That son, born after Amnon and Daniel, was Absalom. This leader was the son of Jesse and the great-grandson of Ruth and Boaz. This person was friends with Saul's son Jonathan and was the King of Israel between Saul and Solomon. Name this person who used his sling to kill Goliath.

Answer: **David** [may be pronounced [dah-VEED]]

15. In the beginning of this writer's memoir, he uses straws from a broom to light a curtain on fire, causing his grandmother's house to burn. This author then recounts moving to Memphis and Chicago, where he works with members of the Communist Party. In a novel by this author, the protagonist is eventually helped by the Communist lawyer Boris Max after trying to frame a Communist named Jan for the death of Mary Dalton. Mary was killed and decapitated by this author's protagonist Bigger Thomas. Name this author of *Black Boy* and *Native Son.*

Answer: Richard (Nathaniel) **Wright**

16. To study this disease, the chemical MPTP is sometimes given to animals. Like some forms of dementia, this disease is characterized by the aggregations of proteins in neurons, and those growths are called Lewy [LOO-ee] bodies. The symptoms of this disease can be reduced by taking monoamine oxidase-B [mah-noh-uh-MEEN "ox-id-ace B"] inhibitors, COMT inhibitors, amantadine [uh-MAN-tuh-deen], and levodopa [lev-uh-DOH-puh]. This disease involves degeneration of the nerve cells in the basal ganglia ["GAIN-glee-uh"], which decreases the amount of dopamine ["DOPE"-uh-meen]. Name this degenerative disorder characterized by slow movement and tremors.

Answer: **Parkinson**'s disease [accept **Parkinson**ism; prompt on **PD**]

17. This person successfully led troops at the Battles of Palo Alto and Resaca [ray-SAH-kuh] de la Palma. After many of his troops were transferred to a different commander, this person built a defensive position that allowed him to repel a large force at the Battle of Buena Vista, stopping an advance by Antonio López de Santa Anna. As a politician, this person antagonized southerners by encouraging California and New Mexico to apply for statehood. This person's political career was cut short possibly because he ate contaminated fruit or milk. Name this president who was nicknamed "Old Rough and Ready" and was replaced by Millard Fillmore when he died in office.
Answer: Zachary **Taylor**

18. One material that takes advantage of this phenomenon is polyvinyl alcohol plastic that has been doped with iodine. Because cordierite [KOR-dee-uh-"rite"] enhances this phenomenon, it can be used to locate the Sun when the Sun is hidden. An angle used for this phenomenon equals the arctangent of the ratio of indices of refraction. This phenomenon exists when a transverse wave lacks rotational symmetry. Intensity is multiplied by the squared cosine of an angle to quantify this phenomenon in Malus's law. Name this phenomenon caused by reflection at Brewster's angle, in which a transverse wave vibrates in a single direction.
Answer: (linear) **polarization** [accept **polarize**d or **polarizing**]

19. In one painting by this artist, an old man wearing green [pause] deposits coins into a sack held by a demon inside a trunk, and a white version of Death enters the room through a door while holding an arrow. That painting is this artist's *Death and the Miser*. In another painting by this artist, a monk and a nun both try to take a bite out of a suspended crepe. Another work by this painter shows God presenting Eve to Adam on the left and shows nightmarish creatures including a pair of ears brandishing a knife on the right. Name this Dutch painter of *Ship of Fools* and *The Garden of Earthly Delights*.
Answer: Hieronymus **Bosch** [or Jheronimus van **Aken**]

20.   This person worked with Matt Grove to start the company Equality Vines. This person's husband suffered from ALS and died three months after they got married. Because John Arthur was so ill, this person's wedding took place on a plane tarmac in Maryland. When this person was denied death benefits, he sued Ohio Governor John Kasich [KAY-sik], but the defendant was changed to the director of the Ohio Department of Health. This person is now friendly with that defendant, Richard Hodges, and he won that case at the Supreme Court in 2015. Name this plaintiff in the case that federally established the right to marry for same-sex couples.

Answer: James "Jim" **Obergefell** [**OH-bur-guh-fell**]

21.   This number is the smallest prime number p for which one less than the quantity "2 raised to the power of p" is not prime. To test for divisibility by this number, add every other digit, then add all the other digits, and check whether the difference is divisible by this number. Rows in Pascal's triangle equal the digits of powers of this number once you correct for carrying. If this number is multiplied by a one-digit number, then the product is a two-digit number with both digits the same. Name this prime number between 7 and 13.

Answer: **11**