

Collective Early Release Entry-level Set (CERES)

Head edited by: Conor Thompson

Edited by: Aatreya Bhattacharyya, Tanay Bodducherla, Bo Chi, Rohan Ganeshan, Rohan Kher, Lukas Koutsoukos, Jacob Hardin-Bernhardt, and Jeff Xie

Written by: the editors, Eamin Ahmed, Nikhil Arjunan, Simon Emmanuel, Andrew Gao, Cindy Gao, Shivani Ganeshan, Soren Gjesfjeld, Kaushik Gollamudi, Deven Hagen, Avery Heinonen, Charles Heydt, Rahul Jogadheni, Matthew Kohn, Arnav Mahendra, Neev Sahgal, George Tagtmeier, and Charles Young

Packet 9

Tossups:

1. **These structures can contain alternating light and dark bands called ogives. Climate change has caused the "retreat" of many of these structures, which can leave behind moraines as they move. In a process called (*) calving, these structures break apart into icebergs after reaching the ocean. For 10 points, what huge moving "rivers" of ice can often be found on high mountains?**

ANSWER: glaciers <Gollamudi, Science>

2. **Adrian Smith used a Y-shaped design for one of these structures located next to the Dubai Fountain. An early architect of these structures, Louis Sullivan, designed one of them named for Elias Wainwright. William Van Alen designed the Chrysler Building, one of these structures in (*) New York. The Burj Khalifa is the tallest of, for 10 points, what towering buildings often found in large cities?**

ANSWER: skyscrapers [prompt on buildings or towers] <Kher, Fine Arts>

3. **Integrals can represent this quantity for the space between a curve and an axis. This quantity can be computed for triangles by using Heron's formula, which involves the semiperimeter. Averaging the lengths of the bases and multiplying by (*) height gives this value for a trapezoid. This value for a parallelogram is equal to the base times the height. For 10 points, what value is equal to the space taken up by a shape?**

ANSWER: area <Heydt, Math>

4. **Hindu participants in these events walk around a fire seven times. Some Muslim scholars hold that these events can be undone by saying "talaq" three times. Jesus turned water into wine at one of these events in (*) Cana. Some Mormon fundamentalists still practice the plural form of this practice, in which men undergo it multiple times with different women. For 10 points, what events usually feature a bride and a groom?**

ANSWER: marriages [accept obvious equivalents like weddings] <Bhattacharyya, Religion>

5. **One city in this state is the largest city in the US by area. Utqiágvik (OOT-kee-AR-vik), once known as Barrow, is the northernmost town in this state, and this state's Kodiak Island is located close to its Kenai Peninsula. This state is the only one divided into boroughs, and it is home to the Iditarod Sled Race. The cities of (*) Nome, Sitka, and Anchorage are in, for 10 points, what largest US state by area, with capital Juneau?**

ANSWER: State of Alaska [accept other answerlines like Alax̄sxax, Alaasikaq, Anáaski, and Alaskaq] <R. Ganeshan, Geography>

6. **This man founded the Peripatetic school of thought at the Lyceum, a temple to Apollo in Athens. This thinker's Nicomachean Ethics are likely named for his son Nicomachus. Philip II of Macedon convinced this man to tutor his son (*) Alexander the Great. This man's writings on physics were influential into the Middle Ages. For 10 points, name this Greek philosopher who invented the syllogism, a student of Plato.**

ANSWER: Aristotle [or Aristoteles] <Hagen, Philosophy>

7. **A poet who wrote in this language dedicated many of his namesake "Petrarchan sonnets" to Laura. In a poem in this language, the narrator meets his lover, Beatrice, and reads the inscription "Abandon all hope, ye who enter here" while being guided by Virgil through the (*) nine circles of hell. Inferno is part of the Divine Comedy written in, for 10 points, what language used by Dante and writers from Venice?**

ANSWER: Italian [or Italiano] <Kher, Literature>

8. **This empire's Qhapaq Ñan (KAH-pak NYAHN) road network was used to transmit information with strings called quipu (KEE-poo). Hiram Bingham excavated the ruins of this empire, whose final ruler was Atahualpa. This empire's capital city, Cuzco, was captured by the conquistador (*) Francisco Pizarro. Around 1450, this empire built a stone citadel in the Andes Mountains. For 10 points, name this South American empire that built Machu Picchu in Peru.**

ANSWER: Inca Empire [or Incan Empire or Tawantinsuyu] <Koutsoukos, History>

9. **The rate of change of this quantity is called jerk. Velocity squared divided by the radius gives the centripetal form of this quantity. According to Newton's Second Law, this quantity can be found by dividing the net force by (*) mass. It's not force, but when this quantity is zero, an object is in equilibrium. The second derivative of position is, for 10 points, what quantity defined as the rate of change of velocity?**

ANSWER: acceleration [prompt on a; prompt on alpha] <Bhattacharyya, Science>

10. **Cybele transformed Hippomenes and Atalanta into these animals as punishment for making love in her temple. One of these animals was strangled alive by Hercules because its impenetrable fur rendered it unable to be killed otherwise; that creature, the (*) "Nemean", one of these animals, was the subject of Hercules's first labor. For 10 points, what big cats were associated with the constellation Leo?**

ANSWER: lions [accept the Nemean Lion] <Kher, Mythology>

11. **An attack on this location was coordinated to occur on the same day as an attack on Hong Kong and was confirmed with the code "tora! tora! tora!". Visitors to this location can explore a memorial to the USS Arizona. Franklin Roosevelt called an attack on this location "a (*) date which will live in infamy." The U.S. first entered World War II following a 1941 Japanese attack at, for 10 points, what Hawaiian naval base?**

ANSWER: Pearl Harbor Naval Station <Kher, History>

12. **This ruler invited scholars like Einhard and Alcuin of York to his court as part of a period of cultural revival called his dynasty's "Renaissance." This son of Pepin the Short was the grandson of Charles Martel, the founder of the Carolingian dynasty. On Christmas Day in 800, Pope Leo III crowned this ruler as (*) Holy Roman Emperor. For 10 points, name this medieval-era Frankish ruler who united most of Western Europe.**

ANSWER: Charlemagne [or Charles the Great or Carolus Magnus or Charles I; prompt on Charles; do NOT accept or prompt on "Charles Martel" or "Charles the Hammer"] <Emmanuel, History>

13. All versions of the original GameBoy were packaged with this game, in which "T-spins" can be performed. A battle royale version that adds "99" to the title of this game was released on the Nintendo Switch. The Soviet Alexei Pajitnov created this game, in which players can use various (*) four-block pieces such as the "S" and "I" pieces. For 10 points, name this video game in which players clear lines using falling blocks.

ANSWER: Tetris <Kher, Popular Culture>

14. Along with sulfur, oxides of this element in the air combine with water to form acid rain. A fixation process named for this element which occurs in plants produces ammonia, which contains one atom of this element bonded to 3 hydrogen atoms. This is the most common element in the Earth's (*) atmosphere, which is composed of 78% of this element. For 10 points, what element with atomic number 7 has the chemical symbol N?

ANSWER: nitrogen <Bodducherla, Science>

15. Rulers of this country used turtle shells as prophetic "oracle bones" to learn of their future. The "tribute system" involved foreign messengers bowing to the ruler of this modern-day country, who was justified by the "Mandate of Heaven." A (*) "terracotta army" protects the tomb of Shi ("sure") Huangdi, an ancient ruler of this country. The Shang and Qin dynasties ruled, for 10 points, what country home to a massive "Great Wall?"

ANSWER: China [or Zhongguo] <Kher, History>

16. In one book, this character attempts to copy off of Alex Aruda. This character plays a tree in a production of the Wizard of Oz, in which he throws apples at Patty Farrell. This character is given "Mom bucks" to bond with his (*) older brother, who is a member of the band Löded Diper, and he lets people believe that he has the "cheese touch" instead of Rowley. For ten points, name this "wimpy kid" in a series by Jeff Kinney.

ANSWER: Greg Heffley [prompt on "the wimpy kid" until read, I guess???] <Gjesfjeld, Literature>

17. In a novel by this author, Ice-Nine falls into the ocean and destroys the world. The writer Kilgore Trout is a recurring character in this author's novels. The protagonist of this author's most famous novel is kidnapped by Tralfamadorians to be put in a zoo, and survives the firebombing of Dresden in the title structure. (*) Billy Pilgrim becomes unstuck in time in, for 10 points, what author's novel *Slaughterhouse-Five*?

ANSWER: Kurt Vonnegut Jr. <Bodducherla, Literature>

18. One of these things named for Abraham Lincoln was marked by concrete posts with a red, white, and blue emblem and was among the first of these things to cross the US. A program that promotes keeping litter off these things allows local businesses to "adopt" them. The (*) numbering of these things was standardized in the 1920s, including a famous one numbered 66. For 10 points, what things allow cars to travel between cities?

ANSWER: roads [or US routes, or highways, or auto trails; prompt on trails] <Kher, General Knowledge>

19. One type of this molecule carries anticodons and amino acids and binds to another type of this molecule during the creation of proteins. That type of this molecule is synthesized from a similarly named molecule during transcription. This molecule contains the nitrogenous base (*) uracil instead of adenine. Transfer and messenger are types of, for 10 points, what single-stranded molecule contrasted with DNA?

ANSWER: RNA [accept ribonucleic acid] <Kohn, Science>

20. **The northernmost of this country's main islands is home to an ethnic minority called the Ainu. A city on that island, Sapporo, also hosted the marathon and race walk competitions during a recent sporting event in this country's (*) capital.** This country's rail network uses high-speed Shinkansen bullet trains, and its capital is overlooked by Mt. Fuji. For 10 points, what country hosted the postponed 2020 Olympics?

ANSWER: **Japan** [accept **Nippon**-koku or **Nihon**-koku] <Heinonen, Geography>

Bonuses:

1. The creature from Frankenstein learned how to speak by reading three texts he found in Victor's jacket. For 10 points each:

[10] One of them was this epic poem by John Milton, which includes the story of the temptation of Adam and Eve and the fall of Lucifer.

ANSWER: **Paradise Lost**

[10] The creature also read Plutarch's Lives, which was originally written in this language. Homer also wrote the Iliad about characters like Achilles in this language.

ANSWER: **Greek** [accept Ancient **Greek**]

[10] The last novel read by the creature was *The Sorrows of Young Werther*, which is written through these documents, classifying it as an epistolary novel. Robert Walton writes many of these documents to his sister throughout Frankenstein.

ANSWER: **letters** <Bhattacharyya, Literature>

2. Answer some questions about Mediterranean cuisine, for 10 points each:

[10] This Greek condiment usually consists of cucumber, yogurt, and garlic. It's often eaten with pita bread, served on gyros ("**he-ros**"), or used as a vegetable dip.

ANSWER: **tzatziki**

[10] Like tzatziki, this Middle Eastern dip is often eaten with pita bread. It is made with mashed chickpeas and a sesame seed-based tahini.

ANSWER: **hummus** [or **humoi**]

[10] Shawarma, another popular Middle Eastern dish, is commonly served with these brined cucumber slices as a topping. The "dill" variety of this food is frequently served whole as a side at kosher delis.

ANSWER: **pickles** <A. Gao, General Knowledge>

3. For 10 points each, answer the following about orchestral works which took influence from Spanish culture:

[10] Joaquin Rodrigo took influence from a variety of Spanish dances to compose a concerto for this six stringed instrument, which comes in "acoustic" and "electric" varieties and has been played by musicians such as Jimi Hendrix.

ANSWER: acoustic **guitar**

[10] Spanish virtuoso Pablo de Sarasate composed a fantasy based on the George Bizet opera *Carmen*, which is set in this southern Spanish city. Rossini wrote an opera about the "Barber of" this city.

ANSWER: **Seville** [or **Sevilla**]

[10] Sarasate was the dedicatee of the piece *Introduction and Rondo Capriccioso*, which was written by this composer. An orchestral work by this composer includes a movement titled "The Swan."

ANSWER: Camille **Saint-Saens** <R. Ganeshan, Fine Arts>

4. Answer the following about astronomy related to the journeys of two characters, Prospect 1 and Prospect 2, in albums by progressive rock band Between the Buried and Me. For 10 points each:

[10] Prospect 2 decides to destroy Earth at the end of the band's album *Parallax II: Future Sequence* by causing it to collide with this star around which Earth orbits.

ANSWER: the **sun**

[10] Prospect 2 uses one of these objects to cause Earth to collide with the sun. Examples of these objects include Ceres and Vesta, and many of them are contained in a region between Jupiter and Mars.

ANSWER: **asteroids**

[10] Prospect 1 returns home to find everything gone in the final track on *The Great Misdirect*, titled "Swim to [this object]". A large flat area on this object called the Ocean of Storms may have been formed by an ancient impact or by colossal rift valleys.

ANSWER: Earth's **moon** <Young, Science>

5. Oh no! The Pope has died! Answer some questions about how to replace him, for 10 points each:
[10] The new pope is elected by a vote of these people. These high-ranking bishops are generally distinguished by their red skull caps at official appearances.

ANSWER: **cardinals**

[10] The cardinals hold a series of votes until one candidate wins a two-thirds majority, an event which is announced by the release of smoke of this color from the chimney of the Sistine Chapel. This is also the primary color of the papal vestments.

ANSWER: **white**

[10] Historically, it's very likely that the cardinals would choose a pope from this country, from which every pope elected from Adrian VI in 1459 until John Paul I in 1978 came. The Vatican City is entirely surrounded by this country.

ANSWER: **Italy** <Thompson, Religion>

6. For 10 points each, answer the following about various subatomic particles.

[10] This positively charged subatomic particle can be located within the nucleus along with neutrons. The atomic number is determined from the number of these particles.

ANSWER: **protons**

[10] Protons are made up of two up-flavored varieties of these particles and one down-flavored variety. These particles also come in strange and charm flavors.

ANSWER: **quarks**

[10] Particles named after this scientist have half odd integer spins and include all quarks and leptons. This scientist created the first nuclear chain reaction, and a classic problem named after him asks "How many piano tuners are there in Chicago?"

ANSWER: Enrico **Fermi** [accept **fermions** or **Fermi problems**] <Gollamudi, Science>

7. While performing this action in opposition to the Affordable Care Act, Ted Cruz read Green Eggs and Ham. For 10 points each:

[10] Name this procedure often used to obstruct bills by speaking for a very long time. Invoking "cloture," which requires sixty votes in the Senate, can be used to end this procedure.

ANSWER: **filibuster** [prompt on **debate**]

[10] This politician filibustered the Civil Rights Act of 1957 for 24 hours and 18 minutes. This racist politician served for 48 years in the Senate until his death in 2003 at the age of 101.

ANSWER: James Strom **Thurmond** Sr.

[10] Strom Thurmond, along with his successor Lindsey Graham, represented this state in the Senate. This state's capital is Columbia.

ANSWER: **South Carolina** <A. Gao, Social Science>

8. Answer some questions about the mathematics of Ancient Egypt, for 10 points each:

[10] Ancient Egyptians almost exclusively used fractions with this number as their numerator.

ANSWER: **one**

[10] Ancient Egyptian texts include applications of a theorem named for this Greek mathematician. Sets like (3,4,5) are examples of "triples" named for this mathematician.

ANSWER: **Pythagoras** of Samos [or **Pythagoras ho Samios**]

[10] Ancient Egyptians presumably did a lot of math when planning the construction of large structures with this geometric shape, including a "Great" one in Giza.

ANSWER: **pyramids** [or **mer** or **maʿ**] <Thompson, Math>

9. Prophecies are fickle things. For 10 points each, answer the following about various attempts to thwart them:

[10] After hearing that a son borne by Metis would overthrow him, this King of the Greek gods consumed her.

ANSWER: **Zeus**

[10] King Acrisius heard from the Oracle that a child of his daughter, Danaë, would eventually overthrow him, and thus locked her up. However, Zeus turned into a shower of gold, and had a son with her, who was this hero.

ANSWER: **Perseus**

[10] After hearing that he was supposed to be killed by his son, King Laius sent a shepherd to abandon Oedipus on a mountainside. Oedipus was spared by the shepherd, and ended up in this city, where he solved the riddle of the Sphinx. It was legendarily founded by Cadmus.

ANSWER: **Thebes** <Gollamudi, Mythology>

10. These cells communicate with each other via synapses. For 10 points each:

[10] Identify these cells. Parts of these cells include axons and dendrites, and they are classified into three types depending on what stimuli they respond to and what their function is.

ANSWER: **neurons**

[10] The Hodgkin-Huxley model used neurons from one of these animals to describe their communication. Some large types of these cephalopods have been known to fight sperm whales.

ANSWER: **squids**

[10] Like most cells, neurons also have these organelles, which come in smooth and rough varieties.

ANSWER: **endoplasmic reticulum** [accept **ER**] <Gollamudi, Science>

11. North and South America had a long history before the Europeans arrived. For 10 points each:

[10] The earliest known Mesoamerican civilization was this Mexican civilization that built seventeen colossal stone heads.

ANSWER: **Olmecs**

[10] Some Mesoamerican cultures, like the Aztec and Maya, practiced this ritual to appease gods such as Tlaloc. In some cultures, the loser of a ballgame would be subject to this ritual.

ANSWER: **human sacrifice** [accept clear equivalents describing humans being killed; prompt on **sacrifice** by asking "what was being sacrificed?"]

[10] Aztec warriors often carried knives made of this hard black volcanic glass. You may be more familiar with this substance from its appearance in Minecraft, where it is the primary component of Nether portals.

ANSWER: **obsidian** <Gjesfjeld, History>

12. The term "Deluge" refers to a period in which Sweden occupied a union of these two countries, which was governed by a parliament called the sejm (**same**). For 10 points each:

[10] Name these two countries that signed the 1569 Union of Lublin, unifying into a commonwealth that would last until it lost its land in a series of 18th century partitions.

ANSWER: **Poland** and **Lithuania** [or the Kingdom of **Poland** and the Grand Duchy of **Lithuania**, or Korona Królestwa **Polskiego** and Didi Kunigystė **Lietuvos** or the **Polish-Lithuanian** Commonwealth]

[10] A famous part of the army of the Polish-Lithuanian Commonwealth were the Winged Hussars, an elite cavalry unit that lifted the Ottoman siege of this present-day European country's capital city of Vienna.

ANSWER: Republic of **Austria**

[10] The Polish-Lithuanian parliament was famously ineffective due to its law enabling any member to unilaterally perform this action to block any legislation. The President of the US has this power, although they can be overridden with a two-thirds vote in both chambers of Congress.

ANSWER: a **veto** [accept **liberum veto**] <Kher, History>

13. In *The Gift of the Magi*, Della takes this action in order to buy a wristwatch chain for Jim. For 10 points each:

[10] Identify this action which, in a twist ending, turns out to have ruined Jim's gift of a fancy comb for Della. In *Little Women*, Jo takes this action to make money for her family. A description is acceptable.

ANSWER: **selling** their **hair** [accept descriptions]

[10] *The Gift of the Magi* is by this American writer of short stories, often with twist endings, such as *The Ransom of Red Chief*.

ANSWER: O. **Henry** [or William Henry **Porter**]

[10] In *The Gift of the Magi*, Jim and Della are buying each other presents for this holiday. Charles Dickens wrote a novel about this holiday featuring Ebenezer Scrooge.

ANSWER: **Christmas** <Mahendra, Literature>

14. This effect can be seen in locations where a desert is located right next to a major mountain range. For 10 points each:

[10] Name this effect. It occurs when mountains block the movement of clouds, which causes the windward slope of the mountain to receive lots of precipitation, but the leeward slope to receive very little.

ANSWER: **rain shadow** effect

[10] The rain shadow effect explains why the Atacama desert, which is located in this country, is one of the driest on Earth. This country is also home to the port city of Valparaíso.

ANSWER: **Chile**

[10] The rain shadow effect also explains the dryness of this state's Mojave (**moh-HAH-vay**) Desert. This state also contains Death Valley, one of the hottest places on earth.

ANSWER: **California** <Bodducherla, General Knowledge>

15. Anna Sewell's novel *Black Beauty* is titled for one of these animals. For 10 points each:

[10] Name these animals. Marguerite Henry wrote a children's book about one of these animals named "Misty of Chincoteague", and one of them named Hwin appears in a C. S. Lewis book titled for one of these animals "And His Boy".

ANSWER: **horses** [or **ponies**]

[10] This novel's title character is devastated after the horse Frou-Frou breaks its back. It ends with the title character throwing herself under a train after an affair with Count Vronsky.

ANSWER: **Anna Karenina**

[10] In *Their Eyes Were Watching God*, which was set in this US state, characters hold an elaborate funeral for a mule. Carl Hiaasen set his novel *Hoot* in the fictional town of Coconut Cove, which is a suburb of this state's city of Miami.

ANSWER: **Florida** <Bodducherla, Literature>

16. In 1997, this country moved its capital from Almaty, its largest city. For 10 points each:

[10] Name this Central Asian country with capital at Nur-Sultan, renamed from Astana in 2019. It is the largest landlocked country in the world.

ANSWER: Republic of **Kazakhstan** [accept **Qazaqstan** Respublikasy]

[10] Kazakhstan has the longest coastline on this body of water which, despite its name, is the largest lake in the world. This lake also borders Russia, Azerbaijan, Iran, and Turkmenistan, and caviar is often procured from fish in this lake.

ANSWER: **Caspian** Sea [or **Kaspi** Tenizi, or **Hazar** Denzi, or **Hezer** Denizi]

[10] In addition to caviar, an industry revolving around this substance is prominent along the shores of the Caspian Sea. Due to its location on the lake, Iran produces 137.5 billion barrels of the "crude" form of this substance, which is often used to power cars.

ANSWER: **oil** [accept crude **oil**; accept **petroleum**] <Emmanuel, Geography>

17. For 10 points each, answer the following about various reactions which produce carbon dioxide:
[10] Probably the most notable one would be this reaction where a hydrocarbon reacts with oxygen to produce CO₂ and water. A "spontaneous" example of these reactions can occur when substances with low ignition temperatures start heating up rapidly.

ANSWER: **combustion** reactions

[10] The water-gas shift reaction produces carbon dioxide from water and this compound, which binds to hemoglobin 200 times stronger than oxygen. This odorless gas can cause sudden illness and death.

ANSWER: **carbon monoxide** [or **CO**]

[10] A type of respiration performed by these things has carbon dioxide as a product. These things are composed of organelles, and plant examples of these things have namesake "walls".

ANSWER: **cells** <Gollamudi, Science>

18. This election year featured the closest electoral college margin since 1800. For 10 points each:

[10] Name this election year in which Rutherford B. Hayes won the electoral college by 1 vote, even though he lost the popular vote to Democratic nominee Samuel Tilden.

ANSWER: **1876**

[10] Hayes agreed to the Compromise of 1877 which stated that he would become the President if he withdrew troops from the South, thus ending this time period. This era, which occurred after the Civil War, involved the passage of new civil rights legislation in the recently readmitted Southern states.

ANSWER: **Reconstruction**

[10] Hayes was selected as a compromise candidate ahead of James G. Blaine, a politician from Maine. Hannibal Hamlin, another late 19th-century Maine politician, was the first vice president for this man, who led the US through the Civil War and issued the Emancipation Proclamation.

ANSWER: Abraham **Lincoln** <Koutsoukos, History>

19. This song was released on the album *Sour*, and is stylized in all lowercase. For 10 points each:

[10] Name this song, which contains the line "Red lights, stop signs". The narrator repeats the fact that she "drove through the suburbs," and how she got the title object "last week".

ANSWER: **drivers license**

[10] This artist wrote songs such as *drivers license*, *deja vu*, and *good 4 u*. This artist starred in Disney+'s *High School Musical: The Musical: The Series* as Nini Salazar-Roberts.

ANSWER: Olivia Isabel **Rodrigo**

[10] Rodrigo views this singer-songwriter as her idol. In her album *folklore*, she sang about knowing a person who was "Dancin' in [their] Levi's" and "Drunk under a streetlight" in her song *cardigan*.

ANSWER: Taylor Alison **Swift** <A. Gao, Popular Culture>

20. Answer some questions about the history of the American flag, for 10 points each:

[10] This Philadelphia upholsterer is often credited with having made the first American flag, although little historical evidence exists to support those claims, which were first made by her relatives a century later.

ANSWER: Betsy **Ross** [or Elizabeth **Griscom**, or Elizabeth **Ashburn**, or Elizabeth **Claypoole**]

[10] The Supreme Court case *Texas v Johnson* held that doing this action to a flag was protected speech under the First Amendment.

ANSWER: **burning** the flag [accept **desecrating** the flag]

[10] The flag was briefly changed to have 15 stripes following the admission of Vermont and Kentucky to the union, before reverting to this many stripes in all subsequent designs, one for each of the original colonies.

ANSWER: **13** <A. Gao, History>