

Froshmore Science

Round Three

Read only for Round Three

Officials Checklist and reminders:

- 1.) Review this checklist and reminders document and the rules flow chart. _____
- 2.) Pencils and fresh scratch paper for each participant _____
- 3.) Timer instructions _____
- 4.) Identify the head coach for each team. _____
- 5.) Identify the team captain. _____
- 6.) Review the pumpnickel rule _____

Accept only the answer to the bonus question that comes from the captain.

The captain may defer to another team member to give the answer to the bonus question.

If you want them to indicate a deferral in a specific way – tell them at the beginning of the match. “If you are going to defer on a bonus question, please do so by”

Coaches may use an ipad or table to keep score (I've sent out an excel score sheet) They may not use their ipad, phone or other technology to look up answers, send or received text messages or emails or to make calls during competition.

Before you begin, remind students that on a toss-up question they must buzz-in and be recognized before giving the answer and that they may NOT confer on a toss-up. You may only confer on a bonus question.”

When you read a toss-up question – identify the subject, then read the question.

If the team member buzzes-in before the question is completed and the answer is incorrect, say ‘incorrect, I will finish the question’ then finish reading the question.

If you have finished reading the question when the first team buzzes-in and gives an incorrect response say ‘incorrect,’ look at the second team call them by team name and say ‘_____ I have finished the question’

If the time has expired, their response should be to immediately buzz-in to be recognized. If there is still time (5 seconds for a regular question 15 on a math computation) they have the remaining time to buzz.

If the toss-up question is not answered correctly by either team, give the correct answer. Do NOT read the bonus question, go on to the next toss-up. **If you need a replacement question for this subject, you may use the unused bonus.**

The first time you read a bonus question for each team say ‘Here is your bonus question, you do not need to buzz-in. Remember you may confer on this question, and I will take the answer from the team captain.’

There is NOT a penalty for buzzing during a bonus question.

When the time for conferring has expired (10 seconds – 15 on math or science computation) **call for the answer.** Say, ‘Captain?’ or ‘answer please’ (or something similar). If they do not give you an immediate answer say ‘time’ and give the correct answer.

There is no limit to the number of team members a team substitutes.

On a toss-up question, do not give the correct response until you have given both teams an opportunity to answer the question.

Leading articles such as “the,” “an,” and “a” are not required (e.g., Tale of Two Cities is an acceptable answer for The Tale of Two Cities). However, if an article is given, it must be the correct one.

Plural/Singular answers are acceptable unless otherwise delineated.

Last names are acceptable, except where there is more than one common person in the same field.

Prompt for more information by saying – ‘more’ or ‘more specific’.

Questions requiring additional computation time (15 seconds) have computation in the subject line - MATH COMPUTATION: or SCIENCE COMPUTATION: or BONUS COMPUTATION: (If it needs it and we forgot it, add it!)

Math or Science questions that do not require computation and receive regular question time (5 for toss-up and 10 for bonus) do not have computation in the subject line - MATH: or SCIENCE: or BONUS

Explain the addition of the word Computation to the timer and the team at the beginning of the tournament. After the first question containing COMPUTATION: You may choose to say only Computation if you wish.

Give your stall count before the game starts. A stall count is the amount of time allowed for the student to begin their answer once you've called on them. "My stall count is _ _ _." Fill in the blanks with your count. Do you count 1, 2, stall? 1, 2, 3, stall? Do you say stall on the upbeat of the 3rd second or the downbeat? My preference is you count 1(1001), 2(1002), 3(1003) with stall being called on the downbeat of 3. (Down beat being the end of the 1003 with 100stall. You do not have to say the 1000 or the second 1, 2 or 3 out loud. You do need to make some type of physical indication - head nod, hand count (like a basketball referee counting the backcourt) even a foot tap. But do something so the student can see the seconds slipping away. This also helps with consistency. Neither team can say the other team received more time before a stall was called. When an immediate answer is expected 1 second is adequate time to allow before a stall is called.

"Welcome to Round Three of the tournament. I am _____, your moderator. (if you have a judge, timer and scorekeeper, introduce them as well) Our two teams are _____ and _____. Head coaches, will you please stand. A protest may be lodged only by the head coach." (run a buzzer check) "Students, remember, you may not give an answer until you are recognized. If you do so, it will be ruled as an incorrect response, even if your answer is correct. Explain the timing for Math or Science Computation: (see instructions) Good sportsmanship is expected from **all** players, substitutes, coaches, spectators and parents. Except for using the excel spreadsheet to keep score, you may not use computers, smart phones, iPad, etc. during the competition. Turn off all and put away all electronics at this time. Remember a player will be removed for the remainder of the game if any device is found at the table. (pause) Are there any questions? Let's begin."

- _____ 1. **HUMANITIES: One example of these songs originated from the Ukrainian New Year's song "Shchedryk." A traditional Irish example of these songs is Don Oíche Úd i mBeithil [Don Iche Ood i Methil] or "That Night in * Bethlehem."** What are these songs frequently sung around a winter holiday?

ANSWER: (Christmas) Carols

BONUS BONUS: The Christmas Carols, "Silent Night," and "O Tannenbaum" originated in what European country?

ANSWER: Germany

- _____ 2. **SCIENCE This physical quantity is proportional to both mass and velocity, and it's conserved in collisions when no external forces act on a system.*** Its conservation can explain the recoil of a gun when a bullet is fired. Identify this quantity, symbolized by p and given by the formula $p=mv$.

ANSWER: momentum

BONUS BONUS SCIENCE CALCULATION If the formula for momentum is $p=mv$, what is the momentum of a 4.5 kg object that moves at 3 m/s, what is its momentum?

ANSWER: 12.5 (kg m/s)

- _____ 3. **MATHEMATICS:** What is the base of a common logarithm?

ANSWER: **Ten**

BONUS BONUS: Natural logarithms have a base of the natural number "e" which is in honor of which mathematician?

ANSWER: **(Leonhard) Euler** [pronounced "Oiler" but accept "U ler"]

- _____ 4. **SCIENCE This element is a key component of both organic molecules and lipids, and is found in all living organisms.*** It is commonly bonded to hydrogen and oxygen to form molecules like sugars and fats. What element is this?

ANSWER: carbon

BONUS BONUS SCIENCE Alkanes are compounds that contain mostly hydrogen and carbon with only single bonds. What is the formula for hydrocarbon propane?

ANSWER: C₃H₈ (Read C three H eight)

- _____ 5. SOCIAL STUDIES: A comedian with this last name portrayed the leader of Freedonia in *Duck Soup* in which he starred alongside his * brothers. A philosopher with this last name wrote “A specter is haunting Europe” in *The Communist Manifesto*. What is this last name shared by comedians Zeppo, Harpo, Chico, and Groucho and philosopher Karl?

ANSWER: Marx

BONUS BONUS: Marx co-wrote the *Communist Manifesto* with what author of *The Condition of the Working Class in England*?

ANSWER: (Friedrich) Engels

- _____ 6. SCIENCE This kingdom includes multicellular, eukaryotic organisms* that are heterotrophic and lack cell walls, such as mammals, insects, and fish. Name this kingdom that is typically contrasted with plantae in biology classes.

ANSWER: animalia (or animal)

BONUS BONUS SCIENCE What is the term for the scientific naming system that uses two names, usually Latin, to uniquely identify each species?

ANSWER: binomial nomenclature

END OF FIRST QUARTER

The score at the end of the first quarter is
Team one _____ Team two _____

Are there any questions?

(pause and look at the coaches if there are no protests proceed)

"Coaches... you may substitute if you wish."

- _____ 7. LITERATURE: It's shrouded in secrecy – almost always a second identity or life that is hidden* from a character's friends or family. It's a secondary self. What is the term that describes a character having more than one life, a secret identity, or an alternate personality?

ANSWER: alter ego

BONUS BONUS: Who is the alter ego of Dr. Jekyll?

ANSWER: Mr. Hyde

- _____ 8. SCIENCE The resistance that a capacitor provides to the change in voltage across it is measured in this unit, symbolized with the letter F.* Named after an English scientist, this unit can be calculated as the charge stored per unit of potential difference. Identify this unit of capacitance.

ANSWER: Farad

BONUS BONUS SCIENCE Which device, made of two conductive plates separated by an insulating material, is used to store electrical charge?

ANSWER: capacitor

_____ 9. MATHEMATICS: What word, beginning with T, is a line that intersects two other lines in a plane?

ANSWER: **Transversal**

BONUS BONUS: When two parallel lines are crossed by a transversal, what is the name of the angles, one on each line on the same side of the transversal, that are congruent?

ANSWER: ***Corresponding (Angles)***

_____ 10. POP/CE: **The leader of this group Hassan Nasrallah*** was killed in an Israeli airstrike. Nasrallah was the most powerful figure in Lebanon and Iran's closest ally in the region. For which group was Nasrallah a leader?

ANSWER: **Hezbollah**

BONUS BONUS: He was killed in an airstrike of the capital of Lebanon. Name it.

ANSWER: **Beirut**

_____ 11. SOCIAL STUDIES: **A member of this family commanded a cavalry regiment during the Revolutionary War and gained the nickname "Light Horse Harry." Another member of this family ended the * Harpers Ferry Raid and later commanded the Confederate Army at Gettysburg. Robert E. was a member of what Virginia political family?**

ANSWER: **Lee**

BONUS BONUS: The first member of the Lee family in Virginia made his fortune in what cash crop which was farmed at the Jamestown colony?

ANSWER: **Tobacco**

_____ 12. SCIENCE **This theory proposes that the universe began from an extremely dense and hot state*** and has been expanding ever since. Name this theory, which is supported by the observation of cosmic microwave background radiation.

ANSWER: **Big Bang** theory

BONUS BONUS SCIENCE Name the scientist who developed the theory of the Big Bang.

ANSWER: Georges **Lemaître**

END OF FIRST HALF

The score at the end of the first half is

Team one _____ Team two _____

Are there any questions?

(pause and look at the coaches if there are no protests proceed)

"Coaches... you may substitute if you wish."

- _____ 13. FINE ARTS: **A work by this composer celebrates the end of the War of the Austrian Succession and is called *Music for the Royal Fireworks*. That work by this composer was commissioned by * George II for whom this composer wrote the coronation anthem *Zadok the Priest*. Who is this German-born composer who wrote *Water Music*?**

ANSWER: (George Frideric) Handel

BONUS BONUS: In what operatic work by Handel does the “Hallelujah” chorus appear?

ANSWER: Messiah

- _____ 14. SCIENCE **This class of animals is characterized by a cold-blooded metabolism, scales, and laying eggs with leathery or hard shells.*** Some species, like the leatherback, are capable of migrating thousands of miles. What class of animals includes species such as turtles, snakes, and lizards?

ANSWER: reptilia or reptiles

BONUS BONUS SCIENCE What is the name of the process in which some reptiles, such as snakes, shed their skin as they grow?

ANSWER: ecdysis or molting

- _____ 15. MATHEMATICS COMPUTATION: What percent of 120 is 48?

ANSWER: **40** (%)

BONUS BONUS COMPUTATION: What is 825 percent of 140?

ANSWER: **1155**

- _____ 16. SOCIAL STUDIES: **The Panjshir Offensive took place in this modern day country and was a victory for the Mujahideen. This modern-day country was the target of the Great Game between Russia and the * United Kingdom.** What is this modern-day country currently led by the Taliban?

ANSWER: Afghanistan

BONUS BONUS: The Mujahideen was led by what man, who was later killed by Seal Team 6 in Operation Neptune Spear?

ANSWER: (Osama) Bin Laden

- _____ 17. SCIENCE **This is the smallest unit of an element that retains the chemical properties of that element.*** It consists of a small dense nucleus surrounded by mostly empty space. What is this basic unit of matter called?

ANSWER: atom

BONUS BONUS SCIENCE This ancient Greek philosopher is credited with using the term atom to describe particles we can't see. Who is he?

ANSWER: Democritus

- _____ 18. HUMANITIES: **The substance “Slow Death” appears in a novel named for this concept by Philip K. Dick. The Community is an example of this concept in Lois Lowry’s * *The Giver*. Gilead is an example of what governmental entity in fiction, contrasted with utopia?**

ANSWER: **Dystopia**

- BONUS BONUS: The Dystopian World State appears in the novel *Brave New World* by what British author?

ANSWER: (Aldous) **Huxley**

END OF THIRD QUARTER

The score at the end of the third quarter is

Team one _____ Team two _____

Are there any questions?

(pause and look at the coaches if there are no protests proceed)

"Coaches... you may substitute if you wish.

- _____ 19. SCIENCE **This organ system includes the kidneys, ureters, bladder, and urethra* and is responsible for removing waste and regulating fluid balance. Name this organ system for which you might have to ask for a pass in order to go and let it carry out its function.**

ANSWER: **urinary** system (or **excretory** system)

- BONUS BONUS SCIENCE What is the primary nitrogenous waste product that the kidneys filter from the blood?

ANSWER: urea

- _____ 20. POP/CE: **Her first major role was starring *Othello* on stage and screen. This actress died in 2024* at the age of 89. Name the British dame who also played Minerva McGonagall in *Harry Potter and the Sorcerer’s Stone*.**

ANSWER: **Maggie Smith**

- BONUS BONUS: Smith also played Violet Crawley in which famous PBS period drama?

ANSWER: **Downton Abbey**

- _____ 21. MATHEMATICS COMPUTATION: How many distinguishable permutations are there of the letters in the word HOPPER?

ANSWER: **360** [6 factorial divided by 2 factorial, $6!/2! = 720/2$]

- BONUS BONUS COMPUTATION: Simplify the expression: $7! \cdot 9! / (8! \cdot 6!)$
[READ: Seven factorial nine factorial divided by eight factorial six factorial]

ANSWER: **63**

- _____ 22. SCIENCE What law, developed by Isaac Newton, states that every mass attracts every other mass with a force proportional to the product of their masses and inversely proportional to the square of the distance between them?

ANSWER: Newton's law of universal gravitation

- BONUS BONUS SCIENCE To 1 decimal place, what is the approximate acceleration due to gravity on Earth's surface?

ANSWER: 9.8 (m/s²)

- _____ 23. SOCIAL STUDIES: **This woman, who later campaigned for the US Senate, was injured during Bloody Sunday while she participated in the march from Selma to Montgomery. This woman took part in the March on Washington after leading a * sit-in at the Katz Drug Store. Who is this civil rights leader from Oklahoma?**

ANSWER: (Clara) Luper

- BONUS BONUS: Luper was a member of the Youth Council of what civil rights organization founded by W.E.B. du Bois?

ANSWER: NAACP [National Association for the Advancement of Colored People]

- _____ 24. SCIENCE **This term refers to the process by which a planet's atmosphere traps heat,*** preventing it from escaping into space. Venus experiences an extreme version of this phenomenon, resulting in surface temperatures hot enough to melt lead. Name this effect.

ANSWER: greenhouse effect

- BONUS BONUS SCIENCE **TWO ANSWERS REQUIRED** Name the two planets in our solar system with atmospheres that experience the greenhouse effect most intensely.

ANSWER: Venus and Earth

END OF GAME

The score at the end of the game is

Team one _____

Team two _____

If there is a tie allow for substitution before you ask the tie-breaker questions. Read all 5 to determine the winner.

Tie Breakers

SCIENCE What do we call the point on Earth's surface directly above an earthquake's origin within the crust, where seismic waves first reach the surface?

ANSWER: epicenter

SCIENCE What is the name for the molten rock that exists beneath Earth's surface, which, when it erupts, forms lava?

ANSWER: magma

SCIENCE In genetics, what is the molecule that carries genetic instructions for the development, functioning, growth, and reproduction of all known living organisms?

ANSWER: DNA (Deoxyribonucleic Acid)

SCIENCE What organelle, found in plant cells but not in animal cells, uses sunlight to produce energy through photosynthesis?

ANSWER: chloroplast

SCIENCE In ecosystems, what term describes an organism, like a lion or eagle, that hunts other animals for food?

ANSWER: predator

Are there any questions? (pause and look at the coaches if there are no protests proceed)
This ends the game. "