

FROSHMORE SCIENCE 23-24

Round Two

Read only for Round Two

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 One 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. (pause) Are there any questions? Let's begin."

- _____ 1. **SCIENCE: This can be measured using inertia or by direct comparison with objects where the value of this property is known.*** The value of this property remains unchanged by buoyancy or gravity. What is this property symbolized by a lowercase "m"?

ANSWER: Mass

BONUS BONUS: This is the effect of gravity on mass. The SI unit for this property is Newtons.

ANSWER: Weight

- _____ 2. **HUMANITIES: Tablet 3 of the Atra-Hasis contains one of these stories. One of these stories in Chinese mythology was stopped by a creation of Yu the Great. The Epic of * Gilgamesh contains an example of what story, another example of which in the Book of Genesis caused Noah to build his ark?**

ANSWER: (Great) Flood (Narrative) [also accept Deluge Myth; accept any other obvious equivalents]

BONUS BONUS: In what religious system was a drought caused by Ahreman cured by a flood from the king Mithras?

ANSWER: Zoroastrianism

- _____ 3. **SCIENCE: This is a series of reactions which produce NADH*** to be used by the electron transport reaction to produce ATP. Named for the acid that is broken down and rebuilt, what is the name for this process that is also named for its discoverer, Hans Krebs?

ANSWER: Citric Acid Cycle [Also accept Krebs's Cycle before the name is said]

BONUS BONUS: This is an important factor in the oxidation of pyruvate in the Citric Acid Cycle. What is the name for this thiol, a non-protein compound that used as a substrate?

ANSWER: Coenzyme A

- _____ 4. **SOCIAL STUDIES: The leader of this country's Social Democratic Party was assassinated in 1986 and was named Olof Palme. This country achieved its territorial height under a leader known as the * Lion of the North. Gustavus Adolphus was a king of what country, governed from Stockholm?**

ANSWER: (Kingdom of) Sweden

BONUS BONUS: Aland is a Swedish-speaking island controlled by what other northern European country?

ANSWER: (Republic of) Finland

_____ 5. MATH COMPUTATION: What is the square root of the cube root of 64?

ANSWER: **2**

BONUS BONUS COMPUTATION: What is the square of the cube of three?

ANSWER: **729**

_____ 6. CURRENT EVENTS/POP CULTURE: **He was suspended by FIFA*** after giving a player a non-consensual kiss on the lips. The kiss happened after Spain won the women's World Cup. Name the man who is the president of the Spanish soccer federation.

ANSWER: **Luis Rubiales**

BONUS BONUS: Which player did Rubiales kiss?

ANSWER: **Jenni Hermoso**

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. SCIENCE: **In a 2023 paper, Dr. Vivek Bajpai of the University of Oklahoma identified 135 new genes responsible for regulating the production of this pigment.*** His team identified a total of 169 individual genes that influenced the production of this pigment which gives hair, eyes, and skin their color. What is this pigment which protects humans from UV radiation?

ANSWER: **Melanin**

BONUS BONUS: This is a skin condition in which melanin production cells die or cease functioning. It is more noticeable in people with darker skin and results in patches of skin without color. What is this chronic condition that often results in self-esteem issues for those who suffer from it?

ANSWER: **Vitiligo**

_____ 8. FINE ARTS: **This artist painted a nude woman being brought flowers by a servant in his *Olympia*. Another work by this artist depicted the bar of a French * night club. A *Bar at the Folies-Bergere* is a work by what early Impressionist painter of *Luncheon on the Grass*?**

ANSWER: (Edouard) **Manet** [do NOT accept Claude Monet; be careful of pronunciation]

BONUS BONUS: During a trip to Spain, Manet was inspired by the work of what Spanish artist of *Third of May, 1808*?

ANSWER: (Francisco) **Goya**

- _____ 9. SCIENCE: **Lactobacillus and Staphylococcus are both classified as this type of bacteria.*** This type of bacteria are given their name based on their uptake of crystal violet stain by the lipids in the cell wall. What is the name for this group of bacteria that are named for this characteristic stain test?

ANSWER: **Gram Positive** (Bacteria)

- BONUS BONUS: Staphylococcus bacteria are one of the most common bacteria, but several strains are antibiotic resistant. These strains resist the effects of Penicillin and cephalosporin. What is the name given to these strains?

ANSWER: **Methicillin-resistant Staphylococcus aureus** [Also accept **MRSA** (pronounced “mer-sa”)]

- _____ 10. MATH COMPUTATION: Solve this equation for all real numbers: $x^2 - 7x + 10 = 0$

ANSWER: (x =) **2 and 5**

- BONUS BONUS COMPUTATION: Solve this equation for all real numbers: $2x^3 - 686 = 0$

ANSWER: (x =) **7**

- _____ 11. SCIENCE: **This relationship is seen between Hyenas and lions, Humans and wolves, and buck deer within a population.*** This relationship is defined by a limited resource that is shared. What is this relationship that has parallels in business, such as McDonald’s and Burger King?

ANSWER: **Competition**

- BONUS BONUS: Competition usually harms both the populations (or individuals) that are involved in that competition. This relationship, however, benefits both individuals involved. What is this relationship seen in bees and flowers?

ANSWER: **Mutualism** [also accept **Symbiosis**]

- _____ 12. SOCIAL STUDIES: **This event’s perpetrator was captured during a showing of the film *War is Hell*. A film reel showing this event was taken by photographer Abraham * Zapruder.** Lee Harvey Oswald was the perpetrator of what event, in which the 35th president was killed in Dallas?

ANSWER: **Assassination of John F. Kennedy** [accept Assassination of JFK or obvious equivalents; prompt on Assassination of Kennedy or obvious equivalents]

- BONUS BONUS: What brother of John F. Kennedy was assassinated by Palestinian nationalist Sirhan Sirhan?

ANSWER: **Robert** (F.) **Kennedy** [also accept Bobby Kennedy or RFK]

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. SCIENCE: **Leopards, katydids, and soldiers all use this method of protection against both predators and prey.*** Either natural or artificial, this is the process of blending into the background to avoid being seen. What is this method of protection whose name is based on the French for “To Disguise?”

ANSWER: Camouflage

BONUS BONUS: While the chameleon is often held as the pinnacle of camouflage, this marine invertebrate does a much better job, changing both color and shape to impersonate everything from rocks to other animals.

ANSWER: Octopus

14. LITERATURE: **He’s one of the most widely read French authors*** famed for his historical fiction of high adventure. He wrote more than a hundred plays and novels. Name the man who wrote the infamous Three Musketeers trilogy.

ANSWER: Alexandre Dumas

BONUS BONUS: Dumas wrote the classic story of an innocent man wrongly imprisoned and his brilliant strategy for revenge. Name this book.

ANSWER: The Count of Monte Cristo

15. SCIENCE: **One of these was visible in Oklahoma on October 14, 2023.*** Because of the relative distances, it was not total and only 75% coverage occurred. What is this astronomical event which occurs when the moon moves between the Earth and the Sun, casting a shadow on Earth and blocking the Sun's light?

ANSWER: (Annular) (Ring) Solar Eclipse

BONUS BONUS: A solar eclipse can only occur during what lunar phase, when the moon is positioned between the Earth and the Sun?

ANSWER: New Moon

16. MATH COMPUTATION: What is the supplement in degrees of an angle of 128.7 degrees?

ANSWER: **51.3** (degrees)

BONUS BONUS COMPUTATION: Find the supplement in radians of an angle of 12π over 23 radians.

ANSWER: **11π over 23** (radians)

17. SCIENCE: **This element was predicted by Mendeleev and called eka-aluminum.*** It is used in a well-known chemist prank to make a spoon that melts in hot liquid. What is this element with atomic number 31 that was discovered by a French chemist and named for his homeland?

ANSWER: Gallium

BONUS BONUS: Mendeleev predicted two other elements, which he named eka-silicon and eka-boron. Name these two elements, numbered 32 and 21 and having the chemical symbols Ge and Sc.

ANSWER: Germanium and Scandium

18. FINE ARTS: **A composer from this country wrote the fantasy overture *Romeo and Juliet* with help from another composer from this country who educated the composer of “The Flight of the * Bumblebee,”** who is also from this country. The Mighty Handful is a group of composers from what country which included Modest Mussorgsky and Nikolai Rimsky-Korsakov?

ANSWER: Russia

BONUS BONUS: What Russian composer wrote *Romeo and Juliet* and the *Manfred Symphony* with help from Mily Balakirev?

ANSWER: (Pyotr Ilyich) Tchaikovsky

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. SOCIAL STUDIES: **This man shattered his jaw in a failed suicide attempt. This man replaced Georges Danton and was killed during the * Thermidorian Reaction.** Who is this man who led the Committee for Public Safety during France’s Reign of Terror?

ANSWER: (Maximilien) Robespierre

BONUS BONUS: Robespierre was also an influential member of what radical political club during the French Revolution?

ANSWER: Jacobin (Club)

20. SCIENCE: **For any sample of gas at a constant temperature, pressure times volume equals a constant.*** This law can be rewritten as "P1 times V1 equals P2 times V2." What is this gas law that states that the pressure of a gas is inversely proportional to its volume?

ANSWER: Boyle's Law

BONUS BONUS: Similar to Boyle's Law, this gas law states that the Temperature and Volume of a gas sample are directly proportional.

ANSWER: Charles' Law

21. CURRENT EVENTS/POP CULTURE: **He says he won’t step down despite continued questions about his health*** after two freezing episodes. The Kentucky lawmaker froze when talking to reporters. Name the Republican senator who is the Minority Leader.

ANSWER: Mitch McConnell

BONUS BONUS: Name the senator from New York who is the Majority Leader.

ANSWER: Chuck Schumer

- _____ 22. MATH: Given a relation with a given domain and range. What is the name for the relation when each member of the domain has exactly ONE member in the range?

ANSWER: **Function**

BONUS BONUS: One ordered pair has an x coordinate and a y coordinate. The y-coordinate is called an ordinate. The x-coordinate is called an abscissa. SPELL the word abscissa [pronounced ab SIS uh].

ANSWER: **A B S C I S S A**

- _____ 23. SCIENCE: **This phylum includes all fish, amphibians, reptiles, birds, and mammals.*** This group is defined by having a cartilage rod, a dorsal nerve tube, pharyngeal slits and post-anal tail at some stage of development. What is this phylum that includes all vertebrates?

ANSWER: **Chordates**

BONUS BONUS: What is the term for the flexible rod made of cartilage that gives chordates their name?

ANSWER: **Notochord**

- _____ 24. SOCIAL STUDIES: **This man led a force which included a regiment of Buffalo Soldiers on a mission to capture Pancho Villa. This man led troops during the * Hundred Days Offensive in World War I.** Who is this American general, nicknamed “Black Jack” who led the American Expeditionary Forces in the First World War?

ANSWER: (John J.) **Pershing**

BONUS BONUS: The American Expeditionary Forces were instrumental in the Allied victory in what final offensive of World War I?

ANSWER: **Meuse-Argonne** (Offensive) [accept Battles of Meuse-Argonne, or pretty much any answer that includes “Meuse-Argonne”]

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.

Tie Breakers

SCIENCE: This weightless state is not really free of gravity, it is just that all reference points are experiencing the same effects of gravity as the observer.* This results in the appearance of a loss of gravity. What is this state between jumping from an airplane and opening the parachute called?

ANSWER: **Freefall**

SCIENCE: This compound is a long chain of glucose molecules that can be found in bacterial biofilms. It is a polysaccharide that is used to provide support in the cell walls of plants. Name this compound used to make paper and paper products.

ANSWER: **Cellulose**

SCIENCE: While this common unit expresses a relationship between a measured value and a reference value and can be used with many other units,* it is most often associated with acoustics. What is this unit used to express sound pressure levels based on the human average lowest perceived sound level?

ANSWER: **Decibel**

SCIENCE: If this type of creature is obligate, [pronounce "AH-bli-gate"] there is no plant material in its diet.* If it is facultative, [pronounce "FAK-you-la-tiv"] there might be some non-animal products to its diet, but it relies mostly on predation or scavaging. What is this term for a meat-eater?

ANSWER: **Carnivore**

SCIENCE: Jimmy the lazy SCIENCE student claims he is not lazy, he just has this property associated with mass.* He claims it prevents him from doing things. What is this property of matter that must be overcome to produce or change the motion of an object?

ANSWER: **Inertia**

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