Froshmore Math

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 pumpernickel 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. MATH COMPUTATION: Solve for x: $x^2 - 169 = 0$

ANSWER: **13 and -13** [or **plus or minus thirteen**] (MUST HAVE BOTH ANSWERS)

BONUS BONUS COMPUTATION: Solve for x: $x^2 - 12 = x$

ANSWER: **-3 and 4** [may say 4 and -3; must have both answers]

_____ _____ 2. HUMANITIES: **Damdami Taksal is an organization of this religion which bans the consumption of caffeine. Full initiates into this religion are known as its Khalsa *** community and must follow the "5 Ks." Guru Nanak is the founder of what syncretic Indian religion centered around the Punjab region?

ANSWER: **Sikhism**

BONUS BONUS: Many Sikh males take what last name, which is Sanskrit for lion?

ANSWER: **Singh**

_____ _____ 3. MATH COMPUTATION: What is the value, using exponential notation, of seven to the eighth times seven to the fifth times seven to the zero divided by seven to the third?

ANSWER: **7^{10}** [seven to the tenth]

BONUS BONUS COMPUTATION: What is 16 to the negative one-fourth power?

ANSWER: **1/2** [one-half]

_____ _____ 4. SCIENCE CALCULATION Light waves travel at the speed of light in a vacuum which is 3.8×10^8 meters per second. Given that the speed of light is equal to wavelength times frequency of a wave, what is the frequency of a light wave that has a wavelength of 7.6 meters?

ANSWER: 50,000,000 Hertz (or inverse seconds or s^{-1})

BONUS BONUS SCIENCE CALCULATION If a light wave is not traveling in a vacuum, but has a frequency of 15,000 Hertz and a wavelength of 5 m, what is the speed of this wave in meters per second?

ANSWER: 75,000 meters per second

_____ _____ 5. MATH: What is the term for the polygon with twelve sides?

ANSWER: **Dodecagon**

BONUS BONUS: What is the common name for a hexahedron?

ANSWER: **Cube**

_____ _____ 6. SOCIAL STUDIES: **This organization implemented Operation Condor to overthrow Socialist governments in South America. This organization recruited mobsters including Santo Trafficante to *** kill Fidel Castro. What is this organization, America's primary foreign intelligence organization headquartered in Langley, Virginia?

ANSWER: **CIA** [or Central Intelligence Agency]

BONUS BONUS: The CIA trained Brigade 2506, a group of refugees who fought in what failed invasion of Cuba?

ANSWER: **Bay of Pigs** (Invasion)

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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.

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_____ _____ 7. LITERATURE: **It is typically written in four-line stanzas called quatrains.*** It can also refer to a slow, romantic, or sentimental song. What is a poem that tells a story called?

ANSWER: **ballad**

BONUS BONUS: Name the popular Christmas ballad written by Clement Clarke Moore.

ANSWER: ***The Night Before Christmas***

_____ _____ 8. MATH COMPUTATION: What are the factors of the polynomial $2x^2 + 16x + 30$ [two X squared plus 16X plus 30]?

ANSWER: **2(x + 5)(x + 3)   OR   2(x + 3)(x + 5)**   [must have the number 2 included]

BONUS BONUS COMPUTATION: What are the factors of the polynomial $x^3 + 8$ [X cubed plus 8]?

ANSWER: **(x + 2)(x² - 2x + 4)**   [(quantity) X plus two times (quantity) X squared minus 2X plus 4]

_____ _____ 9. SCIENCE **Launched on Christmas Day in 2021, this telescope is named after the second administrator of NASA.** Name this telescope that will observe space to complete its mission using near-infrared light.

ANSWER: James Webb

BONUS BONUS: The James Webb Telescope uses near-infrared light to observe space. What type of light does the Hubble Space Telescope use to accomplish its mission?

ANSWER: Visible

_____ _____ 10.   MATH COMPUTATION:. How many sides does a regular polygon have if each interior angle is 165 degrees?

ANSWER: **24**

BONUS   BONUS COMPUTATION: What is the measure, in degrees, of each interior angle of a regular polygon with
120 sides?

ANSWER: **177** (degrees)

_____ _____ 11.   POP/CE: **Russia signed a deal with this country to provide mutual aid*** if either country is attacked. Officials say the country has already provided ammunition to Russia for use in the war in Ukraine. Name the east Asian dictatorship.

ANSWER: **North Korea**

BONUS   BONUS: The deal was signed in North Korea's capital. Name it.

ANSWER: **Pyongyang**

_____ _____ 12.   MATH COMPUTATION:.An intercepted arc formed by a radius and a tangent line with its vertex at the point of tangency has a measure of 146 degrees. What is the measure in degrees of this angle?

ANSWER: **73**   (degrees)

BONUS   BONUS COMPUTATION: Two chords intersect inside a circle, but not at the center of the circle. One angle formed by the intersection of the chords is 42 degrees. If one of the arcs intercepted by the angle and its vertical angle is 36 degrees, what is the measure, in degrees, of the other intercepted arc?

ANSWER: **48** (degrees)

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.   SOCIAL STUDIES: **This man was succeeded by Domingo Caycedo in a post which he resigned before the Admirable Congress. This man issued the Decree of War to the Death and participated in the *** Guayaquil Conference. Who is this South American revolutionary leader known as "The Liberator?"

BONUS

ANSWER: (Simon) **Bolivar**

BONUS: Bolivar issued the Cartagena Manifesto after the collapse of the First Republic of what country, which today is a Bolivarian Republic led by Nicolas Maduro?

ANSWER: **Venezuela**

_____ _____ 14. FINE ARTS: **A _parody_ of a musical by this duo includes the song "Shpadoinkle" and is _Cannibal! The Musical_. That musical by this duo includes a dream ballet and the song** * "Oh, what a beautiful morning." Who is this duo who created the musical _Oklahoma_?

ANSWER: (Richard) **Rodgers and** (Oscar) **Hammerstein** [accept names in either order, but both answers required)

BONUS   BONUS: What other Rodgers and Hammerstein musical includes the song, "Getting to Know You" and is based on the novel _Anna and the King of Siam_?

ANSWER: **The King and I**

_____ _____ 15. MATH COMPUTATION: Solve this equation for x: $12x + 5 = 3x - 112$

ANSWER: (x =) **-13**   [negative thirteen]

BONUS   BONUS COMPUTATION: Solve this equation for y: $5y^3 + 7y - 31 = 289 + 7y$

ANSWER: (y =) **4**

_____ _____ 16. SCIENCE CALCULATION: A layer of rock was analyzed to determine its age using potassium-argon dating. If the half-life of potassium-40 is 1.25 billion years and the sample still contains 25% of the parent potassium, how old is the rock layer in years?

ANSWER: 2,500,000,000 (2.5 billion)

BONUS   BONUS CALCULATION: An archaeologist analyzed an object using radiocarbon dating to determine its age. If the half-life of carbon-14 is 5730 years and 6.25% of the parent carbon-14 still remains, how old is the object in years?

ANSWER: 22,920

_____ _____ 17. SOCIAL STUDIES: **In 1999, this state elected a governor from the Reform Party, former wrestler Jesse Ventura. In 2020, this state was the site of riots following the death of** * George Floyd. Tim Walz is the governor of what midwestern state?

ANSWER: **Minnesota**

BONUS   BONUS: Minnesota was also the home state of what Vice President under Lyndon B. Johnson, who lost the 1968 presidential election to Richard Nixon?

ANSWER: (Hubert H.) **Humphrey**

_____ _____ 18. POP/CE: **Dallas will be home to this new in-person entertainment concept.*** The entertainment venue will host dining, live events, and interactive experiences based on the streaming service's most popular content. Name the company opening its first brick and mortar entertainment experience.

ANSWER: **Netflix**

BONUS   BONUS: The new venue will have a gift shop solely devoted to which Netflix show set in 1980s Indiana?

ANSWER: **_Stranger Things_**

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. MATH COMPUTATION:. The Tenth Street Book Club has twelve members. How many ways can they select a president and a vice president?

ANSWER: **132**

BONUS BONUS COMPUTATION: The Tenth Street Book Club has read seven books this year so far. In how many different ways could they line up these seven books on a bookshelf?

ANSWER: **5040**

_____ _____ 20. SCIENCE **Cells, like all living things, have a life cycle. Most of a cell's life is spent in this phase** where it prepares to undergo cell division. What is the name of this phase, that includes growth, DNA replication, and preparation for mitosis?

ANSWER: Interphase

BONUS BONUS: Within mitosis are several sub-phases. What is the final stage of mitosis in which the new nuclear membranes appear in each new daughter cell?

ANSWER: telophase

_____ _____ 21. HUMANITIES: **This group's traditional local religion features deities that are either peaceful or wrathful and is known as Bon. This group's independence was ended after a conquest in 1951 by the *** People's Republic of China. What is this people group, who name a plateau in western China and whose leader is the Dalai Lama?

ANSWER: **<u>Tibetans</u>**

BONUS BONUS: What other minority group in China has been subject to a cultural genocide centered primarily in the Xinjiang region?

ANSWER: **<u>Uyghurs</u>** [pronounced Wee-gurs]

_____ _____ 22. MATH COMPUTATION:. How many ounces are there in five gallons?

ANSWER: **640** (ounces)

BONUS BONUS COMPUTATION: How many teaspoons are there in 45 tablespoons?

ANSWER: **135** (teaspoons)

_____ _____ 23. SOCIAL STUDIES: **This modern-day country was the site of the Diponegoro War, which led to its dominance by the Dutch East India Company. A president of this country established the principle of Guided Democracy and was named *** Sukarno. What is this country governed from Jakarta?

ANSWER: (Republic of) **Indonesia**

BONUS BONUS: What authoritarian and famously corrupt politician succeeded Sukarno as President of Indonesia?

ANSWER: **Suharto**

_____ _____ 24. MATH: What is the base of a common logarithm?

ANSWER: **Ten**

BONUS BONUS: A logarithm with a base of **e** is known as what kind of logarithm?

ANSWER: **Natural** (logarithm)

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
MATH: Which trig function is defined as the adjacent leg over the hypotenuse?
ANSWER**: Cosine**

MATH COMPUTATION: Calculate the quantity five x cubed, y to the fifth, close quantity to the fourth power.
$$(5x^3y^5)^4$$
ANSWER: **$625x^{12}y^{20}$**   [625 X to the twelfth (power), Y to the twentieth (power)]

MATH COMPUTATION: Evaluate $(2x + 7)^2$ [READ evaluate two X plus seven, quantity squared]
ANSWER: **$4x^2 + 28x + 49$**

MATH: If every element of the domain of a relation has exactly one element in the range of the relation, what is this relation called?
ANSWER: Function

MATH COMPUTATION: What is the smallest prime factor of the number 4,376,295.
                                        [Four million, three hundred seventy-six thousand, two hundred ninety-five.]
ANSWER: **3**   [sum of the digits is 36, a multiple of 3]

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