

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 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. MATH COMPUTATION:: How many sides does a regular polygon have if each interior angle is 170 degrees?

ANSWER: **36**

BONUS BONUS COMPUTATION: What is the measure, in degrees, of each interior angle of a regular polygon with 60 sides?

ANSWER: **174** (degrees)

- \_\_\_\_\_ 2. SOCIAL STUDIES: **This country defeated Bolivia and Peru in the War of the Pacific. This country's Socialist president \* Salvador Allende was ousted in a coup by Augusto Pinochet. What is this South American country governed from Santiago?**

ANSWER: (Republic of) **Chile**

BONUS BONUS: Pinochet's coup was backed by what American organization as part of its Operation Condor?

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

- \_\_\_\_\_ 3. MATH COMPUTATION:: An intercepted arc formed by two radii with a common endpoint has a measure of 46 degrees. What is the measure in degrees of its intercepted arc?

ANSWER: **92** (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 72 degrees. If one of the arcs intercepted by the angle and its vertical angle is 101 degrees, what is the measure, in degrees, of the other intercepted arc?

ANSWER: **43** (degrees)

- \_\_\_\_\_ 4. FINE ARTS: **Pycnodysostosis is a bone condition also known as this artist's syndrome. This artist's portrait of a laundry woman, *La Blanchisseuse*, is his most successful painting in open auction, while his \* *La Toilette* was transferred to the Louvre in 1983. Who is this diminutive French artist who frequently painted posters for the *Moulin Rouge*?**

ANSWER: (Henri de) **Toulouse-Lautrec**

BONUS BONUS: Toulouse-Lautrec's style was heavily influenced by impressionist painters including what painter of *L'absinthe* and *The Ballet Class*?

ANSWER: (Edgar) **Degas**

- \_\_\_\_\_ 5. SCIENCE (calculation): A car travels a distance of 250 meters in 40.0 seconds. What is its average speed in meters per second? Remember to use the correct number of significant digits.

ANSWER: 6.3 m/s [calculated 6.25 and rounded]

- BONUS BONUS: If the car accelerates uniformly and reaches a final speed of 15 m/s from rest in 10.0 seconds, what is its acceleration in meters per second squared?

ANSWER: 1.5 m/s<sup>2</sup>

- \_\_\_\_\_ 6. MATH COMPUTATION::Solve this equation for x:  $9x - 4 = 7x + 826$

ANSWER: (x = ) **415**

- BONUS BONUS COMPUTATION: Solve this equation for y:  $7y^3 - 4y + 3 = 192 - 4y$

ANSWER: (y = ) **3**

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. CURRENT EVENTS/POP CULTURE: **Students at this university are calling for change after the school shared it has the skeletal remains of 15 Native Americans\*** in its possession. The remains were mislabeled for many years, and now students want them laid to rest according to their traditions. Name the Ivy League university located in New Hampshire.

ANSWER: **Dartmouth**

- BONUS BONUS: Which famous American poet graduated from Dartmouth?

ANSWER: **Robert Frost**

- \_\_\_\_\_ 8. MATH COMPUTATION:: Simplify the expression  $6x^7y^3$  times  $13x^5y^{10}$ .  
[READ six x to the seventh, y to the third, times thirteen x to the fifth, y to the tenth]

ANSWER:  **$78x^{12}y^{13}$**  [seventy-eight x to the twelfth (power), y to the thirteenth (power)]

- BONUS BONUS COMPUTATION: If  $(4x^4)^3 = 64$ , give all possible values of x.  
[READ: If quantity four x to the fourth, end quantity, to the third power, equals sixty-four]

ANSWER: **1 or -1** [one or negative one OR  $\pm 1$  plus or minus one]

- \_\_\_\_\_ 9. SOCIAL STUDIES: **One of these things in the New Testament consists of Peter, John, and James. The Great one of these things featured John C. Calhoun, Daniel Webster and \* Henry Clay**, while the First of these in Rome included Pompey and Caesar. What is this term for a ruling group of three individuals?

ANSWER: **Triumvirate**

BONUS BONUS: The Three Pashas, also called the CUP Triumvirate ruled what empire during World War I and were largely responsible for the Armenian Genocide?

ANSWER: **Ottoman** (Empire)

- \_\_\_\_\_ 10. MATH COMPUTATION::How many different ways can eight runners win gold, silver, and bronze medals?

ANSWER: **336**

BONUS BONUS COMPUTATION: How many different ways can a kindergarten teacher line up her ten pupils?

ANSWER: **3,628,800**

- \_\_\_\_\_ 11. LITERATURE: **During his lifetime, he wrote 20 novels, 112 tales, and 12 plays\***. He is best remembered for his novel *The Portrait of a Lady*. Name the American novelist and critic.

ANSWER: **Henry James**

BONUS BONUS: When World War I broke out, James became a naturalized citizen of which country in protest over America's failure to enter the war?

ANSWER: **England**

- \_\_\_\_\_ 12. SCIENCE (calculation): A population of bacteria doubles every 30 minutes. If there are initially 100 bacteria, how many will be present after 2 hours? Provide your ANSWER with the correct number of significant digits.

ANSWER: 1600 bacteria

BONUS BONUS: The petri dish has a diameter of 95 mm. The bacterial colony starts out at 1.45 micrometers in diameter and doubles every 30 minutes. The dish has been completely filled in 8 hours. How long does it take the colony to fill one-quarter of the dish?

ANSWER: 7.0 hours

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. MATH COMPUTATION::What is the correct scientific notation for the number “Seven hundred ten trillion”?

ANSWER: **7.1 x 10<sup>14</sup>** [Seven point one times ten to fourteenth (power)]

BONUS BONUS COMPUTATION: Give the decimal value, using correct place value, of  $4.23 \times 10^{-4}$ .  
[READ: four point two three times ten to the negative fourth power]

ANSWER: **Four hundred twenty-three millionths** [do NOT accept (zero) point zero zero zero four two three]

- \_\_\_\_\_ 14. HUMANITIES: **Many of this author’s short stories were set during the Franco-Prussian War including “Mademoiselle Fifi.” Elisabeth Rousset is the real name of a prostitute in this author’s short story \* “Ball of Fat.”** What French author wrote about the efforts of Mathilde Loisel to pay for a lost piece of jewelry in “The Necklace?”

ANSWER: (Guy de) Maupassant

BONUS BONUS: What other French author and contemporary of Maupassant wrote *Germinal* and *J'accuse!*?

ANSWER: (Emile) Zola

- \_\_\_\_\_ 15. MATH COMPUTATION::How many cups are there in ten gallons?

ANSWER: **160** (cups)

BONUS BONUS COMPUTATION: How many tablespoons are there in 432 teaspoons?

ANSWER: **144** (tablespoons)

- \_\_\_\_\_ 16. SOCIAL STUDIES: **Alice Robertson was the first female member of the House of Representatives from this state. An alleged incident in the Drexel Building led to \* racial violence in the Greenwood District in this state. The Tulsa Race Massacre occurred in what US State?**

ANSWER: Oklahoma

BONUS BONUS: In 1995, the Murrah Building in Oklahoma City was bombed by Timothy McVeigh as retribution for the raid on the Branch Davidian Compound led by David Koresh in what Texas city?

ANSWER: Waco

- \_\_\_\_\_ 17. MATH::What is the term for a segment whose endpoints are on a circle?

ANSWER: **Chord**

BONUS BONUS: What is the term for a line that contains a chord?

ANSWER: **Secant** (line)

18. FINE ARTS: ***Different From the Others*** is an early example of queer cinema in this country. GW Pabst, Robert Wiene and FW Murnau were all directors of this country's \* Weimar era. Fritz Lang directed *M* and *Metropolis* in what European country from which many director's fled the rising Nazi party?

ANSWER: Germany

- BONUS BONUS: Many German Expressionist directors fled to the United States where they pioneered what style of American crime drama film which included works like *The Maltese Falcon*?

ANSWER: (Film) Noir

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 (calculation): An object with a mass of 0.25 kg is moving with a velocity of 12 m/s. Calculate its kinetic energy in Joules. Be sure to use significant digits. Remember the formula  $KE = \frac{1}{2} mv^2$ .

ANSWER: 18 Joules

- BONUS BONUS: If the object's kinetic energy were to double, what would the new velocity be, assuming the mass remained constant?

ANSWER: 17 m/s

20. MATH COMPUTATION:: What is the cosine of 300 degrees?

ANSWER: 1/2

- BONUS BONUS COMPUTATION: If the cosine of an acute angle in a right triangle is 4/5, what is the sine of that same angle in that same triangle?

ANSWER: 3/5

21. CURRENT EVENTS/POP CULTURE: **The Arab League is welcoming this country back\*** into the group. In 2011, the league suspended the country in part because of its civil war. Name the Middle Eastern country that borders Lebanon and Iraq.

ANSWER: Syria

- BONUS BONUS: What is Syria's capital city?

ANSWER: Damascus

- \_\_\_\_\_ 22. SOCIAL STUDIES: **This war's first phase was called the Bohemian Revolt, and this war featured a Swedish Intervention by Gustavus Adolphus. The \* Second Defenestration of Prague began this war which was ended by the Peace of Westphalia. What is this war, which lasted from 1618 to 1648?**

ANSWER: **Thirty Years'** (War)

BONUS BONUS: At what battle did a Swedish army led by Gustavus Adolphus defeat the Holy Roman Imperial army of Albrecht von Wallenstein, despite Gustavus Adolphus dying during the battle?

ANSWER: (Battle of) **Lutzen**

- \_\_\_\_\_ 23. MATH COMPUTATION:: The Chicamauga Chicken Company produces enough eggs to make \$.25 per egg. If they made \$24,600 last year, how many **dozen eggs did they sell?**

ANSWER: **8200**

BONUS BONUS COMPUTATION: The Chicamauga Chicken Company bought 18,500 chickens for \$227,550. How much did they pay per chicken?

ANSWER: **\$12.30**

- \_\_\_\_\_ 24. SCIENCE (calculation): Aaron performs a reaction that requires 75.0 g of substance A and 125.0 g of substance B. The reaction takes place in 500.0 mL of water, which does not participate. Aaron removes Substance X from the beaker and measures 537.0 g remaining. How much substance X was produced by the reaction?

ANSWER: 163.0 g

BONUS BONUS: Aaron had expected 175.0 g to be produced. What was percent yield of the reaction? Be sure to use the correct number of significant digits.

ANSWER: 93.1%

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**

MATH COMPUTATION: Find the value of x: Two supplementary angles have measures of  $3x + 21$  and  $7x - 11$ .

ANSWER: **17**

MATH COMPUTATION: What is the value of tangent of 405 degrees?

ANSWER: **1**

MATH COMPUTATION: How many hours in 28,800 seconds?

ANSWER: **8** (hours)

MATH: Which trig function is defined as the opposite leg over the hypotenuse?

ANSWER: **Sine**



MATH COMPUTATION: What is  $\sqrt[5]{96a^6b^{15}}$  in simplest radical form?

[READ: fifth root of 96 a to the sixth power, b to the fifteenth power]

ANSWER:  $2ab^3\sqrt[5]{3a}$  [Two a, b to the third (power) or cubed, fifth root of three a]

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