"Math Is Cool" Championships — 2021-22
78th Grade — February 2022
Sponsored by:

GENERAL INSTRUCTIONS applying to all tests:

- *Good sportsmanship is expected throughout the competition by <u>all</u> involved (competitors and observers). Display of poor sportsmanship will result in disqualification.*
- *Competitors may not use calculators or any other aids on any portion of this contest.*
- *Unless stated otherwise:*
  - *Express all rational, non-integer answers as common fractions, except in problems dealing with money, where you should give the answer as a decimal rounded to the nearest cent.*
  - *For 5th grade and up, all fractions and ratios must be reduced to simplest form, all radicals must be simplified, and all denominators must be rationalized.*
  - *Do not round or approximate answers. Leave answers in terms of π or other irrational quantities (e.g., √2), where applicable.*
- *Units are not necessary as part of your answer, unless it is a problem that deals with time, in which case, AM or PM is required. However, if you choose to use units, they must be correct.*
- *Record all answers on the colored cover sheets in the answer column only.*
- **Be sure that the student name, school, team number, etc. has been filled out at the top of each answer sheet.**
- *Tests will be scored as a 0 if answers are not recorded correctly on the answer sheets.*
- *Blank answer sheets and answer sheets with no name will be scored as a 0.*

FINAL SCORES AND AWARDS

Individual awards are determined by both the Mental Math and Individual Test scores. Individual ties are broken based on the following, in this order: total scaled individual points, total number of correct answers on the Individual Test, Mental Math raw score, number of correct answers from Individual Test #31-40, number of correct answers from Individual Test #16-30, highest numbered question answered correctly on the Individual Test working backwards from #40.

Team (School) awards are based on the highest score from amongst each of the school's "teams of 4 students" in each event and is calculated as 2·(Sum of highest 3 Mental Math scores) + 2·(Multiple Choice) + 6·(Team) + 1·(Triple Jump) + 1·(College Bowl), for approximate weights of 25%, 20%, 30%, 15% and 10% respectively. Team ties are broken based on highest event score in order of the events, starting with Mental Math.

MENTAL MATH TEST - 30 sec./quest., 8 problems, ~8%/25% of individ./team scores
The proctor will read each question twice. You may not do any writing or talking while arriving at a solution. Record only your answer on your answer sheet. You may not change, cross out, erase, or write over an answer once you have written it down. The maximum wait time is 30 seconds after completion of the second reading of the question. Correct answers receive 1 point.

INDIVIDUAL TEST - 35 minutes, 40 problems, ~92% of individual score
When you are prompted to begin, tear off the colored answer sheet and begin testing. No talking during this individual test. You will be given a 5 minute time warning. Correct answers receive 2 points for problems 1-30 and 3 points for 31-40 (in the scaled score).

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_____ | _____ | _____ | _____
Room # | School Name | Student Name | Team #

Mental Math - ~25% of team score & ~8% of individual score

All students in the room will concurrently be asked the same eight questions in this individual test. When it is time to begin, the proctor will read the first question twice. You may not do any writing or talking while arriving at a solution. Once you have a solution, record it on the sheet in front of you. **You may not change or cross out answers once you have written an answer down. If there are eraser marks, write-overs, or crossed-out answers, they will be marked wrong.** *Once all students have laid their pencils on the desk, another question will be asked. If a student doesn't lay his or her pencil down, the maximum wait time is 30 seconds after completion of the second reading of the question before the next question is read. You may continue to work on a problem (in your head) while the next question is being read. The raw score is 1 point per correct answer.*

STUDENT: DO NOT WRITE IN SHADED REGIONS (or anywhere else, other than the answer box)

	Answer	Scorer 2	Scorer 1
		0 or 1	0 or 1
1			
2			
3			
4			
5			
6			
7			
8			
78th Grade	TOTAL:		

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Mental Math Contest – Answer Key

30 seconds per question – ~25% of team score & ~8% of individual score

SCORERS — Write-overs, Cross-outs, and Erasures Must be Marked Incorrect (0)
Bracketed items […] in the answer key are optional.

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	Answer	
1	12 [quarters]	How many quarters have a value of three dollars?
2	[A+B]=8	Kim eats two-fifths of a sandwich. The fraction of the sandwich that is leftover, as a reduced common fraction, is A over B. What is the value of A plus B?
3	[A=] 25	The area of a circle with diameter ten centimeters is A times pi square centimeters. What is the value of A?
4	9 [miles]	How many miles does a bicyclist travel in forty-five minutes, if she travels at an average speed of twelve miles per hour?
5	[A+B=] 37	A standard die is rolled twice. As a reduced common fraction, the probability of getting a two on the first roll and a three on the second roll is A over B. What is the value of A + B?
6	50	What is the mean of all positive two-digit multiples of ten?
7	1210 [$]	Lilly invests one thousand dollars at ten percent interest compounded at the end of each year. In dollars, what will be the value of this investment after two years?
8	1 [triangle]	A triangle has a perimeter of six inches. How many triangles with this perimeter are possible if the side lengths must be integers?

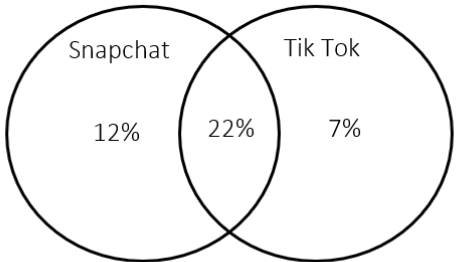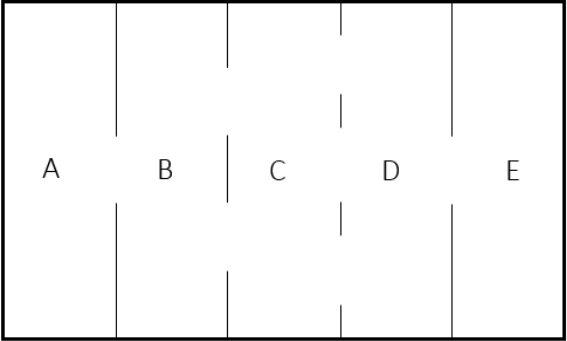# "Math Is Cool" Championships — 2021-22
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Individual Contest

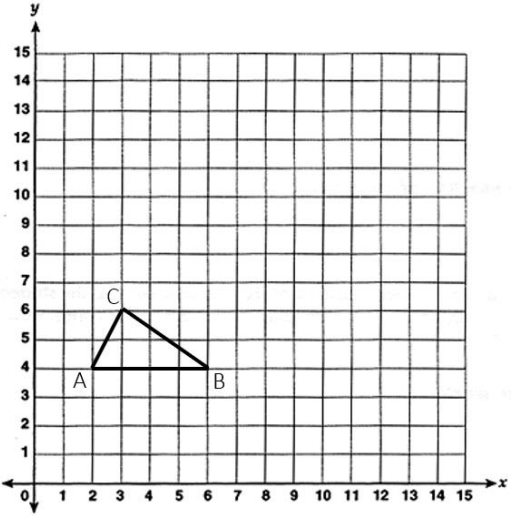Record all answers on the colored cover sheet. 35 minutes, 40 problems, ~92% of individual score.
No talking during this individual test. A 5-minute time warning will be given.

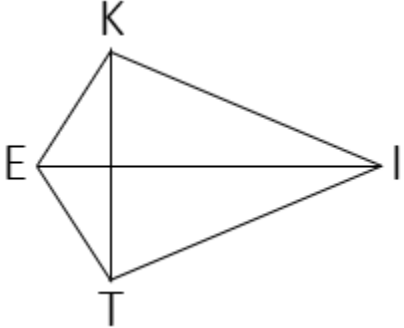|	Questions 1-30: 2 points each
1	What is 12 + 13?
2	How many zeros are in the number 1 million?
3	Axel is 8 years younger than Bonita and 21 years younger than Cinda. How many years older is Cinda than Bonita?
4	One hundred is the first positive three-digit integer. What is the thirteenth positive three-digit integer?
5	There are 40 participants in a tennis tournament. Ten percent of the players are left-handed, and no one is ambidextrous. How many right-handed players are in the tournament?
6	A rectangle has two sides that are 56 inches long and two sides that are 22 inches long. How many inches are in the perimeter of the rectangle?
7	Rosario buys five bags of chips with a $5 bill. Each bag costs 93 cents. How many cents does Rosario receive as change?
8	What is the result if you triple 7 three times?
9	In a trade at lunch, one Krispy Kreme doughnut is worth five Oreo cookies. How many Krispy Kreme doughnuts are sixty-five Oreo cookies worth?
10	A drawer contains 8 brown socks and 6 blue socks that are all mixed up. As a reduced common fraction, the probability that a randomly drawn sock is blue is A/B. What is the value of A + B?
11	What is the mean of the numbers in the following data set: {10, 14, 18, 22, 26, 30}
12	Let A = 5×10^3 and B = 5×10^4. As a 5-digit integer, what is the value of B – A?
13	On a coordinate plane, how many units above the x-axis is the point with coordinates (7, 11)?
14	Solve the following equation for x: 34 = 9x – 164
15	A rocket travels at an average speed of 9 kilometers per second for three minutes. How many kilometers does it travel during these three minutes?

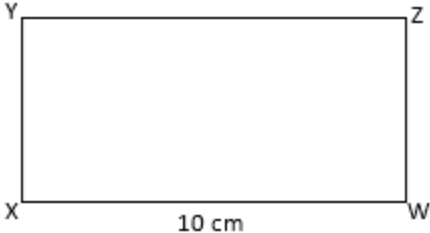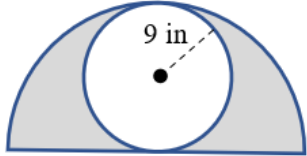| 16	In terms of π, the area of a circle with radius 60 inches is $A\pi$ in^2, where A is a four-digit integer. What is the value of A?
17	The probability of rain on Tuesday is 35%. As a percentage, what is the probability that it will not rain on Tuesday?
18	How many grams are equivalent to 2.2 kilograms?
19	If today is Friday, what day will it be 10 days from now? Answer as an integer: Monday = 1, Tuesday = 2, Wednesday = 3, Thursday = 4, Friday = 5, Saturday = 6, Sunday = 7
20	Avisha has made 5 out of 7 free throws. If she makes the next three in a row, what will her 'free throws made' percentage be?
21	The Venn diagram shows the percentage of U.S. teens who use Snapchat, Tik Tok, or both. What percent of U.S. teens use neither one? Social Media Apps Used by U.S. Teens Social media apps other than Snapchat and Tik Tok Snapchat Tik Tok 12% 22% 7%
22	Let P = 32 times 40 and let Q equal 24 times 48. As a reduced common fraction, Q divided by P equals A/B. What is the value of A + B?
23	How many positive two-digit integers have a tens digit that is two, three, four, or five times the ones digit?
24	How many complete 4-inch-by-4-inch squares can be cut from a 10-inch-by-10-inch square piece of paper? Squares do not count as complete if they are made up of smaller pieces that are combined.
25	In the diagram shown here, how many possible pathways are there from rectangle A to rectangle E through the openings shown, assuming you may not pass through any rectangle more than once? A B C D E

26	Triangle ABC is shown on the coordinate grid below, with vertices A (2, 4), B (6, 4) and C (3, 6). To locate the vertices of ΔA'B'C', all coordinates of points A, B, and C, are each multiplied by 2.5. What is the positive difference, in square units, between the area of ΔA'B'C' and the area of ΔABC?

27	Adeem eats one-third of a pizza. Baeza then eats three-fourths of what is left. Finally, Cam'ron eats the rest. As a reduced common fraction, the fraction of the original pizza that Cam'ron eats is A/B. What is the value of A + B?
28	Simplify the following expression to a three-digit integer: $\dfrac{15 \times 10^{19}}{4 \times 10^{17}}$
29	A group of sixteen friends is planning to rent a hall for a party. If they split the rental cost evenly then each person pays \$90. How many additional friends would need to be part of the group so that each person only needs to pay \$60?
30	A line has a slope of -5/13 and passes through the point with coordinates (1, -3). A second point on the line has coordinates (-18.5, y), where y is in the form A.B and A and B are both single digit integers. What is the value of A + B?

Challenge Questions: 3 points each

31	The area of kite KITE is 1200 square centimeters. How many centimeters long is KT if EI = 1.5KT?

32	Let a ◊ b = $\sqrt{(a-1)(b-1)}$ and let a □ b = $\sqrt{(a+1)(b+1)}$. Evaluate the given expression: (9 ◊ 19) □ (7 ◊ 25)

33	There are three people (Alexa, Ben and Cody), one of whom is a knight, one a knave, and one a spy. The knight always tells the truth, the knave always lies, and the spy can either lie or tell the truth. Alexa says: "Cody is a knave." Ben says: "Alexa is a knight." Cody says: "I am the spy." Who is the spy? Answer as an integer: Alexa = 1, Ben = 2, Cody = 3.
34	Side $\overline{WX}$ on rectangle WXYZ is 10 cm long. The point P is added somewhere along side $\overline{YZ}$. No matter where point P is placed along that side, the resulting area of $\triangle WXP$ is 24 cm². There are two locations for point P resulting in $\triangle WXP$ being a right triangle with $m\angle P = 90°$. As a decimal, the distance between these two locations of point P is A.B cm. What is the value of A + B?
35	A set of five positive integers has a mean, median, and unique mode that all equal 10. What is the largest possible difference between the largest and the smallest of the five integers?
36	How many ways are there to add three distinct positive two-digit integers, such that the sum is exactly 42? The order of the integers is not important.
37	A circle with radius 9 inches is inscribed in a semicircle as shown, creating two shaded regions that are congruent to each other. What is the positive difference between the number of inches in the perimeter of one of these two shaded regions and the number of inches in the circumference of the inscribed circle?
38	Jim runs clockwise around a quarter-mile oval track at an average rate of 5 miles per hour. Pam runs counterclockwise around the same track at an average rate of 6 miles per hour. Jim and Pam begin at the same starting point, and they both run for 31 minutes. After they begin running, how many times will they pass each other on the track, not counting when they started at the same position?
39	Chinmayi draws three cards at random without replacement from a standard deck. As a reduced common fraction, the probability that exactly one card is hearts, and one card is diamonds is A/B. What is the value of A + B?
40	What is the largest three-digit integer whose prime factorization is in the form $a \cdot b \cdot c \cdot d$, where a, b, c, and d are distinct prime numbers?

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KEY

Individual Contest – Answer Key

SCORERS: Bracketed [...] items in answer key are optional. Just mark the score as 0 or 1 and add up those values to reflect total correct.
First Scorer – use the right-hand columns so 2nd scorer can do a blind scoring.

	Answer
1	25
2	6 [zeros]
3	13 [years]
4	112
5	36 [right-handed players]
6	156 [inches]
7	35 [cents]
8	189
9	13 [doughnuts]
10	[A + B =] 10
11	20
12	[B – A =] 45000
13	11 [units]
14	[x =] 22
15	1620 [km]

	Answer
16	[A =] 3600
17	65 [%]
18	2200 [grams]
19	1 [Monday]
20	80 [%]
21	59 [%]
22	[A + B =] 19
23	10 [integers]
24	4 [squares]
25	6 [pathways]
26	21 [square units]
27	[A + B =] 7
28	375
29	8 [friends]
30	[A + B =] 9

	Answer
31	40 [cm]
32	13
33	2 [Ben]
34	[A + B =] 10
35	26
36	12 [ways]
37	18 [inches]
38	22 [times]
39	[A + B =] 1019
40	966

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Total Correct (all columns)

Room #　　SCHOOL NAME　　STUDENT NAME　　Team #

Individual Contest – Score Sheet

STUDENTS: Do Not Write In Shaded Regions

	Answer	1 or 0	1 or 0
1			
2			
3			
4			
5			
6			
7			
8			
9			
10			
11			
12			
13			
14			
15			
1-15 TOTAL:			

	Answer	1 or 0	1 or 0
16			
17			
18			
19			
20			
21			
22			
23			
24			
25			
26			
27			
28			
29			
30			
16-30 TOTAL:			

	Answer	1 or 0	1 or 0
31			
32			
33			
34			
35			
36			
37			
38			
39			
40			
31-40 TOTAL:			

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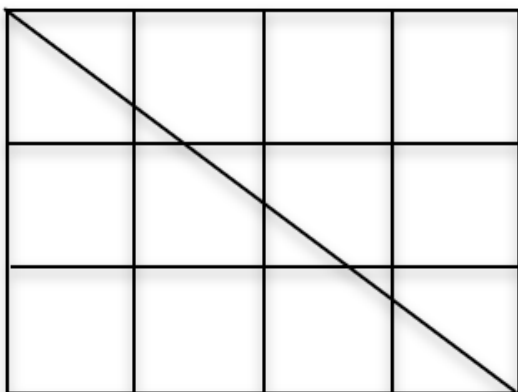Scorers: Just score as 0 or 1 and add up those values (i.e., just work with number correct).

Team Multiple Choice Contest

	USE THE FOLLOWING INFORMATION TO SOLVE PROBLEMS #1 THROUGH #4. The figure shows a 3 cm by 4 cm rectangle that is divided into 12 square-centimeter grid squares and has a diagonal drawn from the upper left vertex to the lower right vertex.
1	How many grid squares are completely untouched by the diagonal in the figure shown? A) 2 B) 3 C) 4 D) 5 E) 6
2	What is the length of the diagonal that is shown in the figure? A) 3 cm B) 4 cm C) 5 cm D) 6 cm E) 7 cm
3	How many pentagons which are contained within a single grid square are in the figure shown? A) 3 B) 4 C) 5 D) 6 E) 7
4	The diagonal divides two of the grid squares in the figure shown into a triangle and a quadrilateral. What is the area of one of these quadrilaterals? A) 5/9 cm^2 B) 3/5 cm^2 C) 5/8 cm^2 D) 2/3 cm^2 E) 5/7 cm^2

USE THE FOLLOWING INFORMATION TO SOLVE PROBLEMS #5 THROUGH #7.

The pie chart shows the results of a poll given to 50 people about their favorite type of movie. The names of the five categories and the percentage of respondents who selected each category are shown. Assume each person responded and gave only one choice of movie type.

Favorite Type of Movie

Sci-fi: 14%   Comedy: 20%

Drama: 8%

Action: 26%
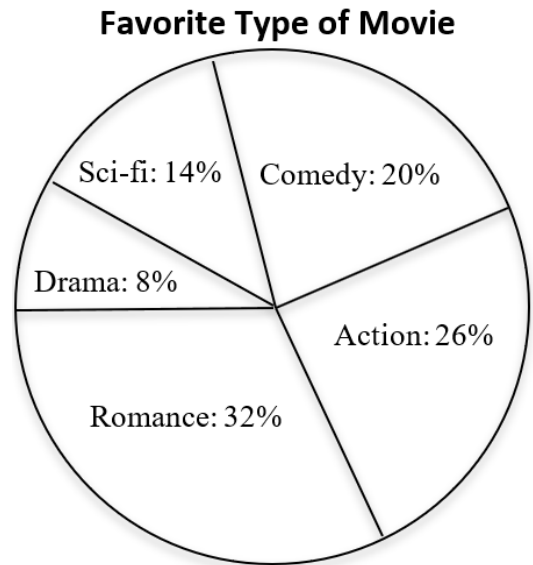
Romance: 32%

| 5 | How many respondents chose comedy as their favorite type of movie? |

A) 7   B) 8   C) 9   D) 10   E) 20

| 6 | What is the probability that a randomly selected point on the chart is in either the Action or the Romance sector of the pie chart? |

A) 29/50   B) 3/5   C) 31/50   D) 16/25   E) 33/50

| 7 | If the poll were given to a different group of 50 people, the results could be different from what is shown in the pie chart. Imagine the poll is given to an additional 19 different groups of 50 people. As a result of this process, how many distinct sets of five percentages are possible in which the order of least popular to most popular matches the order of the pie chart, and where the five percentages form an increasing arithmetic sequence (including the set of percentages in the pie chart)? Assume that in each of the 20 total polls that all 50 respondents give exactly 1 preference. |

A) 8   B) 9   C) 10   D) 18   E) Answer not given

Continued on Next Page

USE THE FOLLOWING INFORMATION TO SOLVE PROBLEMS #8 THROUGH #10.

Base-2 (binary) numbers consist entirely of 1s and 0s. For example, the number 101_2 means $1*2^2 + 0*2^1 + 1*2^0 = 1*4 + 0*2 + 1*1 = 4 + 0 + 1 = 5$ as a base-10 number.

Base-4 numbers consist entirely of 3s, 2s, 1s, and 0s. For example, the number 3210_4 means $3*4^3 + 2*4^2 + 1*4^1 + 0*4^0 = 3*64 + 2*16 + 1*4 + 0*1 = 192 + 32 + 4 + 0 = 228$ as a base-10 number.

Since $4 = 2^2$, there is a special relationship between base-4 and binary numbers as described below:

Consider the base-four number 3210_4 from above.
- The first digit, 3, means $3*4^3 = 1*4^3 + 2*4^3 = 1*2^6 + 2*4^3 = 1*2^6 + 1*2^1*2^6 = 1*2^6 + 1*2^7 = 1*2^7 + 1*2^6$. So, in general, when you see a 3 in base-4 it is replaced with 11 when written in binary.

- The second digit is 2, which means $2*4^2 = 2*2^4 = 1*2^5 + 0*2^4$. So, in general, when you see a 2 in base-4 it is replaced with 10 when written in binary.

- The third digit is 1, which means $1*4^1 = 1*2^2 = 0*2^3 + 1*2^2$. So, in general, when you see a 1 in base-4 it is replaced with 01 when written in binary. The only exception to this would be when 1 is the left-most digit in the base-4 number, in which case it is replaced with 1, not 01.

- The fourth digit is 0, which means $0*4^0 = 0*2^0 = 0*2^1 + 0*2^0$. So, in general, when you see a 0 in base-4 it is replaced with 00 when written in binary.

   This means that the binary number that equals 3210_4 is 11-10-01-00 or 11100100.

---

8 | Which binary number is equal to 2301_4?

A) 10110001   B) 10110010   C) 10110100   D) 10110101   E) 10110110

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9 | Which binary number is equal to the largest three-digit base-4 number?

A) 11111   B) 111101   C) 111110   D) 111111   E) 1111111

---

10 | Since $3^2 = 9$, base-9 and base-3 numbers have a similar relationship to that of base-4 and binary numbers, where each digit in a base-9 number can always be replaced by the same two digits when rewritten in base-3. In a base-9 number, what two digits would replace a 5 when rewriting it in base-3?

A) 10   B) 11   C) 12   D) 13   E) Answer not given

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Team Multiple Choice Contest – Answer Key

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Correct responses are worth 2 points, incorrect responses are worth -1 point, and absence of a response is worth 0 points.

	Answer
1	E
2	C
3	B
4	C
5	D
6	A
7	B
8	A
9	D
10	C

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_____   _____   _____

Room #   **School Name**   **Team #**

Team Multiple Choice Contest – 15 minutes – ~20% of team score

This test is the only test where you will be penalized for incorrect responses. You will receive two points for a correct letter response, zero points for leaving it blank, and minus one point for an incorrect response. When you are prompted to begin, tear off the colored answer sheet, pass out a copy of the test to each team member, and begin testing. **ONLY a letter response should be listed as an answer on this answer sheet.**

Correct responses are worth 2 points, incorrect responses are worth -1 point, and absence of a response is worth 0 points.

STUDENTS: DO NOT WRITE IN SHADED REGIONS

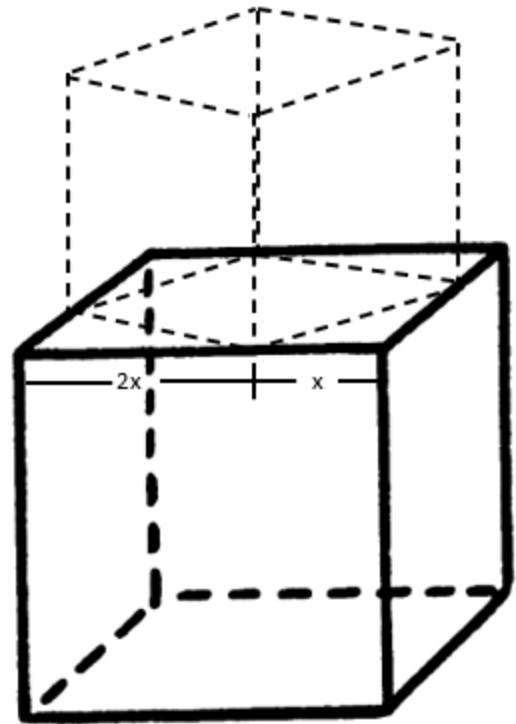|	Answer	Scorer 2 -1, 0, or 2	Scorer 1 -1, 0, or 2
1			
2			
3			
4			
5			
6			
7			
8			
9			
10			
78th Grade	TOTAL:		

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Team Contest

1	Minions have three fingers on each of their two hands. A group of minions has eighteen fingers total. How many minions are in the group?
2	A cookie recipe calls for 3/4 teaspoon of vanilla. As a decimal to the nearest hundredth, the number of teaspoons of vanilla needed when the recipe is tripled is A.BC, where A, B, and C are each single-digit integers. What is the value of A + B + C?
3	Three whatchamacallits equal 4 doohickies. Ten doohickies equal 8 thingamajigs. How many whatchamacallits are equal to 16 thingamajigs?
4	The distance by plane from Los Angeles to Seattle is 950 miles and the flight takes 2.5 hours. In miles per hour, what is the average speed of the plane during this flight?
5	What is the product of the greatest prime number less than 20 and the smallest composite number greater than 10?
6	The measures of two angles in a certain rhombus are each 39°. In degrees, what is the sum of the measures of the other two angles in the rhombus?
7	In the diagram below, how many pathways are there that lead from point A to point B, if you must either move right or down along the solid lines from any junction point?
8	Let A = {1, 2, 3, 4, 5} and B = {11, 12, 13, 14, 15}. As a reduced common fraction, the probability that multiplying a randomly selected number from set A times a randomly selected number from set B results in an even number is P/Q. What is the value of P + Q?

Continued on next page.

9	A smaller cube fits on top of a larger cube such that each of its bottom four vertices coincide with points that divide the four horizontal edges of the top face of the larger cube in a ratio of 1:2, as shown. As a reduced common fraction, the ratio of the total surface area of the smaller cube to the total surface area of the larger cube is A/B. What is the value of A + B?	
10	How many positive three-digit hexadecimal (base-16) numbers are there, assuming the left-hand-most digit may not be a zero?

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Key

Team Contest – Answer Key

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	Answer
1	3 [minions]
2	[A + B + C =] 9
3	15 [whatchamacallits]
4	380 [mph]
5	228
6	282[°]
7	8 [pathways]
8	[P + Q =] 41
9	[A + B =] 14
10	3840 [numbers]

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Final Score *(out of 10)*

_____   _____   _____
Room #   **School Name**   **Team #**

Team Contest – 15 minutes – ~30% of team score

When you are prompted to begin, tear off the colored answer sheet and give a copy of the test to each of your team members and begin testing. Each problem is scored as a 1 or 0. Record all answers on this colored answer sheet.

STUDENTS: DO NOT WRITE IN SHADED REGIONS

	Answer	Scorer 2 0 or 1	Scorer 1 0 or 1
1			
2			
3			
4			
5			
6			
7			
8			
9			
10			
78th Grade	TOTAL:		

Linda Moore Triple Jump

1	What is the distance between -3 and 8 on a number line?
2	Follow the steps below. Step 1: Multiply the smallest two-digit perfect square number by 1.5 Step 2: Divide the result of Step 1 by five Step 3: Subtract 1.8 from the result of Step 2 What is the result of Step 3?
3	What is the number of degrees in the smaller of the two angles formed by the hands of an analog clock at 10:00 pm?
4	How many integer values of x satisfy the inequality? -7 < x < 11
5	A cardboard box has dimensions 12 inches by 24 inches by 6 inches as shown. What is the maximum number of 2 inch by 2 inch by 2 inch wooden blocks that the box can hold so that the blocks do not extend above the sides of the box?
6	One number is removed at random from the set {4, 6, 8, 10, 11, 21, 23, 25}. Then a second number is removed at random from the set of the remaining numbers, forming an ordered pair (x, y). The probability as a reduced common fraction that the sum of the two numbers that were removed is greater than 40 is A/B. What is the value of A + B?
7	In the United States, Labor Day is always the first Monday in September and Veteran's Day is always on November 11. What is the fewest possible number of days in any given calendar year between Labor Day and Veteran's Day (not including Labor Day or Veteran's Day themselves)?
8	In a running race one time around a 400-meter track, Dalilah gets a head start and Allyson starts second. Allyson finishes the race at the exact same time as Dalilah. If Dalilah's head start is 1.5 seconds and her average rate is 6.25 meters per second, then Allyson runs 'r' meters per second faster than Dalilah. What is 100 times r?

Continued on next page.

| 9 | Figure 1 is formed by removing four congruent squares that are each one ninth of the area of the Figure 0, leaving five congruent shaded squares as shown. This process is then repeated on each of the five shaded squares in Figure 1 to get Figure 2 and again to get Figures 3 and 4 (not shown). The perimeter of any figure is the sum of the perimeters of the shaded squares. If the perimeter of Figure 0 is 108 cm, then the perimeter of Figure 4 is the reduced common fraction A/B cm, where A is a four-digit integer and B is a single-digit integer. What is the value of A + B? |
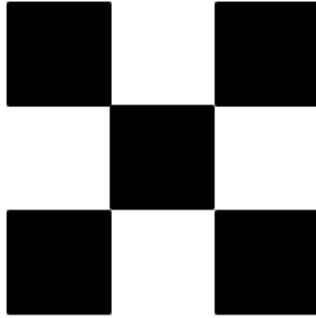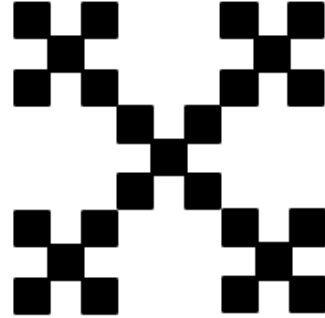
Figure 0   Figure 1   Figure 2

| 10 | For the given equation, how many solutions are ordered pairs of integers (x, y), where both integers are between -5 and 5? |

$$\left(\frac{6}{x} + \frac{4}{y}\right)^2 + \left(\frac{6}{x} - \frac{4}{y}\right)^2 = 16$$

$$\boxed{\textbf{Key}}$$

Linda Moore Triple Jump – Answer Key

78ᵗʰ Grade

	Answer
1	11 [units]
2	3
3	60[°]
4	17 [integers]
5	216 [blocks]
6	[A + B =] 31
7	64 [days]
8	[100r=] 15
9	[A+B=] 2503
10	4 [solutions]

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Final Score *(out of 30)*

_____   _____   _____
Room #   **School Name**   **Team #**

Linda Moore Triple Jump – 15 minutes – ~15% of team score

When you are prompted to begin, tear off the three colored answer sheets and give a copy of the test to each of your team members and begin testing. Record all answers on this colored answer sheet. This Submittal #1 will be collected after 5 minutes.

SUBMITTAL #1

STUDENTS: DO NOT WRITE IN SHADED REGIONS

	Answer	Scorer 2 0 or 1	Scorer 1 0 or 1
1			
2			
3			
4			
5			
6			
7			
8			
9			
10			
78th Grade	**TOTAL:**		

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Room #	

School Name   Team #

Linda Moore Triple Jump – 15 minutes – ~15% of team score

This Submittal #2 will be collected after 10 minutes.

SUBMITTAL #2

STUDENTS: DO NOT WRITE IN SHADED REGIONS

	Answer	Scorer 2 0 or 1	Scorer 1 0 or 1
1			
2			
3			
4			
5			
6			
7			
8			
9			
10			
78th Grade	TOTAL:		

Room #	School Name	Team #

Linda Moore Triple Jump – 15 minutes – ~15% of team score

This Submittal #3 will be collected after 15 minutes.

SUBMITTAL #3

STUDENTS: DO NOT WRITE IN SHADED REGIONS

Answer		Scorer 2 0 or 1	Scorer 1 0 or 1
1			
2			
3			
4			
5			
6			
7			
8			
9			
10			
78th Grade	TOTAL:		

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_____   _____   _____
Room #   **School Name**   **Team #**

Total Score for Each Round

College Bowl #1 (10 Possible)	College Bowl #2 (10 Possible)	College Bowl #3 (10 Possible)

DO NOT USE TALLY MARKS ON THIS SHEET. WRITE THE TOTAL SCORE FOR EACH ROUND.

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Mental Math Contest

MENTAL MATH – 30 seconds per question – ~25% of team score & ~8% of individual score

All students in the room will concurrently be asked the same eight questions in this individual test. When it is time to begin, the proctor will read the first question twice. You may not do any writing or talking while arriving at a solution. Once you have a solution, record it on the sheet in front of you. **You may not change or cross out answers once you have written an answer down. If there are eraser marks, write-overs, or crossed-out answers, they will be marked wrong.** *Once all students have laid their pencils on the desk, another question will be asked. If a student doesn't lay his or her pencil down, the maximum wait time is 30 seconds after completion of the second reading of the question before the next question is read. You may continue to work on a problem (in your head) while the next question is being read. The raw score is 1 point per correct answer.*

1	How many quarters have a value of three dollars?	
2	Kim eats two-fifths of a sandwich. The fraction of the sandwich that is leftover, as a reduced common fraction, is A over B. What is the value of A plus B?	[A+B]=8
3	The area of a circle with diameter ten centimeters is A times pi square centimeters. What is the value of A?	[A=] 25
4	How many miles does a bicyclist travel in forty-five minutes, if she travels at an average speed of twelve miles per hour?	9 [miles]
5	A standard die is rolled twice. As a reduced common fraction, the probability of getting a two on the first roll and a three on the second roll is A over B. What is the value of A + B?	
6	What is the mean of all positive two-digit multiples of ten?	50
7	Lilly invests one thousand dollars at ten percent interest compounded at the end of each year. In dollars, what will be the value of this investment after two years?	
8	A triangle has a perimeter of six inches. How many triangles with this perimeter are possible if the side lengths must be integers?	1 [triangle]

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Key

COLLEGE BOWL ROUND #1

#	Problem	Answer
1	Ryan is at work from nine AM to five PM every day. How many hours does he spend at work in five days?	40 [hours]
2	Solve the equation for X: thirteen X plus five equals ninety-six	[x =] 7
3	A wall is ten feet tall, fifteen feet wide, and is covered with vertical wooden boards. Each board is ten feet tall and five inches wide, with no gaps between boards. How many boards are there?	36 [boards]
4	How many ways are there to arrange the letters A-M-O-N-G-U-S?	5040 [ways]
5	The sum of two numbers is one hundred and eighteen and their positive difference is twenty. What is the smaller of the two numbers?	49
6	It takes Biff three minutes to paint a fence, and Eho six minutes to paint the same fence. How many minutes would it take to paint the fence if Biff and Eho worked together?	2 [minutes]
7	A cone has a base with diameter two inches and a volume of two pi cubic inches. What is the height of the cone, in inches?	6 [inches]
8	What is the product of one hundred one and ninety-nine?	9999
9	A palindrome is a number that reads the same forwards and backwards. What is the smallest palindrome larger than twelve thousand three hundred and forty-five?	12421
10	How many prime numbers between one and one thousand are multiples of three?	1 [prime number]

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Key

COLLEGE BOWL ROUND #2

#	Problem	Answer
1	How many odd numbers are between eight and twenty-six?	9 [odd numbers]
2	The Industrial Revolution started in the year seventeen sixty. The book Industrial Society and its Future was published in nineteen ninety-five. How many years after the start of the Industrial Revolution was the book published?	235 [years]
3	What is the mean of the first seven positive multiples of four?	16
4	Five people each write math problems at the same rate, and together they write eighty questions per hour. If two people leave, how many minutes will it take the remaining three people to write forty questions?	50 [minutes]
5	Two trains leave a station at the same time, one going due north and the other going due west. The first train averages thirty miles an hour, and the second train averages forty miles an hour. How many miles apart are they after three point five hours?	175 [miles]
6	A road is twelve feet wide, and the pavement is five inches deep. How many cubic feet of pavement are in a one-hundred-foot stretch of this road?	500 [ft^3]
7	What is nine factorial divided by six factorial?	504
8	What is the greatest common factor of seventy-five and ninety?	15
9	A regular octagon has a side length of twenty-five centimeters. In meters, what is the perimeter of the octagon?	2 [meters]
10	Biff and Eho go out to dinner. Their bill is twenty-seven dollars and ninety cents, after tax. If they tip the waiter ten percent of this number, how much did they spend altogether, in cents?	3069 [cents]

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Key

COLLEGE BOWL ROUND #3

#	Problem	Answer
1	What is the sum of twelve squared and fourteen squared?	340
2	A balanced scale has nine hundred pillows on one side. On the other side there are fifty pounds of steel plus three hundred pillows. In pounds, how much do the nine hundred pillows weigh together?	75 [pounds]
3	Alice's cat sleeps from ten-fifty AM to five-thirty PM on Monday. How many minutes does Alice's cat sleep during this time?	400 [minutes]
4	A standard deck of cards has all tens, jacks, queens, and kings removed. As a reduced common fraction, the probability of drawing a seven from the remaining cards is A over B. What is the value of A + B?	[A + B =] 10
5	Arlene runs one and a half times as fast as Emily. If Arlene runs six miles in twenty minutes, how many minutes will it take Emily to run five miles?	25 [minutes]
6	To prevent spam, a popular messaging app only allows users to send five messages every two seconds. What is the maximum number of messages three users can send in an hour?	27000 [messages]
7	How many positive factors does ninety-six have that are not divisible by three?	6 [factors]
8	What is the product of all positive prime numbers smaller than ten?	210
9	There are five red marbles, three teal marbles, ten white marbles, and one grey marble in a bag. Without looking, what is the smallest number of marbles you need to pull out to guarantee at least three marbles of the same color?	8 [marbles]
10	What is the sum of the first nine odd counting numbers?	81

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Key

COLLEGE BOWL ROUND #4

#	Problem	Answer
1	What is the remainder when one hundred ninety-two is divided by nine?	3
2	On a four-day trip, Diane and Mindy together took four hundred and fifty-six photos. If Diane took exactly half of the photos, how many photos per day on average did Mindy take?	57 [photos]
3	A circle has a circumference of thirty-six pi centimeters. The area of this circle is A times pi square centimeters. What is the value of A?	[A =] 324
4	Bob's dog runs away from home at an average rate of five miles per hour and leaves at five AM. Bob starts running at seven AM the same day and uses a tracker to follow his dog. If he runs at an average rate of eight miles per hour, how many minutes will it take him to catch up with his dog?	200 [minutes]
5	At a hardware store, one person buys seven cans of paint and two brushes for forty-eight dollars. Another person buys one can of paint and two brushes for twelve dollars. In dollars how much does one brush cost?	3 [dollars]
6	Biff owns three identical copies of the game "Fence Painting Simulator" and four identical copies of the game "Mystery Marble Bag". In how many distinct ways can Biff arrange these games on a shelf, if each game is indistinguishable from its copies?	35 (ways)
7	A train is moving at fifteen miles per hour, and the front of the train is at the entrance of a five-mile tunnel. The train is a quarter of a mile long. How many minutes does it take the train to completely exit the tunnel?	21 [minutes]
8	A trapezoid has bases of length fourteen feet and ten feet and a height of twenty-five feet. What is the area of the trapezoid, in square feet?	300 [ft^2]
9	An animal pen on a spaceship contains cows and chickens. There are eleven cows and fifteen chickens. How many legs are there?	74 [legs]
10	What is the sum of twelve plus seven plus negative eleven?	8

Key

COLLEGE BOWL ROUND #5

#	Problem	Answer
1	What is the remainder when two thousand twenty-two is divided by six?	0
2	Twenty-four large pizzas, each with eight slices, are shared equally among ninety-six people. How many slices does each person get?	2 [slices]
3	In a pyramid of cubes, the top layer has one cube, the second layer has four cubes, the third layer has nine cubes, and so on, with each successive layer having the next perfect square number of cubes. What is the total number of cubes needed to make a six-layer pyramid?	91 [cubes]
4	One marble is chosen at random from a bag that has three red and five blue marbles. A fair six-sided die is also rolled. As a reduced common fraction, the probability that a red marble is chosen and a three is rolled is A over B. What is the value of A plus B?	[A + B =] 17
5	A square has a perimeter of one hundred centimeters. What is the number of centimeters in the perimeter of a regular pentagon with the same side length as the square?	125 [cm]
6	The first two Fibonacci numbers are one and one. What is the sum of the seventh and eighth Fibonacci numbers?	34
7	A cylindrical lamp shade is made of fabric and has a height of eight inches and radius of four inches. The shade has no circular bases. The area of the piece of fabric needed to make this lamp shade is A times pi. What is the value of A?	[A =] 64
8	There are thirty squares in a bar of chocolate. If each person in a group of seven people gets a different whole number of squares, what is the maximum number of squares any one person could get?	9 [squares]
9	Sean travels north for twelve miles, then west for five miles. What is the direct distance, in miles from his starting point to his ending point?	13 [miles]
10	What is the product of all the integers from three to seven inclusive?	2520

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Key

COLLEGE BOWL ROUND #6

#	Problem	Answer
1	What is the product of fifteen, one-third, and seven?	35
2	Alice's cat eats a half cup of food each day. How many days would it take Alice's cat to eat a gallon of food?	32 [days]
3	The hit video game Among Them received review scores of eighty-four from Metacritic, seventy-five from Rotten Tomatoes, and ninety from IGN. What is the mean review score of the video game from these three sources?	83
4	The price of a pair of Airpods dropped from one hundred and fifty dollars to one hundred and twenty-seven dollars and fifty cents. What is the absolute value of the percent decrease in the price of this item?	15 [percent]
5	Potatoes cost seventy cents per pound and carrots cost forty cents per pound. Nathan buys fifteen pounds of potatoes and carrots combined at a total cost of eight dollars and forty cents. How many pounds of carrots does Nathan buy?	7 [pounds]
6	A bag has five white marbles and five black marbles. Two marbles are taken out of the bag, without replacement. As a reduced common fraction, the probability that the two marbles are different colors is A over B. What is the value of A + B?	[A + B =] 14
7	Thelma and Louise are racing on the same circular track in the same direction. Thelma runs ten meters per second while Louise runs twelve meters per second. Thelma has a head start of sixty-four meters. How many seconds will it take Louise to catch up to Thelma?	32 [seconds]
8	The Math is Cool problem writing team has four hours left to write the questions before the contest begins. How many minutes does the team have left?	240 [minutes]
9	Micah plays Minecraft all ninety-two days of summer for three hours each day. How many hours of Minecraft does he play throughout the summer?	276 [hours]
10	A standard twenty-sided die and a standard six-sided die are each rolled once. What is the probability in percent that each die shows a seven?	0 [%]

Proctoring Overview

You will receive a room packet envelope with the schedule and College Bowl rotations on the front. Each room packet includes:

1) the proctor instructions and the general instructions that you will be reading,
2) the proctor question/answers packet (<u>this needs to be carefully controlled</u>), and
3) sets of Mental Math, Individual, Multiple Choice, Team, and Triple Jump test materials.

(If not in the room packet, the proctor supervisor will provide blank scratch paper.)

When you receive the room packet, count to ensure that you have the correct number of tests for each event (16 Mental Math & Individual, 4 of each of the team events).

<u>Key Points</u>

- Act professional; focus on what you are doing.
- Your job is to proctor the students; that is, you administer tests, give time warnings, & monitor students for proper test taking behavior to ensure competition integrity and avoid issues like failing to put answers on the answer sheet.
- The proctor packet has Mental Math and College Bowl questions/answers. Keep the packet secure! Avoid opportunities for competitors to see the tests or answers.
- Student/school names and team numbers are critical on the answer sheets. Make sure that students fill out such identifying information.
- Keep track of time, and provide appropriate time warnings. Keep to the schedule as close as possible. Wait between events, if needed.
- Read & know the rules—competitors & spectators will, and they will call you on it.
- On questions that you read, read smoothly, enunciate clearly, and don't read too fast.
- If unsure of how to deal with an issue/question/concern, flag down the proctor supervisor and ask.
- Be respectful of your classroom — leave it tidy and arranged exactly as you found it. We don't want any displeased teachers!!
- Use the quick-reference guide on the next page for room setup and key information.

<u>Schedule</u>

Each of the 6 events includes about 5 minutes at the start for reading instructions or rearranging the room.

3:30 - 4:00	Coaches register (Library)	6:15 - 6:40	Proctors get dinner in proctor room
4:05 - 4:15	Orientation (Gym)	6:45 - 6:55	College Bowl #1
4:15 - 4:20	Students go to testing rooms	6:55 - 7:05	College Bowl #2
4:20 - 4:35	Mental Math	7:05 - 7:15	College Bowl #3
4:35 - 5:15	Individual Test	7:15 - 7:25	College Bowl #4
5:15 - 5:35	Team M.C. Test	7:25 - 7:35	College Bowl #5
5:35 - 5:55	Team Test	7:35 - 7:45	College Bowl #6
5:55 - 6:15	Triple Jump	8:00 - 8:30	Awards Ceremony (Gym)

1. Mental Math

Configuration: Students at individual desks spread out in the classroom. Alternating desks, students not next to teammates.

Scheduled Time: 4:20-4:35 PM (read instructions & test)

Duration: 30 seconds per question maximum (beginning after the 2nd reading)

Give Time warning at: 5 seconds

Number of questions: 8 (all students do the same questions)

Proctor Actions: Read each question twice, reading clearly and not too fast. Start the 30 second clock <u>after</u> the 2nd reading.

Key Points: Start by reading "General Instructions" then Mental Math instructions. Make sure everyone writes their name, school & team number on the answer sheet. No talking allowed. Except for the answer, no is writing allowed. Collect answer sheets and organize by team number, then alphabetically by first name of competitor, & staple sheets for the same team together.

2. Individual Test

Configuration: Students at individual desks; same arrangement as for Mental Math.

Scheduled Time: 4:35 PM (read instructions), 4:40-5:15 (test)

Duration: 35 minutes

Give Time warning at: 5 minutes & 30 seconds

Number of questions: 40

Proctor Actions: Ensure appropriate test-taking behavior. Prep for next event (or furtively read College Bowl questions to yourself).

Key Points: Read "Individual Test" instructions. Make sure everyone writes their name, team number, school, proctor name, & room number down on the answer sheet. Collect answer sheets, organize by team, then alphabetically by first name of competitor, and staple sheets for same team together.

3. Team Multiple Choice Test

Configuration: Groups of 4 desks, with the groups spread out in the classroom.

Scheduled Time: 5:15 PM (read instructions), 5:20-5:35 PM (test)

Duration: 15 minutes

Give Time warning at: 5 minutes & 30 seconds

Number of questions: 10

Proctor Actions: Ensure appropriate test-taking behavior. Prepare for next event.

Key Points: Read Mult. Choice instructions. Students can talk quietly & work together.

4. Team Test

Configuration: Groups of 4 desks spread out in the classroom (same as Team Mult. Choice).

Scheduled Time: 5:35 PM (read instructions), 5:40-5:55 PM (test)

Duration: 15 minutes

Give Time warning at: 5 minutes & 30 seconds

Number of questions: 10

Proctor Actions: Ensure appropriate test-taking behavior. Prepare for next event.

Key Points: Read Team Test instructions. Need to have school & team number on answer sheet. Students can talk quietly & work together.

5. Triple Jump

Configuration: Groups of 4 desks spread out in the classroom.

Scheduled Time: 5:55 PM (read instructions), 6:00-6:15 PM (test)

Duration: 15 minutes

Give Time warning at: 30 seconds and 5 seconds before each of three submittals.

Number of questions: 10

Proctor Actions: Ensure appropriate test-taking behavior. Collect Submittals #1, #2 and #3 at 5, 10 and 15 minutes.

Key Points: Read Triple Jump instructions. Need to have school & team number on answer sheets. There are THREE answer sheets and submittals. Students can talk quietly & work together

6. College Bowl

Configuration: Row of 9 desks (side by side) at the front of the room (CBA device on center desk).

Scheduled Time: 6:45 PM (read instructions), 6:50-7:45 PM (test)

Duration: 45 seconds per question (30 seconds per question if there is only one team, who will be only going against the clock)

Give Time warning at: 5 seconds

Number of questions: 10 per round, 6 rounds total

Proctor Actions: Read each question twice, reading clearly and not too fast. Start 45 (or 30) second clock <u>after</u> the 2nd full reading. Mark tally on white board as questions are answered and transfer the numeric total to the score sheets.

Key Points: Event is collaborative, talking is allowed. For a wrong answer, just say, "That is incorrect." (no verbal/visual clues that could be interpreted by the other team to arrive at an answer).

Summary of MIC Proctoring
(for proctors to read to themselves)

Pass out materials (answer sheet/test packets, scratch paper) for the current event to individuals or teams (as appropriate) so they can fill in the name, school, and team number information (very important!). Tell students to not lift the cover sheet or turn over the paper until you give the signal to start. Read the general instructions as the first item at the beginning of the competition (before Mental Math). Read the event-specific instructions just prior to each event and ask if there are any relevant questions. After reading the instructions, you can signal students to begin. Make sure one proctor is watching the time and giving appropriate time warnings (e.g., "five minutes remaining"). At the end of the event, tell competitors to stop work. Collect, sort, & staple the answer sheets (as appropriate) and keep them secure until handed off to a runner.

For the Mental Math/Individual tests, arrange students scattered throughout the classroom with **no student next to another student from their own school**. For the team tests, students will be in groups of 4 desks. The Relay will require the desks arranged in columns (front to back). College Bowl will require a line of 9 desks side-by-side across the front of the classroom.

For College Bowl, place the College Bowl apparatus (CBA) on a central desk in the line of desks at the front (4 desks on either side of the central one). One proctor will likely need to hold the CBA in place during the College Bowl rounds. Turn the apparatus on by depressing the button or flipping the dip switch. Students may try out the CBA prior to the 1st question. Note: while one light is blinking, the other light is locked out. There is no need to "reset" the device, just let the light finish blinking and it is ready to go.

Do not read the answer for College Bowl when you read the question (they are both on the same page). In College Bowl, if an incorrect answer is given, simply say "That is incorrect" and do not give any other cues about the answer (e.g., don't say "sorry, you were close" or exhibit interpretable body language). If both teams fail to supply a correct answer, announce what the correct answer was.

If there is an irregularity (i.e., lack of honesty, poor sportsmanship), make a note of the circumstances, flag the answer sheet, and report the issue to the proctor supervisor.

At the end of the day, <u>return the desks to their original arrangement</u>, recycle any unwanted test materials & used scratch paper, erase any marks you made on the whiteboard, and generally make sure the classroom is tidied up. Return the CBA, the room packet envelope, the proctor instructions, the contest rules packet, the proctor packet of questions, extra scratch paper, and unused test material to the proctor supervisor.

Detailed Instructions for Proctors
Grades 4-8

NO CALCULATORS ALLOWED ON ANY TESTS!

1. Check to make sure you have everything in your packet.

    A. ***Mental Math:***
        1. 16 - colored Mental Math answer sheets
        2. Mental Math questions with answers (in the Proctor Packet)

    B. ***Individual Test:*** 16 individual tests, with colored answer sheets attached

    C. ***Team Multiple Choice Test:*** 4 team multiple choice packets (stapled), each containing 4 tests plus one colored answer sheet on top

    D. ***Team Test:*** 4 team test packets (stapled), each containing 4 tests plus one colored answer sheet on top

    E. ***Triple Jump:***
        4 team test packets (stapled), each containing 4 tests plus three colored answer sheets on top (one per submittal).

    F. **College Bowl:**
        1. 4 - College Bowl score sheets
        2. College Bowl questions – 6 rounds (in the Proctor Packet)

    G. Scratch paper (to be handed out as needed, but try not to waste it)

    H. Electronic College Bowl Apparatus (CBA; usually distributed at dinner break)

ALL _COLORED_ ANSWER SHEETS WILL BE COLLECTED BY YOU AND WILL BE TAKEN TO THE SCORING ROOM (by RUNNERS) AS SOON AS THEY ARE FILLED OUT BY COMPETITORS. COMPETITORS CAN KEEP ALL OF THE WHITE SHEETS, IF THEY WOULD LIKE (OTHEWISE COLLECT THEM FOR RECYCLE).

If you are missing anything, you can go get it before the opening ceremony. After the opening ceremony, contact the proctor supervisor/scoring room.

2. Take a photo or draw a picture on the whiteboard of how the classroom is laid out (so that it can be returned to its original configuration following the competition). Then set up the classroom desks for the first event (Mental Math).

Respect the teacher whose room you are using. Do not touch their computer or other items. Do not erase anything on their board. Leave the room tidy & in the exact original layout.

Mental Math

3. Arrange desks in a configuration suitable for individual testing (rows/grid of desks all facing forward, students in separated/alternating desks).

4. Put the Mental Math answer sheets face up on the desks such that students are spread out. Wait for students to arrive. You can fill out the proctor name and room

number (and perhaps team numbers) on all blank answer sheets, if you like. Read over the questions so you will be prepared to read them out loud.

5. After students sit down, check to make sure that no one from the same team is seated next to each other (i.e., "Team xxx, raise your hands."). Ask them to move, if needed.

6. **Check to make sure that students put their full name, school name, team number, and room number on their answer sheet and that the information is legible**.

7. Read the "GENERAL INSTRUCTIONS" (in the Proctor Packet) to the students. Then, read the "MENTAL MATH" instructions (in the Proctor Packet) to the students.

8. Begin the testing. Read each of the eight Mental Math questions to all of the students in the room, per the instructions.

9. At the conclusion of Mental Math, collect the answer sheets. Organize the answer sheets by team number, then alphabetically by first name of competitor. Staple each team's set of four answer sheets together. Promptly hand the packets of answer sheets to your runner for conveyance to the scoring room.

Individual Test

10. The seating configuration will remain unchanged (no swapping seats).

11. Hand out Individual Test packets with the colored blank answer sheet facing up. **Check to make sure that students put their full name, school name, team number, and room number on their answer sheet and that the information is legible**.

12. Read the "INDIVIDUAL TEST" instructions (in the Proctor Packet) to the students and begin the testing at the appointed time.

13. While students are taking the Individual Test, monitor the students for proper test-taking behavior and watch the time to provide 5-minute and 30-second warnings. Make sure students are writing answers on the answer sheet (not the test question pages). During this time you can also get the Individual Multiple Choice tests ready, read through the rules of subsequent events, and (carefully/secretively) look ahead to review the College Bowl questions (i.e., to avoid stumbling over the wording when it comes time to read the questions aloud). You will have observers in the room watching the College Bowl rounds, so make sure you understand the rules, how timing works, etc.

14. At the conclusion of Individual Test, collect the answer sheets. Organize the answer sheets by team number, then alphabetically by first name of competitor. Staple each team's set of four answer sheets together. Promptly hand the packets of answer sheets to your runner for conveyance to the scoring room. Students may keep or recycle their test question packets.

Team Multiple Choice

15. Change the room set-up to groups of 4 desks together so students can work as a team.

16. Hand out the tests and have teams fill out the top portion of the answer sheet. **Check answer sheets to make sure they are filled out correctly (school, team #, etc.).**

17. Read the "TEAM MULTIPLE CHOICE" instructions (in the Proctor Packet) to the students and begin the testing at the appointed time.

18. Monitor the students for proper test-taking behavior (talking is allowed), watch the time, and provide 5-minute and 30-second warnings. While students are taking the Team Multiple Choice test, get the Team Tests ready.

19. At the conclusion of the test, collect the answer sheets & hand them off to the runner.

Team Test

20. Keep the same seating arrangement in groups of four. Hand out the Team Test packets and have teams fill out the information at the top of the colored answer sheet. **Check the answer sheets to make sure they are filled out correctly (school, team #, etc.).**

21. Read the "TEAM TEST" instructions (in the Proctor Packet) to the students and begin the testing at the appointed time.

22. Monitor the students for proper test-taking behavior (talking is allowed), watch the time, and provide 5-minute and 30-second warnings. While students are taking the Team Test, get the Relay tests ready.

23. At the conclusion of the test, collect the answer sheets & hand them off to the runner.

Triple Jump

24. Keep the same seating arrangement in groups of four. Hand out the Triple Jump Test packets and have teams fill out the information at the top of EACH OF THE THREE colored answer sheet. **Check the answer sheets to make sure they are filled out correctly (school, team #, etc**.).

25. Read the "Triple Jump TEST" instructions (in the Proctor Packet) to the students and begin the testing at the appointed time.

26. An Answer Sheet must be submitted every 5 minutes (labeled: Submittal #1, Submittal #2, Submittal #3). Give time warning at 30 seconds and 5 seconds prior to each submittal. Collect the submittals promptly at 5 minutes, 10 minutes and 15 minutes.

27. At the conclusion of the test, staple the three answer sheets for each team together in order: Submittal #1 (top), #2, #3 (bottom) & hand them off to the runner.

28. At the conclusion of the Triple Jump, release the students for their break. If there is anything left (i.e., answer sheets) that should have been taken to the scoring room, give those to the runner or have a proctor take it to the scoring room now.

29. Set up your room for the College Bowl rounds and tidy up the room before you go to break. Set up a line of 9 desks side by side facing the front of the room. One team will be on each side (doesn't matter which) and the College Bowl apparatus will be stuck down on the desk in the middle. Another row of 8 desks should be set up in the middle of the room for the two teams not competing in a round. Other desks should be moved to the back of the room in an orderly fashion for the spectators.

30. Take your packet of College Bowl questions with you during break to keep them secure! Do not leave them in the room!

Dinner Break

31. AT BREAK — Eat dinner in the proctor room. Pick up your College Bowl apparatus (CBA) at this time. If you haven't already, you may want to read over the College Bowl questions to make sure you will be able to pronounce everything properly. Return to your room in time to place the CBA in position.

College Bowl Rounds

32. Place the CBA on the middle desk of the line at the front of the room (you may want to moisten the suction cups with a film of water). One proctor may need to hold the device down (and do timing). Do not press the button to "reset" the CBA (it's an on/off switch).

33. You will have the same teams that were previously in the room for the duration of all College Bowl rounds — if you have an extra/different team, they are in the wrong room and can be disqualified if they hear the questions! Help get them to the correct room.

34. Fill out the score sheets for each team in your room with their school name and team number. Call up the first 2 teams according to the sequence on the room envelope.

35. You will be reading Round #1 questions to two teams while the other two teams (and any spectators) wait in the back of the room out of line of sight of the competitors. Refer to the College Bowl schedule (on your room envelope) to see which two teams compete in each round. If a round only has one team, they will be competing against the clock and thus will have 30 seconds to answer, not 45 seconds. Record the final scores for each team on their score sheets (which you hold on to) after each round. Rounds 2-6 work the same way. Refer to the schedule to make sure the correct teams are competing at the correct time. Don't get ahead of schedule (or behind, for that matter!). If you finish a round early, please wait until the appointed time to start the next round. If you have any problems (including anyone questioning the rules or a decision made by a proctor) contact the proctor supervisor.

36. Who is keeping score? Who is keeping track of the time? YOU ARE !!!

37. Read the "COLLEGE BOWL" instructions (in the Proctor Packet) to all the students (just one time), then begin the testing for each round at the appointed times.

38. If you mis-read a question, replace it with one of the extra questions.

39. If a parent/coach/student protests an answer, make a note of the situation (the test, the problem number, who answered, what their answer was, etc.) and kindly state that the coach should bring up the issue with the contest director. Proceed as normal, scoring the question based on the answer key.

40. At the conclusion of all College Bowl rounds, get the score sheets promptly to the scoring room (either yourself or via a runner).

41. Release your group to the awards ceremony no earlier than 7:45 PM to avoid causing a disruption to other rooms. Have students help re-set the room.

42. At the end of the day, return the desks to their original arrangement, collect all scratch paper, erase any marks you made on the whiteboard, and generally make sure the classroom is tidied up. Return the College Bowl apparatus, proctoring envelope, and residual material to the proctor supervisor.

General Instructions

- Good sportsmanship is expected throughout the competition by <u>all</u> involved (competitors and observers). Display of poor sportsmanship will result in disqualification.
- Competitors may not use calculators or any other aids on any portion of this contest.
- Unless stated otherwise: Note: for 2022 tests, all answers are integers.
  - Express all rational, non-integer answers as common fractions, except in problems dealing with money, where you should give the answer as a decimal rounded to the nearest cent.
  - For fifth grade and up, all fractions and ratios must be reduced to simplest form, all radicals must be simplified, and all denominators must be rationalized.
  - Do not round or approximate answers. Leave answers in terms of π or other irrational quantities (e.g., √2), where applicable.
- Units are not necessary as part of your answer, unless it is a problem that deals with time, in which case, AM or PM is required. However, if you choose to use units, they must be correct.
- Record all answers on the colored cover sheets in the answer column only.
- **Be sure that the student name, school, team number, etc. has been filled out at the top of each answer sheet.**
- Tests will be scored as a 0 if answers are not recorded correctly on the answer sheets.
- Blank answer sheets and answer sheets with no name will be scored as a 0.

Mental Math Instructions

All students in the room will concurrently be asked the same eight questions in this individual test. When it is time to begin, the proctor will read the first question twice. You may not do any writing or talking while arriving at a solution. Once you have a solution, record it on the sheet in front of you. **You may not change or cross out answers once you have written an answer down. If there are eraser marks, write-overs, or crossed-out answers, they will be marked wrong.** Once all students have laid their pencils on the

desk, another question will be asked. If a student doesn't lay his or her pencil down, the maximum wait time is 30 seconds after completion of the second reading of the question before the next question is read. You may continue to work on a problem (in your head) while the next question is being read. The raw score is 1 point per correct answer.

Individual Test Instructions

You will have 35 minutes to work on the Individual test, which consists of 40 questions. When you are prompted to begin, tear off the colored sheet and begin testing. Make sure your name and school are recorded on the answer sheet. The first 30 questions are worth two points each and questions 31-40 are worth 3 points each. Record your answers on the score sheet. No talking during the test. You will be given a 5 minute warning.

Team Multiple Choice Instructions

You will have 15 minutes to answer 10 multiple choice questions as a team. This test is the only test where you will be penalized for incorrect responses. You will receive two points for a correct letter response, zero points for leaving it blank, and minus one point for an incorrect response. When you are prompted to begin, tear off the colored answer sheet, pass out a copy of the test to each team member, and begin testing. **ONLY a letter response should be listed as an answer on this answer sheet.**

Team Test Instructions

You will have 15 minutes to answer 10 questions as a team. When you are prompted to begin, tear off the colored answer sheet and give a copy of the test to each of your team members and begin testing. Each problem is scored as a 1 or 0. Record all answers on this colored answer sheet.

Triple Jump Instructions

You will have 15 minutes to answer 10 questions as a team. However, you will submit a set of answers every 5 minutes. Notice that your answer sheets are labeled Submittal #1 (to be submitted after 5 minutes), Submittal #2 (to be submitted after 10 minutes) and Submittal #3 (to be submitted after 15 minutes). Each problem is scored as a 1 or 0 on each of the three submittals, for a total of 30 points. Answers that are written on one submittal sheet do NOT carry over to the next submittal sheet – they need to be entered again. You may change your answer for a question from one submittal to the next, if you feel that your previous answer was incorrect.

College Bowl Instructions

Read these to the competitors before the first round:

To maintain the integrity of the competition, spectators must stay in this room during a round of College Bowl questions. Once all readings for a round have been completed, you may leave.

All competitors must be facing the front of the room in one row. Teams not competing in the current round need to be behind the front row and in front of the spectators. All spectators need to be behind the competitors at the back of the room.

A maximum of ten questions per round will be scored. It is OK for both teams to score the same number of points! The proctor will record the points earned on each team's score sheet, which is retained by the proctor.

You may use scratch paper and pencil. You may talk with your team members while arriving at a solution.

An Electronic College Bowl Apparatus (CBA) will be used to identify the team who is first to have an answer.

During these rounds, each question will be read twice and a maximum time of 45 seconds after the second reading of the question is completed will be allowed for a team to answer. If a team buzzes in after the second reading and gives an incorrect response, the other team has the remainder of the 45 seconds to respond. A team is allowed only one attempt at buzzing in and answering per question. You may interrupt (buzz in) while a question is being read, however, if you do, the proctor will stop reading, and an immediate response is needed. If the correct response is given, the proctor will proceed to the next question. Otherwise, the question will be re-read for the other team, making sure it has two full readings. If an immediate response is not given after a team buzzes in, their lack of an answer in a timely manner is considered incorrect. In the event that only one team is competing in a round (i.e., one team is absent), the team competing will have a maximum of 30 seconds after the completion of the second reading in which to buzz in. The proctor will give a 5-second time warning.

Wait to be acknowledged by the proctor before giving an answer. This avoids the situation of blurting out an answer when the other team buzzed in first.

If two students from the same team answer at the same time with different answers, the answer will be considered incorrect.

If a problem arises with one of the questions, an extra question will be asked to replace that question.

If the round finishes early, you need to stay in the room for the remaining time.

Mental Math Questions

Relay Answers

College Bowl Questions/Answers