"Math Is Cool" Championships — 2023-24

5th Grade — March 2024

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:*
  - *All answers are integers, and any non-integer answers will be "coded" as integers.*
  - *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, 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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Final Score *(out of 8)*

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

"Math Is Cool" Championships — 2023-24

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Key

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.

5th Grade

	Answer	
1	12 [pieces]	Jake got three bags of candy for his birthday. The first bag had three pieces, the second bag had four pieces, and the final bag had five pieces. How many pieces of candy did Jake get for his birthday?
2	25 [sq. units]	What is the area in square units of a square with side length 5 units?
3	9	What is x plus seven minus two if x equals four?
4	30	What is twenty percent of one hundred fifty?
5	494	A palindrome is a whole number that reads the same forwards or backwards, such as two hundred thirty two. What is the largest palindrome that is less than five hundred?
6	7	What is the average of the following set: two, eight, fourteen, five, six
7	5 [sides]	A sequence of shapes begins with: triangle, pentagon, square, octagon, then keeps repeating in the same order. How many sides does the twenty-sixth shape in the sequence have?
8	201 [cents]	Carter has twelve quarters, eleven dimes, seven nickels, and four pennies. He is buying a chocolate bar that costs two dollars and forty-eight cents. In cents, how much money will he have left after buying the chocolate bar?

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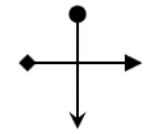
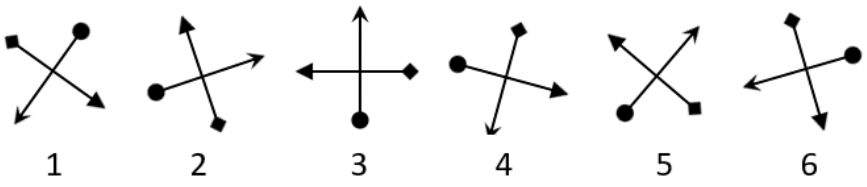
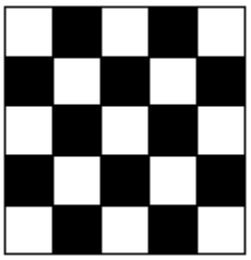
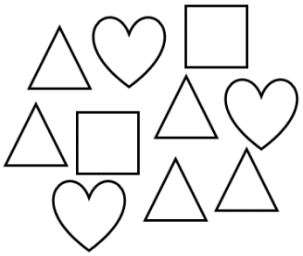
Individual Contest

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	Evaluate: 1 + 23 + 456
2	Mrs. Kelly wants to give each of her 25 students 3 pieces of candy for the last day of school. She has already bought 20 pieces of candy. How many more pieces of candy does she need to buy?
3	What digit is in the thousandths place of the following number? 1234.5678
4	In square feet, what is the area of a rectangle with sides of length 5 feet and 20 feet?
5	What is the smallest prime number that is greater than 10?
6	What is 25% of 800?
7	Four times my favorite number equals 44. What is my favorite number?
8	Which figure number, 1, 2, 3, 4, 5 or 6, is not a rotation of the figure shown at the top?  
9	Multiply, and write your answer as an integer: $6\frac{1}{2} * \frac{4}{13}$
10	Amy went to the store to buy 3 cookies for 25 cents each, but only brought 38 cents. How many more pennies would she need?
11	Find the mean of the following data set: {5, 10, 11, 15, 19}.
12	Michael runs 10 miles up a hill at a steady 4 miles per hour. How long will it take for him to reach the top, in minutes?
13	In triangle ABC, angle A has a measure of 53 degrees, and angle B has a measure of 79 degrees. In degrees, what is the measure of angle C?

Continued on next page.

14	The grid consists of unit squares painted black and white in a checkerboard pattern.  How many of the following rules will result in a grid that contains the same number of black and white squares? At the beginning of each rule, start from the original grid. • Add one more row following the same pattern. • Add one more column following the same pattern. • First add one more row, then add one more column, following the same pattern. • First add one more row, then one more column, then one more row, following the same pattern. • First add one more row, then one more column, then one more row, then one more column, following the same pattern.
15	At Kamiak Elementary School, all 50 5th grade students do exactly one activity: robotics, math team, or science club. If 10 students do robotics, and 25 do math team, what percent of students do science club?
16	What is the product of the first 3 even numbers that are greater than 5?
17	One shape is randomly selected from the group of shapes shown here. As a percentage, what is the probability that the chosen shape is a triangle? 
18	The first three terms in an arithmetic sequence are 2, 6, and 10. What is the 7th term?
19	How many inches are in one-half yard?
20	In how many ways can you rearrange the letters in the word MAMA?
21	What is the sum of the prime numbers that are less than 20?
22	What is the volume in cubic inches of a box with sides of length 5, 7, and 11 inches?
23	What is one-half of one-fifth of two-thirds of 120?
24	There are 5 cars for every 3 trucks parked in a used vehicle lot. If there are a total of 120 cars and trucks in the lot, how many cars are there?
25	Seth has a 16 fluid ounce water bottle that starts full at the start of each day. Throughout the day, he keeps drinking from it and must refill it 3 times, and at the end of the day, it is empty. How many fluid ounces of water did he drink?
26	A new function is defined as follows: $x\Delta y = 2x + xy - 3$ Find the value of: $4\Delta(1\Delta3)$
27	On crazy sock day, ten students each have two different colored socks on. No two of the students have the same pair of colors. What is the smallest possible number of different colors of socks they are wearing?

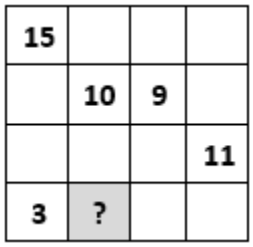
Continued on next page.

28	What is the sum of the range and median of the following set of numbers: {10, 6, 3, 5, 2, 7, 9, 1, 11}
29	Aadi's parents were driving her from their house to the Math Is Cool competition, which was 12 miles away, at a rate of 20 miles per hour. When they were one-third of the way there, she realized they would be late, so she told her parents to speed up, and they drove the rest of the way at triple their previous speed. How many more minutes did it take them to reach the Math Is Cool competition after they increased their rate?
30	What is the sum of the first 5 terms in the geometric series whose first 3 terms are: 2, 6, 18, and so on

Challenge Questions: 3 points each

31	What is the value of x times y if x plus y equals 5 and x minus y equals 1?
32	Biff and Eho are playing a game where they both start counting from 1, but Biff adds 2 each time and Eho multiplies by 2 each time. So, they both say 1 at the same time, then Biff says 3 and Eho says 2 at the same time. What number will Eho say when his number is at least 5 times Biff's number for the first time?
33	Huckson was getting ready for school, but realized he forgot to put on his socks. He quickly got 2 socks out of his drawer without checking the colors. His drawer had 2 red socks, 4 yellow socks, and 10 blue socks. As a percentage, what is the probability that he grabbed 2 yellow socks?
34	Aurora-Jo goes to Target to buy a shirt. She has 3 coupons: 20% off any shirt more than $60, 25% off any shirt more than $70, and 35% off any shirt more than $75. She finds 3 shirts that she likes, priced at $65, $72, and $80. If she uses every coupon exactly once, how much will she pay in dollars to buy all 3 shirts?
35	For a fund raising event, Veda bought 15 objects costing a total of $860 to raffle off. She created three prize boxes, with each box containing 5 objects. Each of the objects individually cost either $100, $70 or $50. Each of the three prize boxes has a different total value of the five objects it contains. What is the largest possible value, in dollars, of the objects in one of the prize boxes?
36	William and Vishal are traveling to 2 different solar systems, System W and System V, respectively. System W has 7 planets, which each have 12 moons. Each moon has 11 cities that have an average of 3 monster cows each. System V has 9 planets that each have 6 moons. Each moon in system V has 14 cities and an average of 5 monster cows at each city. How many more monster cows does System V have than System W?
37	Chicken poppers come in boxes of 5 or 7. Mir asks Aditya to buy a certain number of chicken poppers, and that number is greater than 15. Aditya goes to buy the poppers, but then realizes that it is impossible to buy the exact number of chicken poppers that Mir asked for. What is the sum of every possible number of chicken poppers that Mir might have asked for?

Continued on next page.

38	Fill in each square in the following grid so that all squares contain a different whole number, and the sum of the numbers in each row, column and diagonal equals 30. What number replaces the question mark in the shaded square? 
39	Fidel rolls 3 fair six-sided dice, and uses the 3 numbers that are on top to form the largest 3-digit number possible. Lexi uses the same 3 digits that Fidel does, but creates the smallest number possible. The probability that Fidel's number is the same as Lexi's can be written as a reduced common fraction 1/m. What is the value of m?
40	In square inches, what is the area of a circle inscribed in a square that is inscribed in a circle that is inscribed in a square that is inscribed in a circle of circumference 16π inches? Approximate π with a value of 3.1, and round your final answer to the nearest integer number of square inches.

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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	480
2	55 [pieces of candy]
3	7
4	100 [ft squared]
5	11
6	200
7	[x=] 11
8	4 [figure #]
9	2
10	37 [pennies]
11	12
12	150 [minutes]
13	48 [degrees]
14	4
15	30 [percent]

	Answer
16	480
17	50 [%]
18	26
19	18 [inches]
20	6 [ways]
21	77
22	385 [cubic inches]
23	8
24	75 [cars]
25	64 [fluid ounces]
26	13
27	5 [colors]
28	16
29	8 [minutes]
30	242

	Answer
31	6
32	128
33	5 [%]
34	158 [$]
35	340 [$]
36	1008 [monster cows]
37	57
38	13
39	36
40	50 [square inches]

5th Grade

March 2024

"Math Is Cool" Championships – 2023-24

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:			

5th Grade

March 2024

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

"Math Is Cool" Championships — 2023-24

5th Grade — March 2024

Team Multiple Choice Contest

	USE THE FOLLOWING INFORMATION TO SOLVE PROBLEMS #1 THROUGH #3. Yareli and Francisco went on an Easter egg hunt. Yareli collected four pink, seven yellow, eight green, one purple, and five blue eggs. One of the pink eggs was decorated with stars, four of the green eggs were decorated with stripes, and three of the blue eggs were decorated with polka dots.  Francisco collected two pink, four green and four purple eggs. Two of the green eggs were decorated with stripes.
1	How many more eggs does Yareli have than Francisco? A) 5 B) 10 C) 15 D) 25 E) Answer not given.
2	All of the eggs have been hard-boiled. A single hard-boiled egg weighs about 50 grams. If Yareli and Francisco put their eggs together, approximately how many kilograms of eggs do they have? A) 0.1 kg B) 1.0 kg C) 1.75 kg D) 2.25 kg E) Answer not given.
3	Yareli randomly selects one of her eggs. She pulls out a solid-colored egg, with no decorations. What is the probability that it is pink? A) 3/17 B) 5/18 C) 4/19 D) 5/19 E) Answer not given.

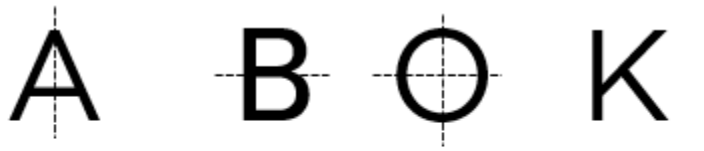
Continued on Next Page

USE THE FOLLOWING INFORMATION TO SOLVE PROBLEMS #4 THROUGH #7.

The 26 capital letters in the English language are shown here. Some of the letters are symmetric (a mirror image) over a vertical line drawn through the middle of the letter, some of the letters are symmetric over a horizontal line drawn through the middle of the letter, and some letters are symmetric over both lines. Other letters are not symmetric in either direction.

A B C D E F G H I
J K L M N O P Q R
S T U V W X Y Z

Examples:



Symmetric Over Vertical line | Symmetric Over Horizontal line | Symmetric Over both lines | Symmetric Over no lines

4 Some of the letters consist of only straight lines, such as the W. Other letters include or consist of 'curvy' sections, such as the R. How many of the letters only consist of straight lines?

A) 12 B) 14 C) 15 D) 17 E) Answer not given.

5 How many letters are <u>only</u> symmetric over a vertical line?

A) 7 B) 8 C) 10 D) 11 E) Answer not given.

6 How many <u>more</u> letters are symmetric in only one direction (either vertical or horizontal) compared to letters that are symmetric in both directions?

A) 6 B) 7 C) 8 D) 9 E) Answer not given.

7 The entire alphabet is going to be typed repeatedly, starting with ABCDEFGHIJKLMNOPQRSTUVWXYZABCD… The … at the end indicates that the sequence continues infinitely, with the alphabet being typed over and over. The first letter in the sequence is A, the second letter is B, and so on. What is the 2024^{th} letter in the sequence?

A) P B) Q C) T D) V E) Answer not given.

Continued on Next Page

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

The following table shows the number of visitors in 2022 at the Top 10 visited National Parks (NP) in the United States.

Park Name	Number of Visitors in 2022
Acadia NP	3,970,260
Cuyahoga Valley NP	2,913,312
Glacier NP	2,908,458
Grand Canyon NP	4,732,101
Great Smoky Mountains NP	12,937,633
Joshua Tree NP	3,058,294
Rocky Mountain NP	4,300,424
Yellowstone NP	3,290,242
Yosemite NP	3,667,550
Zion NP	4,692,417

8 Out of the following choices, which park had the fewest number of visitors in 2022?

A) Acadia B) Joshua Tree C) Rocky Mountain
D) Yellowstone E) Yosemite

9 Out of the ten parks, how many of them have visitor numbers that are divisible by 9?

A) 3 B) 4 C) 5 D) 7 E) Answer not given.

10 Out of the ten parks, approximately what percent of the visitors went to Great Smoky Mountains? Pick the best answer.

A) 7% B) 15% C) 26% D) 38% E) 42%

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Key

Team Multiple Choice Contest – Answer Key

5th Grade

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

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

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Final Score *(out of 20)*

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

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

"Math Is Cool" Championships — 2023-24

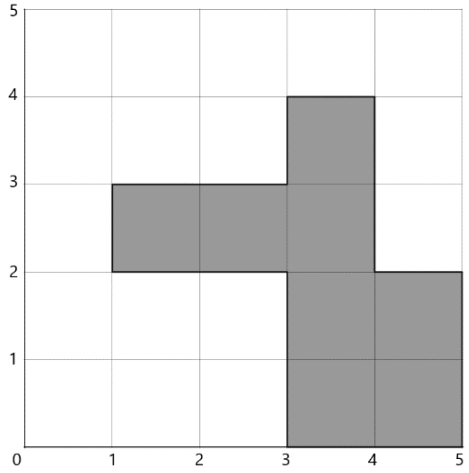
5th Grade — March 2024

Team Contest

1 Yolia makes tie-dye clothing and sells it at the Tri-Cities arts and crafts festival. On the first day of the festival, she sells the following items. How many total items did she sell on the first day?

Yolia's Tie-dye Booth	
Item	**Number sold**
T-shirt	27
Sweatpants	14
Bandanas	36

2 The horizontal or vertical distance between each grid number on the coordinate plane is 1 unit. In units, what is the perimeter of the figure shown here?



3 Sumaya is traveling in her self-driving car at a constant rate of 55 miles per hour. At this rate, how many hours will it take to travel 1,210 miles?

4 How many positive factors does the number 55 have?

5 Jackson is trying to make a 24 inch by 18 inch by 36 inch rectangular prism out of 1-inch cubes. How many cubes will he need?

6 What is the sum of the next 2 terms in the sequence that starts: 1, 4, 2, 8, 6, 24, 22…

7 Howen went on a 5-day road trip, and kept track of how many miles he drove each day. He drove 346 miles on the first day, 213 miles on the second day, 512 miles on the third day, 377 miles on the fourth day, and 367 miles on the final day. What is the positive difference between the mean number of miles driven per day and the median number of miles driven per day?

Continued on next page.

8	In how many different ways can three squares in the following shape, made of unit squares, be colored red, such that no two neighboring squares are colored red? 
9	Jim, John, and Jake are playing a dice game, where they take turns rolling a pair of fair 6-sided dice. Jim goes first, then John, then Jake. Jim wins if he rolls a sum of 5, John wins if he rolls a product of 6, and Jake wins if the positive difference between the two dice is 4. The game will continue until one of them wins, and ends once one has won. The probability that Jake wins on his first turn can be written as a common fraction A/729. What is A?
10	What is the largest 4-digit whole number that satisfies the following conditions: • The leftmost digit is a perfect square • The 2 leftmost digits in order create a two-digit perfect square • The 3 leftmost digits in order create a 3-digit perfect square • The 2 rightmost digits in order create a triangular number

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Key

Team Contest – Answer Key

5th Grade

	Answer
1	77 [items]
2	16 [units]
3	22 [hours]
4	4 [factors]
5	15552 [cubes]
6	174
7	4 [miles]
8	10 [ways]
9	64 [= A]
10	1691

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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			
5th Grade	**TOTAL:**		

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Linda Moore Triple Jump

1	Evaluate: $(2 \times 3 + 5) + 5$
2	How many ounces are in 4 pounds and 6 ounces?
3	Find the sum: $\frac{5}{6} + \frac{2}{3} + \frac{1}{2}$
4	Altogether, 27 trapezoids and 6 hexagons have the same number of sides as how many triangles?
5	The following puzzle contains 4 unknown numbers (a, b, c and d) and 6 total equations, 3 across the rows and 3 down the columns. For example, the equation reading down the right-most column is: 20 – d = 8. What is the value of a + b + c + d? 5 × a = 20 - + - c × b = d = = = 1 + 7 = 8
6	Out of the 200 fifth graders at Grant Elementary School, 44 of them are in chess club, 51 of them are in robotics, and 3/7 of the remainder play football. None of the students does more than one of these activities. What percent of the students do none of these 3 activities?
7	Aditya's older brother is six years older than him. The sum of their ages is 40 years. In years, how old is Aditya's brother?
8	There are 100 students at Lincoln Middle School. Every student has either 0, 1, or 2 siblings, with at least one student in each category. On 'bring your sibling to school day', every student brought all their siblings, and a total of 117 siblings showed up. What is the maximum number of students that could have had exactly 1 sibling?
9	A 3-digit integer is called *stupendous* if it has a prime factorization consisting of two 2-digit integers such that one of them is the sum of the digits of the other. How many *stupendous* 3-digit integers are there?
10	Parker and Packard are playing a game where they both roll 2 fair 6-sided dice, and whoever gets the higher sum wins. As a reduced fraction, the probability that they tie, but they also roll the exact same pair of numbers, is x/216. What is x?

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Key

Linda Moore Triple Jump – Answer Key

5th Grade

	Answer
1	16
2	70 [ounces]
3	2
4	48 [triangles]
5	23
6	30 [percent]
7	23 [years]
8	81 [students]
9	4 [integers]
10	11

"Math Is Cool" Championships — 2023-24

5th Grade — March 2024

Final Score *(out of 10)*

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			
5th Grade	**TOTAL:**		

"Math Is Cool" Championships — 2023-24

5th Grade — March 2024

Final Score *(out of 10)*

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			
5th Grade	**TOTAL:**		

"Math Is Cool" Championships — 2023-24

5th Grade — March 2024

Final Score *(out of 10)*

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			
5th Grade	**TOTAL:**		

"Math Is Cool" Championships — 2023-24

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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.

"Math Is Cool" Championships — 2023-24

5th Grade — March 2024

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.

"Math Is Cool" Championships — 2023-24

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Proctor Copy

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	Jake got three bags of candy for his birthday. The first bag had three pieces, the second bag had four pieces, and the final bag had five pieces. How many pieces of candy did Jake get for his birthday?	12 [pieces]
2	What is the area in square units of a square with side length 5 units?	25 [sq. units]
3	What is x plus seven minus two if x equals four?	9
4	What is twenty percent of one hundred fifty?	30
5	A palindrome is a whole number that reads the same forwards or backwards, such as two hundred thirty two. What is the largest palindrome that is less than five hundred?	494
6	What is the average of the following set: two, eight, fourteen, five, six	7
7	A sequence of shapes begins with: triangle, pentagon, square, octagon, then keeps repeating in the same order. How many sides does the twenty-sixth shape in the sequence have?	5 [sides]
8	Carter has twelve quarters, eleven dimes, seven nickels, and four pennies. He is buying a chocolate bar that costs two dollars and forty-eight cents. In cents, how much money will he have left after buying the chocolate bar?	201 [cents]

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Key

COLLEGE BOWL ROUND #1

#	Problem	Answer
1	What number is ten times as much as seventy?	700
2	What is the perimeter in centimeters of a triangle with side lengths six centimeters, four centimeters, and eight centimeters?	18 [cm]
3	How many prime numbers are between one and fifteen?	6 [prime nos.]
4	There are twenty-five students in Mrs. Maxson's fourth grade class, and three of them are named Ryan. If she randomly selects one student, what is the probability in percent that their name is Ryan?	12 [%]
5	What is the value of 'x' if 'x' minus two thousand twenty-four equals two thousand twenty-four?	4048 [= x]
6	The mean of the following data set is six. What is the value of x? Five, three, seven, x, eleven	4 [=x]
7	Three hundred eighty-five pennies and one hundred twenty-three dimes have the same value as how many nickels?	323 [nickels]
8	What is the next number in the following sequence? One, one, two, four, seven, eleven, sixteen, and so on.	22
9	The tennis coach at Pullman High School bought eight new cans of tennis balls for three dollars each. The golf coach bought eight new sleeves of golf balls for fourteen dollars each. How many more dollars did the golf coach spend than the tennis coach?	88 [$]
10	Lila makes a rectangular prism by placing five unit cubes in a row, then adding two more rows of five unit cubes on top of that. What is the volume of the final rectangular prism, in cubic units?	15 [cu units]

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Key

COLLEGE BOWL ROUND #2

#	Problem	Answer
1	What is ninety thousand plus two thousand plus fifty plus five?	92,055 [ninety two thousand fifty-five]
2	The perimeter of a trapezoid is fifteen meters. Three of the side lengths are four, five, and four meters. In meters, what is the length of the fourth side?	2 [m]
3	If a plus b equals twelve, and a equals seven, what is the product of a and b?	35
4	Maya randomly selects a whole number from one to one hundred, inclusive. What is the probability in percent that she chooses a multiple of nine?	11 [%]
5	What is the Least Common Multiple of six and ten?	30
6	If the median of the following data set equals five, what is the value of x? Two, nine, ten, one, x	5 [=x]
7	In inches, what is the positive difference between twelve yards and forty feet?	48 [inches]
8	What number should be in the blank of the following sequence? Sixty-three, fifty-nine, blank, fifty-one, forty-seven, and so on.	55
9	Packard's grandpa gave him one hundred thirty dollars to spend on baseball equipment. Packard bought two pairs of baseball pants that cost twenty-four dollars each and one pair of batting gloves that cost thirty-two dollars. How many dollars does Packard have left?	50 [$]
10	A barge on the Columbia River holds one hundred freight containers. Each freight container is a rectangular prism with dimensions seventeen meters by three meters by three meters. What is the total volume of the freight containers on the barge in cubic meters?	15300 [cu meters]

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Key

COLLEGE BOWL ROUND #3

#	Problem	Answer
1	Which of the following numbers is the smallest: thirty-four, fifty-one, seventy-eight, thirty-nine, forty-two	34
2	A rectangular ping-pong table measures nine feet by five feet. What is the area of the table in square feet?	45 [sq. ft]
3	What number should be in the blank of the following sequence? Five, blank, eighty, three hundred twenty, one thousand two hundred eighty, and so on.	20
4	Four friends are at Silverwood Theme Park. They want to ride the bumper cars, with two friends in each car. In how many different ways can they form teams of two? The order of the friends in each car is not important.	3 [ways]
5	What is the Greatest Common Factor of fifteen and eleven?	1
6	A bag contains seven orange jelly beans, five green jelly beans and two blue jelly beans. If one jelly bean is randomly selected, what is the probability in percent that it is not orange?	50 [%]
7	The following set of data consists of whole numbers. If the range of the data set equals fifteen, what is the value of x? Twelve, three, seven, x, thirteen	18 [= x]
8	What number minus fifty-three equals fifteen?	68
9	Nino's coin bank is shaped like a cube, with side lengths of seven inches. What is the surface area of the coin bank, in square inches?	294 [sq inches]
10	How many pennies are needed to evenly exchange in value for 25 nickels?	125 [pennies]

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Key

COLLEGE BOWL ROUND #4

#	Problem	Answer
1	What is twenty-seven thousand five hundred seventy-five rounded to the nearest ten thousand?	30000 [thirty thousand]
2	How many of the following angle measurements are obtuse? Twenty-five degrees, ninety degrees, fifteen degrees, seventy-two degrees, one hundred twenty degrees	1 [obtuse angle]
3	What is the sum of the next two numbers in the geometric sequence that begins as follows: Two hundred forty-three, eighty-one, twenty-seven, and so on	12
4	A standard ten-sided die (singular of dice) is numbered zero through nine. When the die is rolled once, what is the probability in percent that the number showing is five or less?	60 [%]
5	What is the largest whole number that is less than eight times six times four times two?	383
6	What is the median of the following data set? Seventeen, thirty-three, five, twenty-five	21 [median]
7	Adri writes down all of the integers from one to one hundred. How many times does she write the digit five?	20 [times]
8	Mr. Perez got new calculators for his classroom, and each calculator needs four batteries. He has three packages of batteries with ten batteries in each package. What is the maximum number of calculators that can be completely filled with batteries?	7 [calculators]
9	What is the radius, in units, of a circle with an area of sixteen pi square units?	4 [units]
10	What is fifty percent of eight thousand one hundred thirty-four?	4067

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Key

COLLEGE BOWL ROUND #5

#	Problem	Answer
1	What is the sum of one thousand three hundred ninety-nine and four thousand two hundred thirty-two?	5631 [five thousand six hundred thirty-one]
2	How many of the following shapes have four sides? Trapezoid, square, triangle, pentagon, parallelogram, rectangle, star	4 [shapes]
3	What is the next number in the following sequence? One, five, twenty-five, one hundred twenty-five, and so on	625
4	In how many ways can the letters in the word book, spelled B-O-O-K, be arranged?	12 [ways]
5	How many multiples of three are between eleven and sixty-two?	17 [multiples of 3]
6	Bryce and Yusuf each have some cookies. Bryce says to Yusuf, if you give me one of your cookies, we would have the same number. Yusuf says, but if you gave me one of yours, I would have five times as many as you. How many cookies does Yusuf currently have?	4 [cookies]
7	If one of the interior angles of a parallelogram measures sixty-five degrees, what is the sum of the other three interior angle measurements, in degrees?	295 [degrees]
8	Julisa has five red pens. She has eight more black pens than red pens. She has ten more blue pens than red pens. How many pens does she have all together?	33 [pens]
9	Find the mode of the following set of numbers: One, three, nine, three, ten, nine, one, one	1 [= mode]
10	The Barbie movie starts at eleven PM and ends at twelve fifty-four AM the next day. How long is the movie in minutes?	114 [minutes]

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Key

COLLEGE BOWL ROUND #6

#	Problem	Answer
1	Naveen has been saving two dollars a week for fourteen weeks. He wants to spend his savings on comic books. They cost three dollars each. What is the maximum number of comic books that he can buy?	9 [comic books]
2	Four meters and fifty-nine centimeters is equal to how many centimeters?	459 [cm]
3	What is the next number in the following sequence? Two, five, eight, eleven, and so on	14
4	In square units, what is the area of a square that has a perimeter of 36 units?	81 [sq units]
5	All ten letters used to spell Math Is Cool are placed in a bag. If one letter is randomly selected, what is the probability in percent that it is a vowel?	40 [%]
6	Warren has ten dollars more than a third of Penny's money. If Penny has twelve dollars, how many dollars does Warren have?	14 [$]
7	What is the perimeter in inches of a rectangle with area of 19 square inches, if all of the side lengths are whole numbers?	40 [inches]
8	What is the greatest prime factor of twenty-four?	3
9	Find the mean of the following set of numbers: One, two, three, four, five, six, seven	4 [= mean]
10	Yessica wants to buy a jump rope that costs ten dollars, a video game that costs nineteen dollars, and a book that costs ten dollars. She has four dollars from her allowance and twenty dollars of birthday money. How many more dollars does she need to buy all three items?	15 [$]

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Key

COLLEGE BOWL – EXTRA QUESTIONS

#	Problem	Answer
1	What is the product of nine and three thousand?	27,000 [twenty-seven thousand]
2	A rectangular storage unit is twenty-one feet long and fifteen feet wide. What is its perimeter in yards?	24 [yards]
3	How many distinct factors does the number twenty-five have?	3 [factors]
4	What is the product of all of the digits in the number thirty-seven thousand two hundred five?	0 [= product]
5	Two fair coins are flipped. What is the probability in percent that they both come up heads?	25 [%]
6	What is the units digit of six raised to the sixth power?	6
7	How many seconds are in two hours?	7200 [seconds]
8	Nine plus ninety-nine plus nine hundred ninety-nine equals nine times what number?	123
9	What is the sum of the number of faces on a cube and the number of edges on a cube?	18
10	What is the positive difference between four thousand one hundred two and two thousand twenty-four?	2078

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 (this needs to be carefully controlled), and
3) sets of Mental Math, Individual, Multiple Choice, Team, and Relay 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).

Key Points

- 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, Relay, 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.
- You will score the Relays.
- 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.

Schedule

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 after 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 after 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, return the desks to their original arrangement, 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 (AND PERHAPS GRADED BY YOU). 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 all 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., $\sqrt{2}$), 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