"Math Is Cool" Championships — 2022-23

4th Grade — March 2023

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:* ***For 2023: 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 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).

"Math Is Cool" Championships — 2022-23

4th Grade — March 2023

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			
4th Grade	**TOTAL:**		

"Math Is Cool" Championships — 2022-23

4th Grade — March 2023

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.

4th Grade

	Answer	
1	[7]	What is the quotient of fifty-six and eight?
2	18 [units]	What is the perimeter in units of a regular hexagon with a side length of three units?
3	50 [minutes]	How many minutes are between 10:15 AM and 11:05 AM?
4	250 [cm]	How many centimeters are in two point five meters?
5	29	What term comes next in the arithmetic sequence that begins with eleven, seventeen, twenty-three, and so on?
6	9 [girls]	In a class, two-fifths of the children are boys and the rest are girls. If there are fifteen students, how many are girls?
7	784 [cents]	If one candy bar costs one dollar and ninety-six cents, how many cents do four candy bars cost?
8	24	What is the sum of all of the factors of fifteen?

"Math Is Cool" Championships — 2022-23

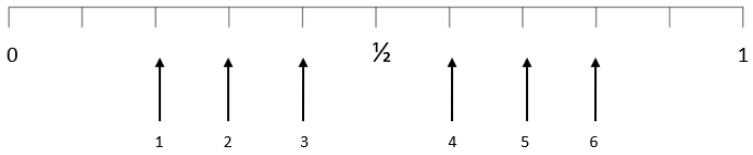
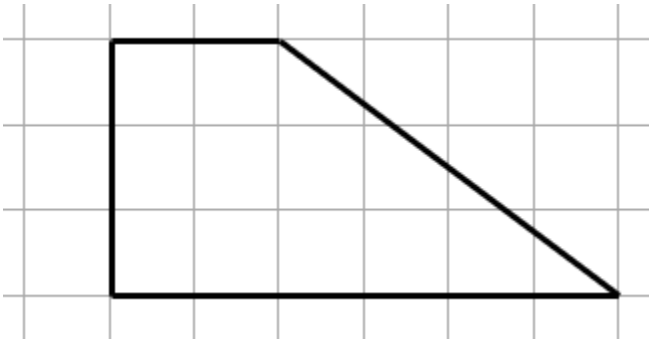
4th Grade — March 2023

Individual Contest

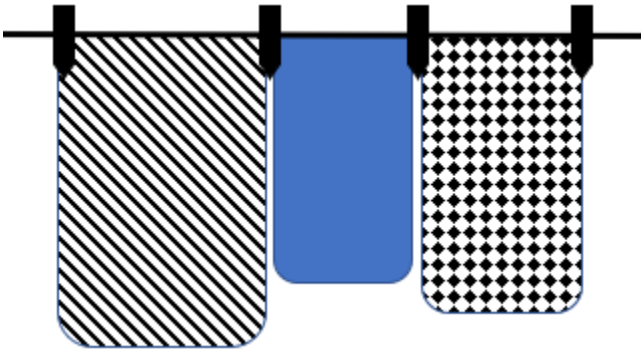
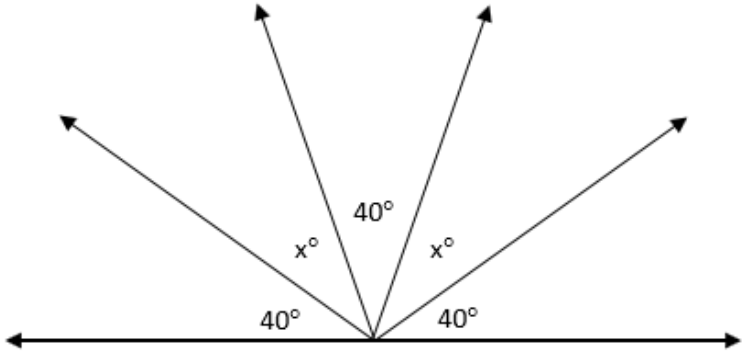
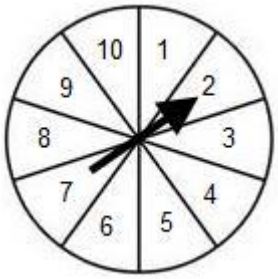
Record all answers on the colored cover sheet. 35 minutes, 40 problems, ~92% of individual score.
No talking during this individual test. A 5-minute time warning will be given.

	Questions 1-30: 2 points each
1	Biff had 10 gumballs but then got 15 more from Eho. How many gumballs does Biff have now?
2	How many minutes are in two hours?
3	What is the next number in the following arithmetic sequence? 10, 14, 18, 22, …,
4	Children between the ages of 9 and 13 need approximately 30 grams of protein each day. A certain snack bar contains 6 grams of protein. How many of these snack bars would a 10-year old child need to eat in one day to fulfill their protein needs?
5	What is the median of the following numbers? 2, 19, 5, 10, 9
6	Evaluate: $10 \div (2 + 3)$
7	How many sides does a parallelogram have?
8	What is the largest prime number that is less than 15?
9	A bag of jelly beans has 3 green jelly beans, 4 yellow jelly beans and 3 red jelly beans. If one jelly bean is randomly selected, what is the probability in percent that it is red?
10	What number is 1/3 of 18?
11	What is the area in square meters of a rectangle with sides measuring 9 meters and 7 meters?
12	What number is halfway between 1200 and 1300?
13	In how many different ways can two identical nickels and one penny be arranged in a line?
14	What is 50% of 220?
15	Maria put a coffeecake in the oven at 12:05 pm. She took the coffeecake out of the oven at 1:00 pm the same day. How many minutes was the coffeecake in the oven?
16	What is the smallest three-digit positive multiple of 15?

Continued on next page.

17	The following table shows the number of students in various elective classes at their school. What is the mean number of students taking an elective class? **Elective Class** / **Number of Students** Painting: 14 Debate: 17 Photography: 14 Journalism: 19
18	On the following number line, which numbered arrow indicates the position of the fraction 2/5 ? Enter an integer from 1 through 6 as your answer. 
19	Water is added to frozen lemon concentrate to make lemonade. The final lemonade mixture consists of 7/9 water. In an 18 ounce serving of lemonade, how many ounces of frozen lemon concentrate are there?
20	How many of the following statements are true? $8 \div 2 < 5$ $10 = 2 \times 5$ $1 + 2 + 10 > 12$ $10 \times 4 = 2 \times (10 \times 2)$
21	The numbers x and y are the next two numbers in the following sequence. What is y? 1, 4, 9, 16, x, y, …
22	Three friends are playing a game. They have four hats in a box, two blue hats and two red hats. Each friend closes their eyes and randomly chooses a hat and puts it on. The leftover hat remains in the box. After opening their eyes, they can see their friend's hats but not their own. Rohan sees that Shryta is wearing a red hat and Alex is wearing a blue hat. Out of the three friends, how many of them know the color of their own hat?
23	Add, and express your answer as a whole number: $6\frac{1}{3} + 11\frac{2}{3} + 5$
24	Find the area of the trapezoid in square units. Each square on the grid is 1 unit by 1 unit. 

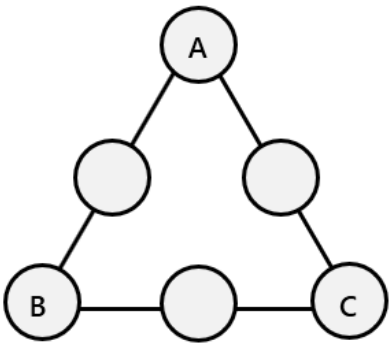
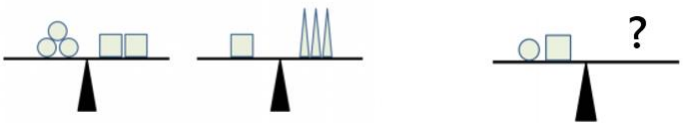
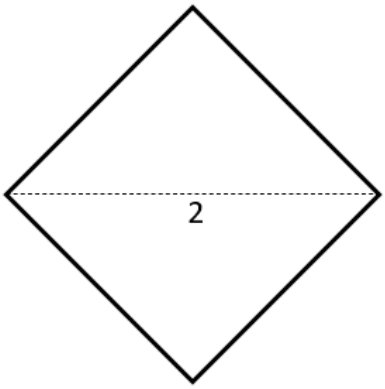
Continued on next page.

25	Chris hangs the kitchen towels on a clothesline. They want to use as few clothespins as possible. For example, 4 clothespins are needed to hang 3 towels, as shown. What is the minimum number of clothespins needed to hang 9 towels? 
26	If x = 3 and y = 4, what does 4x + y equal?
27	How many 2-digit positive integers are multiples of 5?
28	In the figure shown here, the five angles (40°, x°, 40°, x°, 40°) form a straight line when placed together. What is the measure of one angle 'x', in degrees? 
29	The spinner is split into equally sized segments. When the arrow is spun, it is equally likely to land on any of the segments. On a single spin, what is the probability in percent that it lands on a prime number? 
30	A whole number rounded to the nearest thousand is 22,000. What is the largest possible value for the number?

Challenge Questions: 3 points each

31	If a◆b = 2a + 3b, find the value of 4◆2.
32	Chloe writes a list of 10 consecutive integers. The sum of the least and greatest numbers on her list is 93. What is the smallest number in her list?
33	All students in 8th grade at a middle school are learning either Spanish or French, but not both. If 55% of the students are learning Spanish and 36 students are learning French, how many students are learning Spanish?

Continued on next page.

34	Place the numbers 1 through 6 in the circles, using each number exactly once, so that the total you get by adding the numbers along each side is always 9. What is the value of A + B + C? 
35	The number 2,528 has only one odd digit, and the value of this odd digit is 500, because the 5 is in the hundreds place. What is the product of the values of all the odd digits in 65,213?
36	Five friends, Aditya, Brendan, Cam, Deepti and Elle run a race against each other. The following information is known about the results (there were no ties): • Aditya finishes either second or fourth. • Brendan finishes either first or fifth. • Cam finishes either third or fourth. • Deepti finishes either first or second. • Elle finishes either third or fifth. In how many different orders could the friends have placed 1st through 5th in the race?
37	The first two scales shown are evenly balanced. In the third scale, how many triangles will it take to balance one circle and one square? 
38	Evaluate: 1 – 2 + 3 – 4 + 5 – 6 + … + 2021 – 2022
39	The square shown here has a diagonal length of 2 units. What is the area of the square, in units squared? 
40	In the following figure, composed of three unit squares, each square can be colored either black, orange or purple. A color can be used in more than one square. How many different ways are there to color the squares so that any two adjacent squares (next to each other) are not the same color? 

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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 [gumballs]
2	120 [minutes]
3	26
4	5 [bars]
5	9
6	2
7	4 [sides]
8	13
9	30 [%]
10	6
11	63 [square meters]
12	1250
13	3
14	110
15	55 [minutes]

	Answer
16	105
17	16 [students]
18	3
19	4 [ounces]
20	4
21	36
22	1 [friend]
23	23
24	12 [square units]
25	10 [clothespins]
26	16
27	18
28	30 [°]
29	40 [%]
30	22499

	Answer
31	14
32	42
33	44 [students]
34	6
35	150000
36	2 [orders]
37	5 [triangles]
38	-1011
39	2 [square units]
40	12

4th Grade

March 2023

"Math Is Cool" Championships – 2022-23

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:			

4th Grade

March 2023

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

"Math Is Cool" Championships — 2022-23

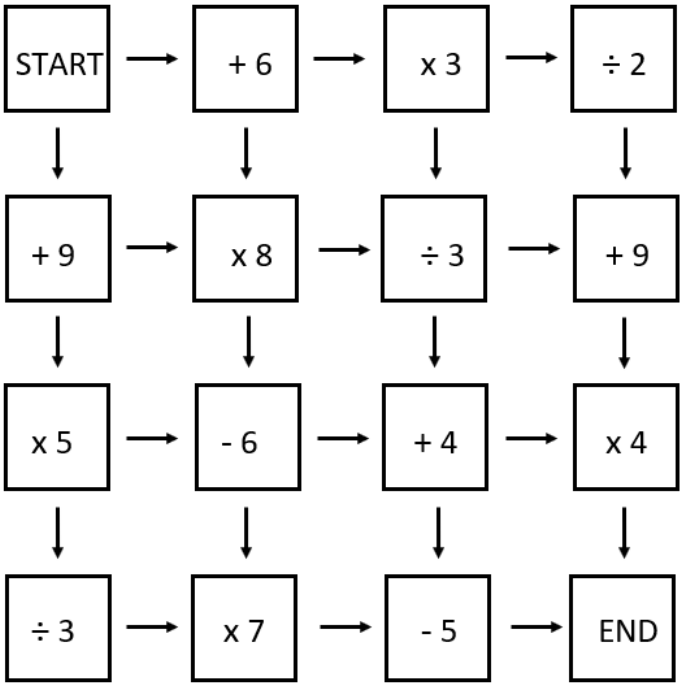
4th Grade — March 2023

Team Multiple Choice Contest

USE THE FOLLOWING INFORMATION TO SOLVE PROBLEMS #1 THROUGH #3.

To complete the maze, you will begin at the upper-left corner in the 'START' box, with a starting score of 0. You will make one move at a time, by following the arrows either to the right or down. You may only move to a neighboring box, no skipping is allowed.

Each time you move, you will take your current score and perform the indicated operation, either addition, subtraction, multiplication, or division, which will then give you a new score. The maze is over when you reach the 'END' box.



1 From the START box, if you move to the right 3 steps, followed by 3 steps down, what will your score be when you reach the END?

A) 56 B) 72 C) 100 D) 354 E) Answer not given.

2 By choosing any allowable route, what is the highest score that can be achieved when you reach the END?

A) 126 B) 354 C) 457 D) 502 E) Answer not given.

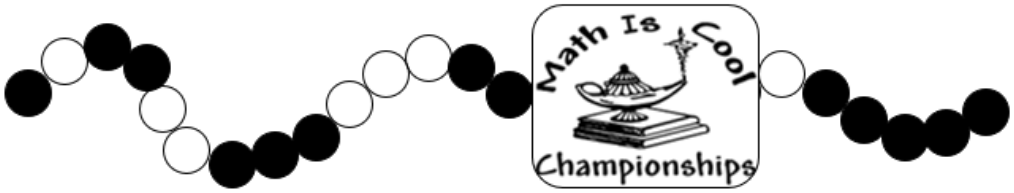
3 How many different routes will give you an ending score of exactly 100?

A) 2 B) 3 C) 4 D) 5 E) Answer not given.

Continued on Next Page

	USE THE FOLLOWING INFORMATION TO SOLVE PROBLEMS #4 THROUGH #7. Mr. Mabry won a contest by correctly guessing how many sugar cubes were contained in a jar. As his prize, the sugar company sent him one million sugar cubes. The one million sugar cubes were stacked so that they formed one perfect cube and were wrapped in plastic for shipment in a box sized perfectly to contain the cube. Each individual sugar cube measures 1 cm by 1 cm by 1 cm. 
4	What is the surface area of a single sugar cube? A) 1 cm^2 B) 4 cm^2 C) 6 cm^2 D) 10 cm^2 E) Answer not given.
5	A single sugar cube weighs 1.6 grams. How much do one thousand of the sugar cubes weigh, in kilograms? A) 1.6 kg B) 100 kg C) 160 kg D) 1600 kg E) Answer not given.
6	With the cubes still in their original packaging as described above, approximately what size of a storage area will Mr. Mabry need to store his cube of sugar cubes? A) Inside a small backpack. B) Under a low (1-foot tall) coffee table in the living room. C) Inside a large, deep storage closet. D) It will fill his 2-car garage. E) Mr. Mabry will need to rent a large warehouse.
7	Mr. Mabry unwraps his cubes and removes one full layer of cubes from the top of the cube structure. Then he removes one full layer of cubes from the front of the cube structure. How many individual cubes remain in the original structure? A) 980,100 B) 989,100 C) 990,100 D) 990,900 E) Answer not given.

Continued on Next Page

8	In the following string of beads, which ones are covered by the Math Is Cool banner?  A)  B)  C)  D)  E) 
9	Lilac bushes are planted in a straight line along both sides of a driveway. The distance between the lilac bushes on each side of the driveway is 2 meters. What is the maximum number of bushes that can be planted if the driveway is 20 meters long? A) 10 B) 11 C) 12 D) 20 E) 22
10	A math team started out with 10 boys and 15 girls. However, every week 3 more boys joined and 2 more girls joined the team. After a few weeks, there was an equal number of boys and girls on the team. How many total students were on the math team at that point? A) 25 B) 35 C) 45 D) 50 E) 60

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Key

Team Multiple Choice Contest – Answer Key

4th Grade

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

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

"Math Is Cool" Championships — 2022-23

4th Grade — March 2023

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.

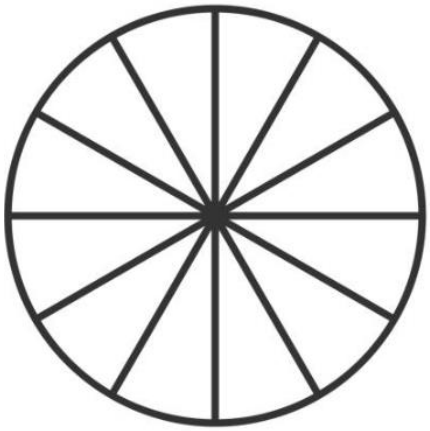
STUDENTS: DO NOT WRITE IN SHADED REGIONS

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

"Math Is Cool" Championships — 2022-23

4th Grade — March 2023

Team Contest

1	If Merlin takes 45 minutes to brew one potion, how long in minutes does it take for him to brew 10 potions?
2	The following circle is split into equal-sized segments. How many of the segments need to be colored in, in order to have 75% of the circle colored? 
3	Hunter found one quarter on Monday, two dimes on Tuesday, three nickels on Wednesday, and four pennies on Thursday. How many cents did he find over those four days?
4	Luis decides to share a package of candies with his siblings. He first gives a quarter of the candies to his older brother Manuel. After that he splits the remaining candies evenly between himself and his two younger sisters. If each of his sisters received 9 candies and there were none left over, how many candies did the package start with?
5	A triangle has two sides of lengths 7 units and 12 units. What is the longest possible length of the third side, in units, if it must also be an integer.
6	What is the positive difference between the mean and the median of the following data set? {3, 4, 6, 14, 2, 13}
7	Veena is surrounding a rectangular garden with 96 yards of fencing, where all side lengths will be whole numbers. What is the largest area, in square yards, that the garden can be?

Continued on next page.

8	The digits 1 through 6 are each used exactly once to create two 3-digit numbers, ABC and DEF. What is the largest possible result for the difference of the two numbers when DEF is subtracted from ABC?	$\begin{array}{r} A\ B\ C \\ -\ D\ E\ F \\ \hline ?\ ?\ ? \end{array}$
9	Several schools competed in a cross-country meet. Each team sent three participants. Mary, Matt, and Medha were the three representatives for Handley Middle School. Mary finished the race in exactly the middle position of all the competitors. Matt finished after Mary in the 16th position, and Medha finished 23rd. How many schools took part in the race?	
10	Catalina lives at the bottom of a very tall hill. One day she begins biking up the hill at a constant speed of 6 miles per hour. At the top, she immediately turns around and coasts back to her house at a constant 12 miles per hour. What was Catalina's average speed during the bike ride, in miles per hour?	

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4th Grade — March 2023

Key

Team Contest – Answer Key

4th Grade

	Answer
1	450 [minutes]
2	9 [segments]
3	64 [cents]
4	36 [candies]
5	18 [units]
6	2
7	576 [square yards]
8	531
9	9 [schools]
10	8 [miles per hour]

"Math Is Cool" Championships — 2022-23

4th Grade — March 2023

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.

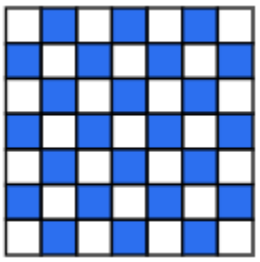
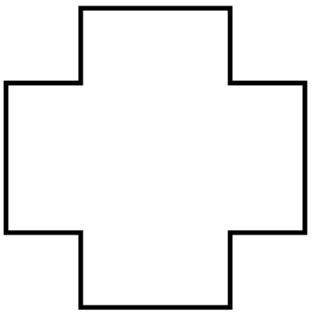
STUDENTS: DO NOT WRITE IN SHADED REGIONS

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

"Math Is Cool" Championships — 2022-23

4th Grade — March 2023

Linda Moore Triple Jump

1	The following checkerboard is made up of unit squares. The total area of the checkerboard is 49 cm^2. What is the combined area of the white squares, in cm^2? 
2	While organizing her Pokémon cards, Olivia put 3 cards in the first pile, 5 cards in the second pile, 9 cards in the third pile, and 15 cards in the fourth pile. If this pattern continues, how many cards will Olivia put in the fifth pile?
3	How many lines of symmetry does the following shape have? 
4	Choose two numbers from the box to complete the number sentence below, by putting one number in each box. What is the larger of the two numbers? 2 3 4 5 6 7 8 9 10 11 ☐ and ☐ have a product of 54.
5	The rectangles shown here have the same perimeter, in meters. What is the area, in square meters, of the shaded rectangle? 7 m 3 m   1 m
6	What is the sum of the distinct positive factors of 36?

Continued on next page.

7	At midnight, the hour and minute hand of an analog clock completely overlap. How many times do the hour and minute hands completely overlap over a 24-hour period that starts at 6:00 AM?
8	For how many two-digit integers does the sum of the integer's digits equal 9? For example, the number 15 has a sum of 1 + 5 = 6.
9	It takes 15 lumberjacks 6 hours to chop down 81 trees. Working at the same rate, how many hours would it take 26 lumberjacks to chop down 117 trees?
10	The five starting basketball players for the CBC Hawks scored 95 points in their win last night over their rivals the Yakima Valley Yaks. Assuming the following statements from the five players are true, how many points did Jackson score? Noah: No two of us scored the same number of points. Roman: Tomas was our fourth highest scorer. Aidan: All five of us scored an odd number of points. Tomas: Aidan scored two points more than Roman. Jackson: Noah was our top scorer with 23 points.

"Math Is Cool" Championships — 2022-23

4th Grade — March 2023

Key

Linda Moore Triple Jump – Answer Key

4th Grade

	Answer
1	25 [cm^2]
2	23 [cards]
3	4 [lines]
4	9
5	9 [square meters]
6	91
7	22 [times]
8	9 [integers]
9	5 [hours]
10	15 [points]

"Math Is Cool" Championships — 2022-23

4th Grade — March 2023

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			
4th Grade	**TOTAL:**		

"Math Is Cool" Championships — 2022-23

4th Grade — March 2023

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			
4th Grade	**TOTAL:**		

"Math Is Cool" Championships — 2022-23

4th Grade — March 2023

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			
4th Grade	**TOTAL:**		

"Math Is Cool" Championships — 2022-23

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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 — 2022-23

4th Grade — March 2023

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 — 2022-23

4th Grade — March 2023

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	What is the quotient of fifty-six and eight?	[7]
2	What is the perimeter in units of a regular hexagon with a side length of three units?	18 [units]
3	How many minutes are between 10:15 AM and 11:05 AM?	50 [minutes]
4	How many centimeters are in two point five meters?	250 [cm]
5	What term comes next in the arithmetic sequence that begins with eleven, seventeen, twenty-three, and so on?	29
6	In a class, two-fifths of the children are boys and the rest are girls. If there are fifteen students, how many are girls?	9 [girls]
7	If one candy bar costs one dollar and ninety-six cents, how many cents do four candy bars cost?	784 [cents]
8	What is the sum of all of the factors of fifteen?	24

"Math Is Cool" Championships — 2022-23

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Key

COLLEGE BOWL ROUND #1

#	Problem	Answer
1	What is the sum of eight and seventy-one?	79
2	When rolling a fair six-sided die, what is the probability in percent of rolling an odd number?	50 [%]
3	How many vertices does a cube have?	8 [vertices]
4	I have a secret amount of candy pieces. If I add 16 pieces of candy and then divide the candy into five equal groups, there are ten pieces of candy in each group. How many pieces of candy did I start with?	34 [pieces}
5	What is the next term of the arithmetic [PROCTOR – pronounced air-ith-MET-ic] sequence that begins: Two hundred thirty-four, two hundred twenty-one, two hundred eight, one hundred ninety-five, and so on.	182
6	Using the digits five, three and eight exactly once each, what is the largest three-digit odd whole number that can be made?	853
7	Jasmin counts up by fives. The seventh number she says is forty. What was the fourth number she said?	25
8	What is the sum of the digits in the number thirty thousand four hundred and eighty two?	17
9	The perimeter of an irregular pentagon is eighteen units. Four of the side lengths are five, five, two and five units. How many units is the length of the fifth side?	1 [unit]
10	What is four hundred and forty-two dollars rounded to the nearest hundred dollars?	400 [$]

"Math Is Cool" Championships — 2022-23

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Key

COLLEGE BOWL ROUND #2

#	Problem	Answer
1	Batman had twenty-eight jellybeans. He gave all of them, except for the four that were red, to his friend Robin. How many jellybeans does Batman have now?	4 [jellybeans]
2	What whole number is eight point one plus twenty-two point nine?	31
3	A beach volleyball court is 9 meters wide and 16 meters long. What is its perimeter in meters?	50 [meters]
4	A single bracelet is drawn out of a box containing five pink, four blue, and seven green bracelets. As a percentage, what is the probability that the bracelet is **not** blue?	75 [%]
5	What is the next number in the sequence that begins: one, two, four, seven, eleven, sixteen, and so on?	22
6	Twenty-four is one-third of twice my favorite number. What is my favorite number?	36
7	How many even ten-digit positive numbers can be written using only two ones and eight zeros?	8 [numbers]
8	What is the range of the following list of numbers: nine, four, one, three, seven, two	8
9	Three gallons and three quarts is equal to how many quarts?	15 [quarts]
10	What whole number is the product of nine and one-third?	3

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Key

COLLEGE BOWL ROUND #3

#	Problem	Answer
1	What is the mean of the following numbers: three, twenty-five, two, ten and fifteen?	11
2	What is one minus two plus three minus four plus five?	3
3	A square piece of carpet has sides that are 12 feet long. What is the carpet's area in square feet?	144 [square feet]
4	At Miriam's Pet Rescue, there are four dogs for every five cats. If there are a total of thirty-six dogs and cats combined, how many dogs are there?	16 [dogs]
5	How many positive distinct factors does the number 12 have?	6 [factors]
6	If Juan's allowance is fifteen dollars in January, twenty dollars in February, and continues to increase by five dollars every month, how many total dollars will he receive in one year?	510 [dollars]
7	Gino is seven years old, and his father is thirty-four years old. After how many years will Gino be half his father's age?	20 [years]
8	How many points of intersection do two parallel lines have?	0 [points]
9	In the following equation, what is the value of x? Nineteen minus x equals 9 plus x.	5
10	Evaluate the following expression: five times five times five divided by one hundred twenty-five.	1

"Math Is Cool" Championships — 2022-23

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Key

COLLEGE BOWL ROUND #4

#	Problem	Answer
1	What is the sum of the first five prime numbers?	28
2	What is the area in square units of a square with a side length of 13?	169 [square units]
3	How many positive five digit whole numbers are there?	90000 [numbers]
4	If one interior angle of a parallelogram measures twenty-three degrees, what is the sum in degrees of the other three interior angles?	337 [degrees]
5	A set of four numbers x, y, thirteen and fifteen has a mean equal to twelve. What is x plus y?	20 [=x + y]
6	A single six-sided die is rolled four times, and the results are: five, five, one, three. When the die is rolled a fifth time, what is the probability in percent that the result is an odd number?	50 [percent]
7	A geometric sequence with first term equal to one begins as follows: 1, 2, 4, 8, and so on. What is the seventh term in the sequence?	64
8	Lyla left home for her baseball game at 4:20 PM and returned home at 7:10 PM the same day. For how many minutes was Lyla away from home?	170 [minutes]
9	Two angles join to form a right angle. The first angle measures 24 degrees. What is the measure of the second angle in degrees?	66 [degrees]
10	What integer is equal to three-tenths plus seven-tenths?	1

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Key

COLLEGE BOWL ROUND #5

#	Problem	Answer
1	What is the quotient of 64 and 4?	16
2	How many meters are in seven kilometers?	7000 [meters]
3	How many lines of symmetry does a square have?	4 [lines]
4	If a single six-sided die is rolled, what is the probability in percent that the number showing is less than four?	50 [percent]
5	A grandfather clock chimes once at one o'clock, twice at two o'clock, three times at three o'clock, and so on through twelve o'clock. How many total times does it chime in a twelve hour period from one o'clock to twelve o'clock inclusive?	78 [times]
6	How many whole numbers between one and forty are divisible by three?	13 [numbers]
7	A bag has red and green marbles. The ratio of red to green is three to eight. If there are thirty-three red marbles, how many green marbles are there?	88 [green marbles]
8	Aditi bought a used book costing five dollars and thirty-six cents. He gave the cashier a ten dollar bill. How much change, in cents, did he receive?	464 [cents]
9	What is the mode of the following set of numbers: zero, zero, four, one, four, four.	4
10	What is the perimeter in centimeters of a right triangle with side lengths six centimeters, eight centimeters and ten centimeters	24 [centimeters]

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Key

COLLEGE BOWL ROUND #6

#	Problem	Answer
1	In centimeters, what is 35 millimeters plus 55 millimeters?	9 [cm]
2	In degrees, what is the sum of two of the interior angles in an equilateral triangle?	120 [degrees]
3	What is the next term in the arithmetic (PROCTOR – pronounced air-ith-MET-ic) sequence that begins: 51, 47, 43, and so on.	39
4	The number N equals two times two times two times five times five times five. How many digits are in the number N?	4 [digits]
5	In how many different ways can the letters of the word boom, spelled B-O-O-M, be arranged, if the B must stay in the first position?	3 [ways]
6	Prisha is in a book-reading contest at the library. Two contestants read the same number of books and tied for first place. Four people finished ahead of Prisha, and three people finished behind Prisha. How many total contestants were in the contest?	8 [contestants]
7	A bag contains five red marbles and twenty blue marbles. If one marble is randomly selected, what is the probability in percent that it is not red?	80 [%]
8	What is the median of the following set of numbers: seven, eight, three, eight, three, nine, three	7
9	What whole number is equal to five times seven-fifths?	7
10	Two congruent squares have a combined area of 50 square units. What is the side length, in units, of one of the squares?	5 [units]

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Key

COLLEGE BOWL – EXTRA QUESTIONS

#	Problem	Answer
1	What is the volume in cubic inches of a rectangular prism with a length of three inches, a width of two inches, and a height of nine inches?	54 [cubic inches]
2	What is one-fifth of one-hundred?	20
3	What is the mean of the following data set? Seven, four, three, four, seven	5
4	Biff the caterpillar can crawl nine inches in one day. How many days will it take him to crawl four yards?	16 [days]
5	What is the area in square centimeters of a square with a perimeter of twenty cm?	25 [cm^2]
6	What is the product of thirty-five and four?	140
7	Sahana has five one-dollar bills, three quarters, and seven pennies. How much money does Sahana have in cents?	582 [cents]
8	Find the next number in the sequence that begins with: One, five, four, eight, seven, eleven, ten, and so on.	14
9	How many distinct arrangements are there of the letters in the word DAD, spelled D-A-D	3
10	What is the positive square root of one hundred twenty-one?	11

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