"Math Is Cool" Championships — 2022-23

5th Grade — Feb./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).

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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:**		

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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	40 [students]	If ten out of every twenty-five students at Medina Elementary School are on the math team, then how many of the 100 total students are on the math team?
2	25	What is five squared?
3	33 [combinations]	Sebastian goes to Ferdinand's Creamery to get an ice cream cone with one scoop of ice cream. They have three types of cones and eleven flavors of ice cream. How many different combinations of one cone and one flavor can Sebastian order?
4	90 [cents]	How many cents are fourteen nickels and two dimes worth?
5	[x=] 16	What is the value of x if x plus seven equals twenty-three?
6	23	Find the sum of the next two terms in the arithmetic sequence that begins: one, four, seven, and so on.
7	36 [cm]	What is the perimeter in centimeters of a square with an area of eighty-one square centimeters?
8	8 [factors]	How many positive integer factors does twenty-four have?

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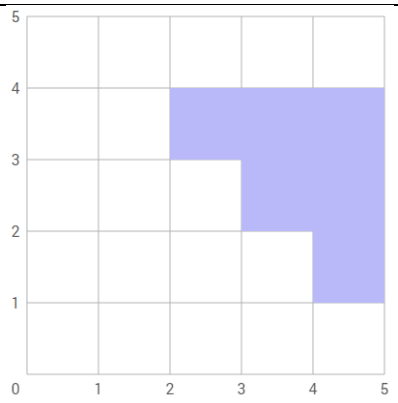
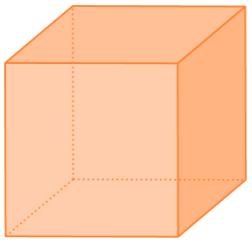
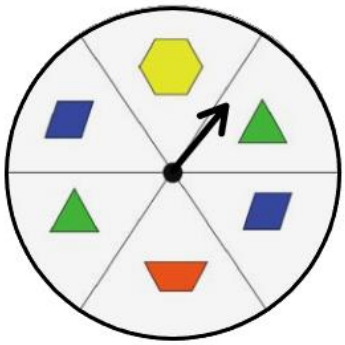
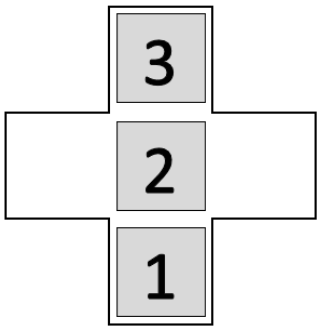
Individual Contest

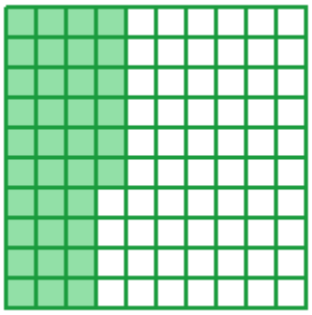
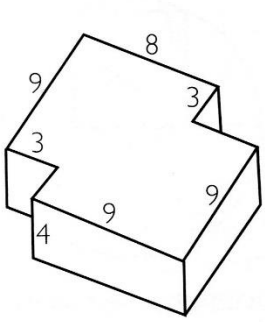
Record all answers on the colored cover sheet. 35 minutes, 40 problems, ~92% of individual score.
No talking during this individual test. A 5-minute time warning will be given.

	Questions 1-30: 2 points each
1	Evaluate: 123 + 45
2	Each square on the following grid represents one square unit. What is the area in square units of the shaded area? 
3	Which of the following numbers is a factor of 15? 7, 2, 4, 3, 9
4	Elijah has 5 pennies, 4 nickels, 3 dimes, and 2 quarters. What is the value of the money that he has in cents?
5	Evaluate: $8 \times \frac{2}{4}$
6	Jasmine eats 5 donuts every day for one week. How many total donuts did she eat?
7	I'm thinking of a number. When I cut it in half and then add 7, I get 57. What is my number?
8	Solve for y if y = 2x + 3 and x = 5
9	Mir scored 85% on his test. If his test was out of 200 points, how many points did he score?
10	What is the sum of the number of faces and vertices on this cube? 
11	Evaluate: $6 \times [5 + (6 \div 2)]$
12	A triangle has 2 angles that measure 40 and 60 degrees respectively. What is the measure of the third angle, in degrees?

Continued on next page.

13	What is the next number in this sequence? 1, 3, 7, 13, 21, 31, 43, ?
14	Twenty millimeters equals how many centimeters?
15	What is the mean (average) of the following set of numbers? {1, 2, 3, 4, 5, 6, 77}
16	The following spinner is divided into six equal sections. When the spinner is spun 50 times, what is the expected number of times that it will land on a shape which has four sides? 
17	What is the area in square units of a triangle with a base of length 12 units, and a height equal to half of its base?
18	A cross-shaped puzzle box contains three numbered blocks. The blocks can slide left, right, up or down, if there is an available space (no jumping). The object is to rearrange the numbers to read 1, 2, 3 from top to bottom. What is the minimum number of moves needed to accomplish this, where a 'move' consists of only sliding one space at a time? 
19	Aiden is filling up a 50-gallon tub with water. The pump fills the tub at 5 gallons per minute for the first minute, then 10 gallons per minute for the second minute, then 15 gallons per minute for the third minute and so on. After how many minutes will the tub be full?
20	For the following list of data, the median is 5. What is the value of x? {1, 10, x, 4, 11, 2}
21	Billie rolls 2 fair six-sided dice. The probability that the sum of the two numbers showing equals 4 can be written as a reduced common fraction 1/A. What is A?
22	Leo the lion and Peter the parrot start counting at the same time and same rate. Leo starts at 0 and counts up by 11s, while Peter starts at 90 and counts down by 4s. At what number will they meet?
23	Write as an integer: 668.2×10^3
24	What is the sum of the first 20 even positive integers?
25	Jefferson Elementary school has 3 fifth grade classes. Each class has 30 students, a mixture of boys and girls. The first class has 14 boys, and the second class has 17 boys. If there are a total of 44 girls in the three classes combined, then how many girls are in the third class?

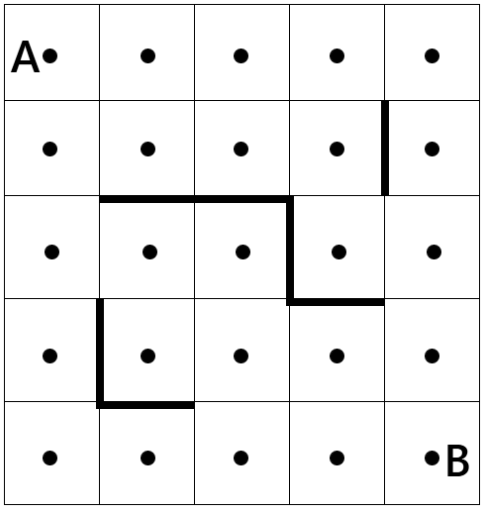
Continued on next page.

26	What is the positive difference in area, in square units, of a square with side length 15 units, and a rectangle with sides of length 14 units and 16 units?
27	What percentage of the following shape, composed of unit squares, is shaded? 
28	Shohom listens to audiobooks every day. On Monday, he listened for 5 minutes. On Tuesday he listened for 8 minutes. On Wednesday he listened for 11 minutes, and on Thursday he listened for 14 minutes. He continues this pattern for a total of 14 days, listening 3 minutes more each day. If each minute of an audiobook is equivalent to 2 pages of a real book, how many total pages has he listened to over the course of the 14 days?
29	A king-size Math Kat chocolate bar costs $1.49, including tax. Soren goes to the store to buy as many as he can. He realizes that he can buy 7 of them, and have some money left over, but he does not have enough money to buy 8. What is the maximum number of cents he could have?
30	What is the volume in cubic units of the figure shown here, with all measurements shown in units? The shape has a constant height of 4 units, and all angles that appear to be right angles are right angles. 

Challenge Questions: 3 points each

31	A jar contains 12 blue marbles, 8 green marbles, and 5 orange marbles. Two marbles will be chosen randomly and without replacement. The probability that both marbles are orange can be written as a reduced common fraction 1/A. What is A?
32	Mr. E and his grandson have the same birthday (month and day). For 6 consecutive birthdays, Mr. E has been an integral number of times as old as his grandson, in years. How many years old did Mr. E turn on the sixth joint birthday that this occurred? Assume Mr. E is under a hundred years old.
33	Ingrid owns an unusual farm. On this farm there are 2-headed cows (with 4 legs) and 3 headed chickens (with 2 legs). If there are a total of 45 heads and 38 legs from the cows and the chickens, what is the product of the number of cows and the number of chickens?

Continued on next page.

34	Yiyang goes to Mathmart to buy rulers, protractors, and cubes. Each ruler costs 2 dollars, each protractor costs 3 dollars, and each cube costs 1.50 dollars. She has 50 dollars and needs to buy at least 4 of each item. What is the maximum number of items that she can afford to buy?
35	Ishaan wakes up at 7:30 AM. He takes 15 minutes to get ready for school, and then starts walking there at 3 miles per hour. Halfway through his 1 mile walk to school he realizes he left his backpack at home and sprints back home at 10 miles per hour. He then runs all the way to school at a pace of 6 miles per hour. How many total minutes elapsed from the time he woke up until the time he arrived at school?
36	Addy is thinking of a positive 5-digit integer. The number is a palindrome, which means it reads the same forwards and backwards (e.g., 121 or 13531). No digit in the number is repeated more than 3 times. The number is divisible by 4. What is the greatest possible number she could be thinking of?
37	How many ways can you rearrange the letters in the word ANGLE, if the A and the N must be next to each other?
38	What is the units digit of $1^{2023} + 2^{2023}$?
39	In the following grid, the object is to move from point A to point B by moving to the right one dot or down one dot at a time. Additionally, the "obstacles" (heavy bold lines) may not be crossed. Following these rules, how many different paths can be taken from A to B? 
40	What is the area in square units of a square that has a diagonal of length 14 units?

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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	168
2	6 [square units]
3	3
4	105 [cents]
5	4
6	35 [donuts]
7	100
8	13
9	170 [points]
10	14
11	48
12	80 [degrees]
13	57
14	2 [cm]
15	14

	Answer
16	25 [times]
17	36 [units squared]
18	8 [moves]
19	4 [minutes]
20	6 [x =]
21	12
22	66
23	668200
24	420
25	15 [girls]
26	1 [unit squared]
27	36 [%]
28	686 [pages]
29	1191 [cents]
30	492 [cubic units]

	Answer
31	30
32	66 [years old]
33	39
34	28 [items]
35	38 [minutes]
36	86968
37	48 [arrangements]
38	9
39	12 [paths]
40	98 [units squared]

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Total Correct (all columns)

Room # _____ SCHOOL NAME _____ STUDENT NAME _____ Team # _____

Individual Contest – Score Sheet

STUDENTS: DO NOT WRITE IN SHADED REGIONS

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

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

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

5th Grade

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

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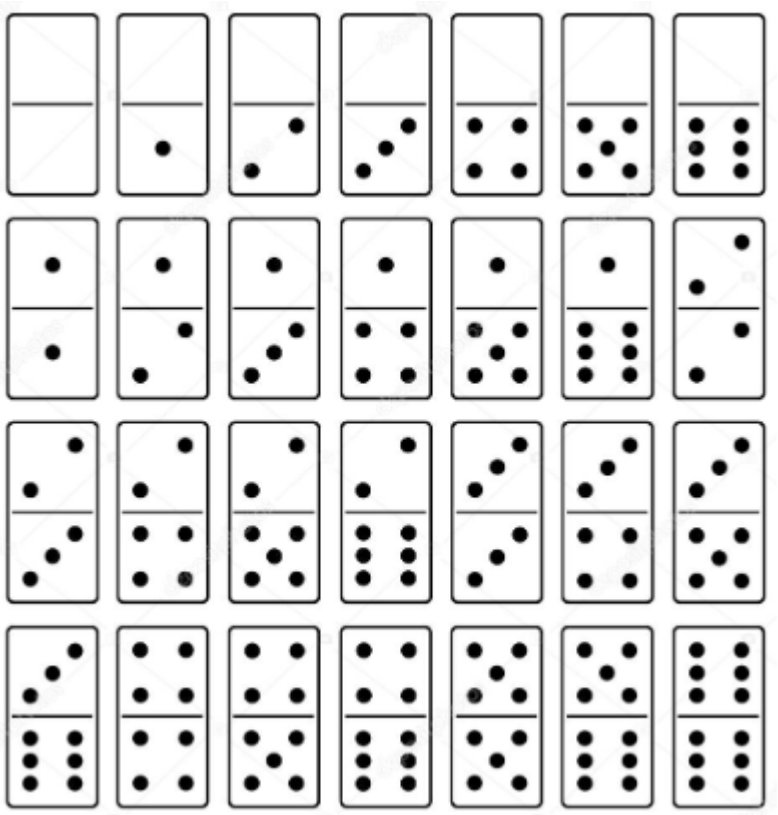
Team Multiple Choice Contest

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

A domino set consists of 28 tiles. Each tile is split into two half-tiles, marked with the values 0 through 6 on each half-tile. (The blank half-tiles have a value of 0).

There are four rows of dominoes here, starting with Row 1 at the top, followed by Rows 2, 3 and 4.



1 How many different ways can the dominoes be arranged in rows and columns to form a rectangle so that there are no extra dominoes leftover? For example, in the figure shown above, there are 4 rows and 7 columns, which can be written as an ordered pair (4, 7). A different ordering of the rows and column would count as a different arrangement.

A) 2 B) 4 C) 6 D) 7 E) Answer not given.

2 For the dominoes in Row 3 of the figure above, how many total dots are on the seven dominoes?

A) 47 B) 49 C) 50 D) 51 E) Answer not given.

3 For the dominoes in the figure, what is the median of all of the numbers on all of the half-tiles? Include the blank half-tiles as '0's.

A) 2 B) 2.5 C) 3 D) 3.5 E) Answer not given.

Continued on Next Page

	USE THE FOLLOWING INFORMATION TO SOLVE PROBLEMS #4 THROUGH #6. Markee's Bike Shop sells bicycles, tricycles, and quadricycles. All bicycles have two wheels, all tricycles have three wheels, and all quadricycles have four wheels. All of the cycles are equipped with the appropriate number of wheels, and there are no extra wheels in the shop.
4	If there are four bicycles, three tricycles and one quadricycle on the showroom floor, how many total wheels are there on the showroom floor? A) 17 B) 18 C) 19 D) 20 E) Answer not given.
5	If there are 17 wheels in the back room, all attached to one of the three types of cycles, what is the maximum number of quadricycles that could possibly be in the back room? A) 3 B) 4 C) 5 D) 6 E) Answer not given.
6	If there are 17 wheels in the back room, all attached to one of the three types of cycles, how many different combinations of bicycles, tricycles, and quadricycles might be stored in the back room? For example, one possible combination is: 0 quadricycles, 5 tricycles and 1 bicycle. A) 6 B) 7 C) 8 D) 9 E) Answer not given.
	USE THE FOLLOWING INFORMATION TO SOLVE PROBLEMS #7 THROUGH #10. Mrs. Earley's 5th grade class did a project where they counted the number of students who visited their school library each day for one full week. Here is some of the data they collected: • 80 students visited the library on Friday. • The number of visitors on Monday and Wednesday were both half that of Friday. • The ratio of visitors on Tuesday to that on Thursday was 1:2. • On Thursday, there were 8 more visitors than on Monday. • The ratio of students who checked out books to those who did not check out books was 1:3.
7	How many students visited the library on Monday and Tuesday combined? A) 40 B) 64 C) 48 D) 82 E) Answer not given.
8	How many more students visited the library on Friday compared to Thursday? A) 32 B) 48 C) 52 D) 80 E) Answer not given.
9	What fraction of the total visitors for the week came on Tuesday? Express your answer as a reduced fraction. A) 1/2 B) 1/7 C) 3/29 D) 4/37 E) Answer not given.
10	How many students checked out books during the week? A) 48 B) 58 C) 62 D) 74 E) Answer not given.

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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	A
3	C
4	E [21]
5	A
6	C
7	B
8	A
9	C
10	B

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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:**		

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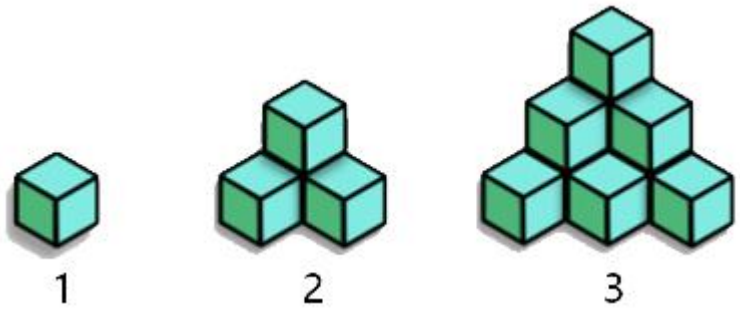
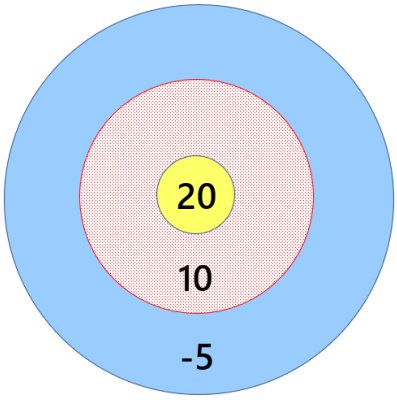
Team Contest

1	Sowjanyaa biked 5 hours a day every day for one week at a constant rate of 10 miles per hour. How many total miles did she bike?
2	A rectangle has an area of 10 square units, and one side length of 2 units. What is the perimeter of the rectangle, in units?
3	How many integers from 1 to 100, including 1 and 100, are divisible by 2?
4	Unit blocks are stacked in the following pattern, where the first stack contains 1 block, the second stack contains 4 blocks, and the third stack contains 10 blocks. If this pattern continues, how many blocks will the fifth stack contain?  1 2 3
5	What is the sum of the first 8 positive odd integers?
6	The formula $t = \sqrt{\frac{h}{5}}$ calculates the amount of time t (in seconds) it takes for a ball to drop to the ground from a height h (in meters). How long, in seconds, would it take a ball to drop from a height of 125 meters?
7	Bryan and his friend Noah are playing a card game with 10 cards numbered 1 through 10. They each draw a different card from the deck and they give hints for each other to guess their card. Bryan starts by saying, "My number is divisible by 3." To which Noah responds, "My number is even and I'll be able to tell what your number is if you tell me whether it is prime or composite." What is the number on Noah's card?
8	If 3x + 4 = 16, and y = x + 2, what is y?

Continued on next page.

9	Three friends all have a different number of hacky-sacks, and each of them has at least 1 hacky-sack. The average number of hacky-sacks per person for the group is 6, and the median number of hack-sacks is 5. What is the greatest number of hacky-sacks that one of the friends could have?
10	A circular dartboard is made up of three concentric circles. The radii of the circles are 1, 3, and 5 units. Hitting the center circle is worth 20 points, the middle ring is worth 10 points, and the outer ring is a penalty of -5 points. When a dart is thrown, it always lands randomly somewhere on the board. If a round consists of a dart being thrown 25 times, on average how many points will be awarded in one round? 

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Key

Team Contest – Answer Key

5th Grade

	Answer
1	350 [miles]
2	14 [units]
3	50 [integers]
4	35 [blocks]
5	64
6	5 [seconds]
7	6
8	6 [y =]
9	12 [hacky-sacks]
10	20 [points]

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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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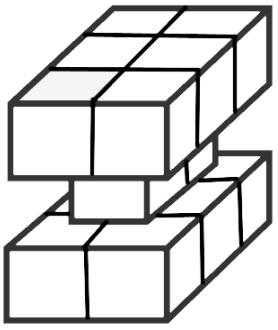
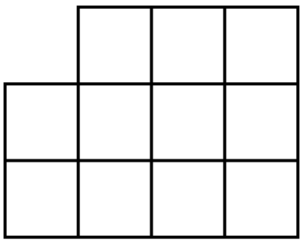
Linda Moore Triple Jump

1	Franklin Elementary School's basketball team played a game against Sunnyside Elementary School's Basketball Team. If Franklin scored nine 2-point baskets and nine 3-point baskets, how many total points did they score?
2	What is the next number in the sequence? 2, 6, 5, 15, 14, 42, …
3	How many square inches are in 2 square feet?
4	Mr. Mielke has a class of 25 guitar students. Fourteen of the students are girls and the rest are boys. He picks one person at random for a guitar solo. What is the probability in percent that he chooses a boy?
5	What is the sum of all the integers that are more than 10 but less than 16?
6	How many digits have to be written in order to write down every integer from 1 to 101, including 1 and 101?
7	List the following 5 numbers from least to greatest. Your answer should be in the form of a 5-digit number containing the digits 1 through 5 (referring to numbers 1 through 5 listed above), such as 53421 or 34215. 1) 10 2) π^2 3) $\sqrt{105}$ 4) 9 5) 35/4
8	Ziyi bought a big bag of candy. She gave half of the pieces to her friend Mo, and then Ziyi ate 5 pieces. She gave half of the remaining pieces to her brother, and then gave 3 pieces to her dad. If Ziyi has 11 pieces of candy left, how many pieces did she start with?
9	Fourteen identical unit cubes are glued together in layers, with 6 cubes on the bottom, 2 cubes in the middle, and 6 cubes on top. The top and bottom layers completely cover the faces of the middle layer. What is the surface area of the figure, in square units? 
10	Given the following grid composed of unit squares, how many rectangles, of any size, appear in the figure? 

"Math Is Cool" Championships — 2022-23

5th Grade — Feb./March 2023

Key

Linda Moore Triple Jump – Answer Key

5th Grade

	Answer
1	45 [points]
2	41
3	288 [sq. in]
4	44 [%]
5	65
6	196 [digits]
7	54213
8	66 [pieces]
9	46 [sq. units]
10	48 [rectangles]

"Math Is Cool" Championships — 2022-23

5th Grade — Feb./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			
5th Grade	**TOTAL:**		

"Math Is Cool" Championships — 2022-23

5th Grade — Feb./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			
5th Grade	**TOTAL:**		

"Math Is Cool" Championships — 2022-23

5th Grade — Feb./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			
5th Grade	**TOTAL:**		

"Math Is Cool" Championships — 2022-23

5th Grade — Feb./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

5th Grade — Feb./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

5th Grade — Feb./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	If ten out of every twenty-five students at Medina Elementary School are on the math team, then how many of the 100 total students are on the math team?	40 [students]
2	What is five squared?	25
3	Sebastian goes to Ferdinand's Creamery to get an ice cream cone with one scoop of ice cream. They have three types of cones and eleven flavors of ice cream. How many different combinations of one cone and one flavor can Sebastian order?	33 [combinations]
4	How many cents are fourteen nickels and two dimes worth?	90 [cents]
5	What is the value of x if x plus seven equals twenty-three?	16
6	Find the sum of the next two terms in the arithmetic sequence that begins: one, four, seven, and so on.	23
7	What is the perimeter in centimeters of a square with an area of eighty-one square centimeters?	
8	How many positive integer factors does twenty-four have?	8 [factors]

"Math Is Cool" Championships — 2022-23

5th Grade — Feb./March 2023

Key

COLLEGE BOWL ROUND #1

#	Problem	Answer
1	What is the sum of eleven and ninety-nine?	110
2	When rolling a fair six-sided die, what is the probability in percent of rolling an even number?	50 [%]
3	What is the product of five and thirteen?	65
4	Shen and Diya are playing a game where they each count by fives starting at fifty. Shen counts down while Diya counts up. For example, after 1 second, Shen will say forty-five and Diya will say fifty-five, and after two seconds, Shen will say forty and Diya will say sixty. At five seconds, what will be the sum of the two numbers they say?	100
5	What is the sum of the next two terms in the following sequence that begins with: Two, four, seven, eleven, sixteen, twenty-two, and so on.	66
6	How many nickels are equivalent to five pennies, five dimes, and three quarters?	26 [nickels]
7	There is a box of free books at a garage sale. Jack takes one-half of the books, and Lucy takes one-sixth of the number of books that are remaining. If there were originally twelve books, how many books are left?	5 [books]
8	Solve for x if two times x plus seven equals eleven.	2 [=x]
9	What is the side length in centimeters of a regular nonagon with a perimeter of seventy-two centimeters?	8 [cm]
10	In how many distinct ways can you rearrange the letters in the word DOG, spelled D-O-G?	6 [ways]

"Math Is Cool" Championships — 2022-23

5th Grade — Feb./March 2023

Key

COLLEGE BOWL ROUND #2

#	Problem	Answer
1	Marcelo practices playing guitar fifteen minutes a day, six days a week, and on the seventh day, he practices for thirty minutes. How many hours does Marcelo practice guitar every week?	2 [hours]
2	How many zeroes are in the sum of one-thousand two-hundred fifty-six and three-thousand seven-hundred forty-four?	3 [zeroes]
3	On the coordinate plane, how many units apart are the points negative two comma eight and five comma eight?	7 [units]
4	What is the next number in the following sequence that begins with: Three, six, four, eight, six, twelve, ten, and so on.	20
5	What is the smallest three-digit palindrome whose digits sum to fifteen?	393
6	A group of five students is forming a math club. They need to pick a president, a vice-president, and a secretary. How many ways can they distribute these three positions, if a person can only hold one position?	60 [ways]
7	How many minutes are between one fifteen pm and five fifty-five pm on the same day?	280 [minutes]
8	Mrs. Carlson lined up her students. Counting from the back of the line, Landen is the sixteenth student in line, and counting from the front of the line, he is the fifth student in line. How many total students are in line?	20 [students]
9	What is one plus two plus three plus five plus six? [PROCTOR NOTE – READ THAT ONE CAREFULLY!]	17
10	What is the area in square inches of a square with sides of length seven inches?	49 [square inches]

"Math Is Cool" Championships — 2022-23

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Key

COLLEGE BOWL ROUND #3

#	Problem	Answer
1	An adult ticket to the museum costs fifteen dollars, and a ticket for a child is five dollars cheaper. A father went to the museum with his two children. How much in dollars did they have to pay for their tickets?	35 [$]
2	What is the greatest common factor of eight and twelve?	4
3	What is the sum of the first three prime numbers?	10
4	Daveen rolls a fair six-sided dice, and also flips a coin. What is the probability in percent that he rolls a prime number and flips heads on the coin?	25 [%]
5	If two times x plus 5 equals 7 times x, what is the value of 3 times x?	3 [= 3x]
6	What is the perimeter, in feet, of a regular dodecagon with side lengths of five inches?	5 [feet]
7	Sahil is writing math questions for a math competition. It takes him five minutes to write a hard question, and two minutes to write an easy question. How many minutes will it take him to write four hard questions and three easy questions?	26 [minutes]
8	There are eight boys and twelve girls in Ms. Devine's math class. If she randomly chooses one student, what is the probability in percent that she chooses a girl?	60 [%]
9	What is one-hundred twenty-three plus four-hundred fifty-six plus seven-hundred eighty-nine?	1368
10	How many inches are in two yards?	72 [inches]

"Math Is Cool" Championships — 2022-23

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Key

COLLEGE BOWL ROUND #4

#	Problem	Answer
1	On one side of Jenna Road the houses are numbered with the consecutive odd integers from one to nineteen. On the other side of Jenna Road, the houses are numbered with the consecutive even integers from two to fourteen. How many houses are there on Jenna Road?	17 [houses]
2	Vishal's brother is one fourth of Vishal's age in years. If his brother is five years old, how old is Vishal in years?	20 [years]
3	If one card is randomly selected from a standard deck of playing cards, what is the probability in percent that it is a diamond?	25 [%]
4	What is the sum of the mean, median, and mode of the following data set: Zero, one, one, three, five	4
5	What whole number is equal to three halves plus eight sixteenths?	2
6	How many multiples of fifty are between two-hundred ten and one-thousand sixty?	17 [multiples]
7	The mean of four numbers is twenty. A fifth number is added, and the new mean is thirty. What is the fifth number?	70
8	How many months are in one decade?	120 [months]
9	How many interior angles does a regular hexagon have?	6 [angles]
10	What is the next number in the following geometric sequence, that begins with: One, five, twenty-five, and so on.	125

"Math Is Cool" Championships — 2022-23

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Key

COLLEGE BOWL ROUND #5

#	Problem	Answer
1	What is the range of the following data set: Five, eleven, twenty-five, twenty-three, nine, eight, twelve.	20
2	Eho is driving at fifty miles per hour. If he drives for four hours, how many miles will he have driven?	200 [miles]
3	How many congruent sides does a scalene triangle have?	0
4	Four Hershey Bars are worth five Reece's Peanut Butter Cups. Three Reece's Peanut Butter Cups are worth four pieces of gum. How many pieces of gum are twelve Hershey's Bars worth?	20 [pieces of gum]
5	What is the smallest prime factor of two-hundred thirty-one?	3
6	What is the next number in the sequence that begins: One, two, six, twenty-four, one-hundred twenty, and so on.	720
7	The current time shown on an analog clock is twelve-thirty pm. How many degrees is the smaller angle formed by the hour and minute hands?	165 [degrees]
8	It takes fifteen cups of water and one cup of lemon juice to make one gallon of lemonade. How many cups of water will it take to make four gallons of lemonade?	60 [cups of water]
9	How many different ways can you arrange a yellow chair, a red chair, and a green chair in a line?	6 [ways]
10	Evaluate: one plus two minus three plus four minus five plus six	5

"Math Is Cool" Championships — 2022-23

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Key

COLLEGE BOWL ROUND #6

#	Problem	Answer
1	What is one-half of one-third of sixty?	10
2	A bag contains six red marbles, eleven green marbles, and three black marbles. If a single marble is randomly selected, what is the probability in percent that it is red?	30 [%]
3	What is the sum of the first four positive odd integers?	16
4	The area of a circle is sixteen times pi square meters. What is the diameter of the circle in meters?	8 [meters]
5	William has a long iron rod. He cuts it into four equal pieces. Then, he cuts three of the pieces into three equal pieces each and he cuts the fourth piece into four equal pieces. How many pieces does William now have?	13 [pieces]
6	How many prime numbers are between twenty-five and thirty-five?	2 [prime numbers]
7	The mean of the numbers fourteen, seventeen, fourteen, eighteen, and x is fifteen. What is the value of x?	12 [=x]
8	How many of the following shapes are polygons? Circle, triangle, trapezoid, cube, hexagon, pyramid, rectangle	4 [polygons]
9	Eloise and Clara live in a skyscraper. Clara lives twelve floors above Eloise. One day Eloise went to visit Clara, and she took the stairs up from her apartment to Clara's apartment. Half-way up she was on the eighth floor. On what number floor does Clara live?	14 [floor]
10	How many units apart on a number line are the numbers negative one-half and positive seven-halves?	4 [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 five inches, a width of two inches, and a height of ten inches?	100 [cubic inches]
2	What is one-fifth of eighty percent of one-hundred?	16
3	What is the median of the following data set? Seven, four, three, twenty-one, nine, seven	7
4	Biff drinks twelve cups of water a day. How many days will it take him to drink three gallons of water?	4 [days]
5	What is the area in square centimeters of a square with a perimeter of twenty-four cm?	36 [cm^2]
6	What is the quotient of thirty-five and five?	7
7	What is the sum of three times four [pause] plus five times six?	42
8	Find the next number in the sequence that begins with: Five, fifteen, ten, thirty, twenty-five, seventy-five, seventy, two-hundred ten, and so on.	205
9	How many distinct arrangements are there of the letters in the word ADD, spelled A-D-D	3
10	What is the square root of two-hundred fifty six?	16

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