"Math Is Cool" Championships — 2021-22

4th Grade — March 2022

Sponsored by:

GENERAL INSTRUCTIONS applying to all tests:

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

FINAL SCORES AND AWARDS

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

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

MENTAL MATH TEST - 30 sec./quest., 8 problems, ~8%/25% of individ./team scores

The proctor will read each question twice. You may not do any writing or talking while arriving at a solution. Record only your answer on your answer sheet. You may not change, cross out, erase, or write over an answer once you have written it down. The maximum wait time is 30 seconds after completion of the second reading of the question. Correct answers receive 1 point.

INDIVIDUAL TEST - 35 minutes, 40 problems, ~92% of individual score

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

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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 — 2021-22

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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.

4th Grade

	Answer	
1	5 [sides]	How many sides does a pentagon have?
2	36	What is the product of four and nine?
3	24 [inches	How many inches are in two feet?
4	35 [minutes]	Harper's piano lesson began at 2:45 PM and ended at 3:20 PM the same afternoon. How many minutes long was Harper's piano lesson?
5	75	What is 50% of 150?
6	44	The sum of two consecutive integers is 89. What is the smaller of the two integers?
7	45 [balloon animals]	Eric can make 30 balloon animals in 20 minutes. Working at the same rate, how many balloon animals can Eric make in 30 minutes?
8	450 [cents]	Shen has thirty-five dollars. He buys 5 books which each cost 6 dollars and 10 cents. How many CENTS does Shen have left over?

"Math Is Cool" Championships — 2021-22

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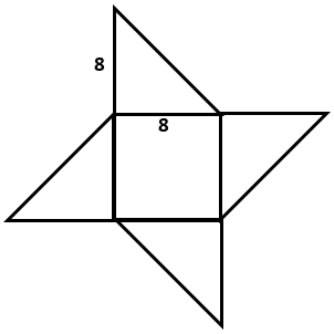
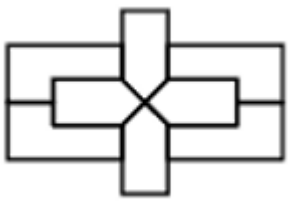
Individual Contest

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

	Questions 1-30: 2 points each
1	Round the following number to the nearest hundred: 9528
2	Diego needs to earn 24 AR (Accelerated Reading) points by the end of the week, so he can participate in the class AR party. If Diego has earned 19 points so far, how many more AR points does he need to earn by the end of the week?
3	What is the next number in this sequence: 4, 8, 12, 16, … ?
4	Find the sum of 568 and 737.
5	How many sides does a trapezoid have?
6	Seven penguins walk in a single file line. Every 5 minutes, the last penguin in line moves to the front of the line. How many times must this happen for the penguins to be in the same order they started in?
7	What is the remainder when 921 is divided by 4?
8	The area of a circle with a radius of 5 centimeters can be written as $A\pi$ (A times π) square centimeters, where A is an integer. What is the value of A?
9	How many quarters are equal in value to $12.25 ?
10	A 27-digit number is formed using a pattern of digits that begins as follows: 101101110… What is the sum of the digits in the 27-digit number?
11	How many centimeters are in 50 meters?
12	When the fraction $\frac{12}{20}$ is reduced to its simplest form, it gives a common fraction in the form of $\frac{A}{B}$, where A is the numerator and B is the denominator. What is the value of A + B ?
13	The Mathzazzle Elementary School math team has 27 members. They will travel to the math competition in cars that can hold at most 5 team members. What is the fewest number of cars that will be needed to transport all of the team members?
14	Armando completed one-third of his math assignment during class and needs to finish the rest at home. If the math assignment has 42 questions, how many questions will Armando need to do at home?

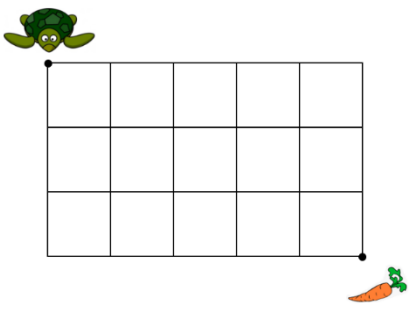
Continued on next page.

15	What is the average of the following set of numbers? {2, 10, 15, 17, 21}
16	How many distinct positive factors does 9 have?
17	Biff graphs the point (3, 5) and (3, 13) on a coordinate plane. What is the length of the straight line connecting these two points?
18	Find the area in square units of the pinwheel shown here. The pinwheel is made up of a square with side length 8 units, and four equal isosceles right triangles. 
19	Dobby has a drawer with 7 red socks, 4 orange socks, and 3 purple socks. Dobby randomly selects one sock from the drawer. What is the probability, as a percentage, that Dobby selected a red sock?
20	What is 30% of 80?
21	Liliana drove 8 miles to the store in 15 minutes. Driving at the same constant speed, how many miles could Liliana drive in three hours?
22	A palindrome is a number that reads the same forwards and backwards. (For example: 232) What is the smallest 4-digit palindrome that is divisible by 3?
23	Ekta lives on the 8th floor of an apartment building and the elevator is broken. Any two adjacent floors are connected by a staircase with 27 steps. If Ekta enters the building on the ground (1^{st}) floor, how many total steps will she have to climb to get to her apartment on the 8^{th} floor?
24	Two unknown numbers have a sum of 75 and a difference of 17. What is the smaller of the unknown numbers?
25	Biff and Eho start at the number 70 and count down. Biff is counting down by 7s (so 70, 63, and so on.) Eho is counting down by 6s (so 70, 64 and so on). What is the first number (not including 70) that Biff and Eho both say aloud (not necessarily at the same time)?
26	Leticia's homework problem said to divide by 3. Leticia misread the problem and instead subtracted 3 to get an incorrect answer of 24. What was the correct answer to the original problem?
27	Mikako's wardrobe consists of 10 shirts, 7 pairs of pants and 5 pairs of shoes. How many different outfits can Mikako make from her wardrobe if an outfit requires 1 shirt, 1 pair of pants, and one pair of shoes?
28	Using as few colors as possible, color this figure so that no two regions next to each other (sharing a common border of some length) are the same color. What is the fewest number of distinct colors that are needed? 

Continued on next page.

29	One angle of an isosceles triangle measures 132°. What is the measure of one of the other two angles, in degrees?
30	My counting number has two digits. When I multiply the two digits together, the product is less than 5. What is the largest possible value of my number?

Challenge Questions: 3 points each

31	Square "A" has one-fourth the area of square "B" which has a perimeter of 32 centimeters. What is the perimeter in centimeters of Square A?
32	There are 48 fourth graders at Arendelle Elementary. They all participate in one or both of the two extra-curricular activities: Math Team and Robotics Club. There are 24 students total who participate in Math Team, and 35 students total who participate in Robotics Club. How many students participate in both Math Team and Robotics Club?
33	Yousef is preparing a tank to bring home a new pet turtle. The tank is 150 cm wide, 60 cm deep, and 80 cm tall. What is the volume of water in Yousef's tank in cubic centimeters if it is 90% filled with water?
34	St. Patrick's Day is on March 17th which is a Thursday. National Hug-a-Gnome Day is in May on a Tuesday. What is the fewest number of possible days between St. Patrick's Day and National Hug-a-Gnome Day, not including St. Patrick's Day and National Hug-a-Gnome Day?
35	5 years ago from today, Biff was 3 times as old as Eho. In 2 years from today, Biff will be twice as old as Eho. How old is Eho today, in years?
36	Fifteen percent of the number of girls in Deepa's class is equal to 18% of the number of boys in her class. What is the smallest possible number of students that could be in the class? The 15% and 18% of the numbers are not necessarily whole numbers.
37	The sum of three distinct numbers is equal to their product. Two of the numbers are $\frac{4}{3}$ and 1. What is the third number?
38	I have six gummy sharks, eight gummy pineapples, and some number of gummy fish in a bag. After removing one gummy fish from the bag and not replacing it, the probability that I randomly select a gummy fish from the bag is $\frac{3}{10}$. How many gummy fish were in the bag to begin with?
39	Terry the turtle wants to eat his favorite snack, located diagonally across the grid from his starting point. From the point where he is located, he can only walk along the gridlines, and may only move downwards or to the right. How many different paths of any length can Terry take to reach his snack? 
40	You have a watch that runs 1 minute fast for every half-hour that goes by. You set your watch to the correct time at 10:00 AM on Monday Feb. 14th. How many minutes ahead of the true time will your watch be when it reads 1:09 PM on Wednesday Feb. 16th?

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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	9500
2	5 [points]
3	20
4	1305
5	4 [sides]
6	7 [times]
7	1
8	25 [A =]
9	49 [quarters]
10	21
11	5000
12	8
13	6 [cars]
14	28 [questions]
15	13

	Answer
16	3 [factors]
17	8 [units]
18	192 [square units]
19	50 [%]
20	24
21	96 [miles]
22	1221
23	189 [steps]
24	29
25	28
26	9
27	350 [outfits]
28	3 [colors]
29	24 [degrees]
30	90

	Answer
31	16 [cm]
32	11
33	648,000 [cubic cm]
34	46 [days]
35	12 [years]
36	11 [students]
37	7
38	7 [gummy fish]
39	56 [paths]
40	99 [minutes]

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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:			

4th Grade

March 2022

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

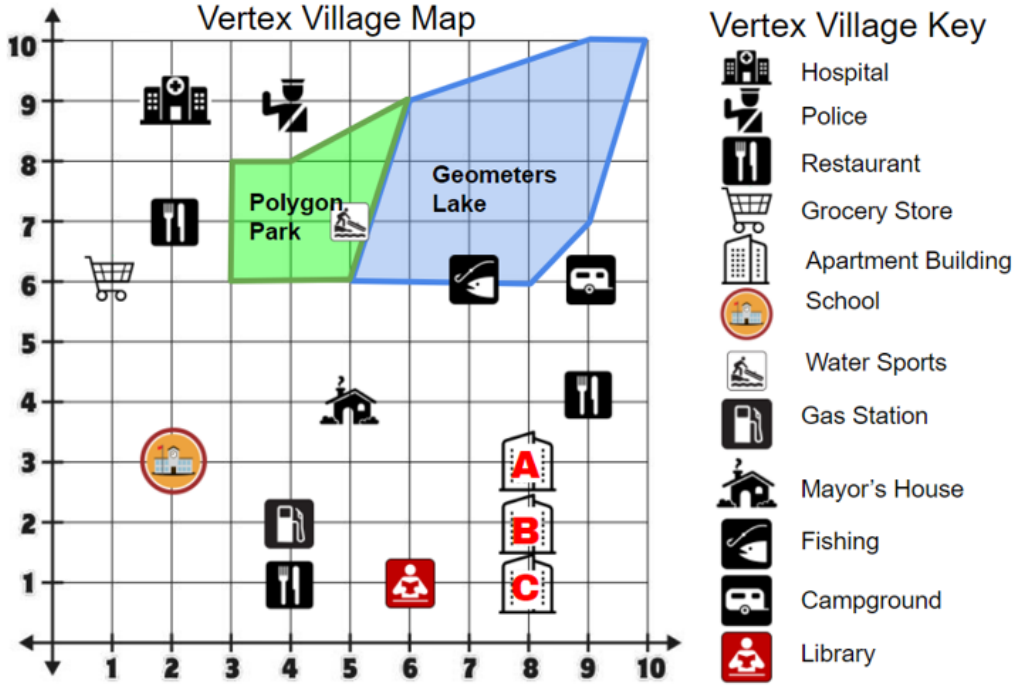
"Math Is Cool" Championships — 2021-22

4th Grade — March 2022

Team Multiple Choice Contest

USE THE FOLLOWING MAP AND KEY TO SOLVE PROBLEMS #1 THROUGH #4.

Vertex Village is set up on a coordinate grid where each unit represents 1 mile, and therefore each unit square represents 1 square mile of area. Each site indicated in the Key is located at integer coordinates on the map. The icons for each site are centered over their coordinate point locations. For example, the Hospital in the upper left area of the map is located at coordinates (2, 9).



1 What are the coordinates of the campground?

A) (6, 9) B) (9, 6) C) (4, 9) D) 9 units E) Answer not given.

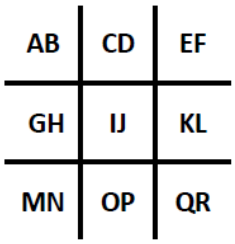
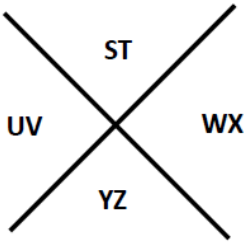
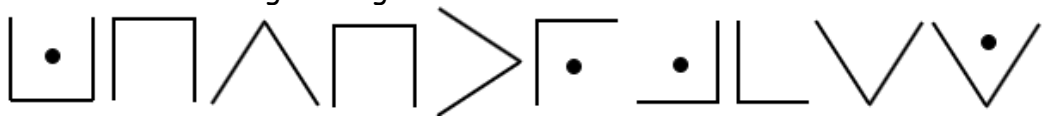
2 Which of the following best describes the shape of Polygon Park?

A) Quadrilateral B) Pentagon C) Hexagon D) Trapezoid E) Answer not given.

3 The streets in Vertex Village are located on the grid lines, including the grid lines that border (touch) Polygon Park and Geometers Lake. There are no streets through Polygon Park or Geometers Lake, and the border between the park and the lake is not a street. All cars must drive on the streets. What is the shortest possible driving distance from the library to the police station?

A) 10 miles B) 11 miles C) 12 miles D) 13.5 miles E) Answer not given.

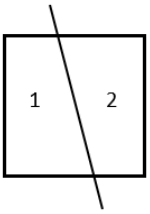
Continued on Next Page

4	What is the area of Geometers Lake? A) 13 square miles B) 14½ square miles C) 16½ square miles D) 20 square miles E) Answer not given.
	USE THE FOLLOWING INFORMATION TO SOLVE PROBLEMS #5 THROUGH #7. A secret code can be used to send a message, by using a shape to stand for each letter of the alphabet. The code works as follows. Each space stands for one of the letters that was in it. The first letter of the two letters in each space is shown by just the space; the second letter is shown by the space with a dot in it. For example: For the letter A you write:  For the letter B you write:  For the letter W you write:  For the letter X you write:   
5	Which letter does the following symbol represent?  A) H B) I C) J D) K E) Answer not given.
6	Decode the following message.  A) Dont be late B) Do you get it C) Do your best D) Could we win E) Counting up
7	When written using the code, how many MORE dots does the phrase 'Lowest Common Denominator' use compared to the phrase 'Acute Angle'. A) 3 B) 5 C) 8 D) 9 E) Answer not given.

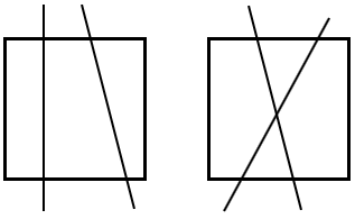
Continued on Next Page

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

One straight line can only divide a square into two regions, as shown.



Two straight lines can divide a square into either three or four regions, as shown. Therefore, there are two different numbers of regions (3 and 4) that a square can be divided into using two straight lines.



Notice that the region outside the square is not being counted.

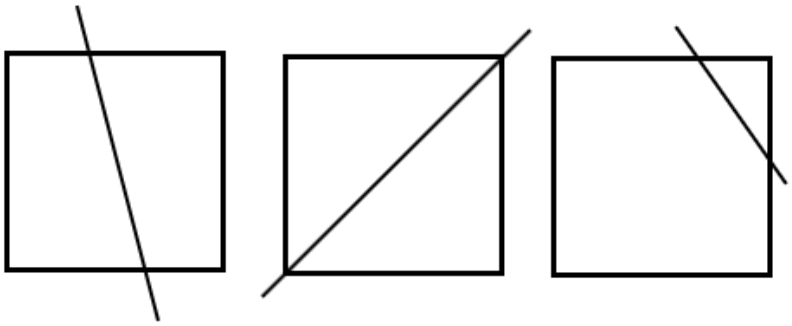
8 Into how many different numbers of regions can three straight lines divide a square?

A) 4 B) 5 C) 6 D) 7 E) Answer not given.

9 Using four straight lines, what is the minimum number of regions that a square can be divided into?

A) 4 B) 5 C) 6 D) 7 E) Answer not given.

10 As shown here, a single line can divide a square into two regions, creating 2 quadrilaterals, 2 triangles, or 1 triangle and 1 pentagon. Therefore, there are 3 different-sided polygons that can be created, 3-sided, 4-sided or 5-sided.



2 Quadrilaterals 2 Triangles 1 Triangle + 1 Pentagon

Using TWO straight lines to divide the square, how many different-sided polygons can be created?

A) 3 B) 4 C) 5 D) 6 E) Answer not given.

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

"Math Is Cool" Championships — 2021-22

4th Grade — March 2022

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:**		

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4th Grade — March 2022

Team Contest

1	What comes next in the following number sequence? 59, 52, 45, 38, …
2	An Olympic swimming pool measures 50 meters long and 25 meters wide. What is the area, in square meters, of an Olympic sized swimming pool?
3	Emilio has 7 quarters, 5 dimes, 2 nickels and 7 pennies in his pocket. He uses this money to buy a candy bar that costs 79 cents. How many cents does Emilio have left over after buying the candy bar?
4	Human hair grows $1\frac{1}{4}$ centimeters per month, on average. How many centimeters does human hair grow in one year?
5	Vivek is driving at a speed of 55 miles per hour. Assuming he drives at a constant rate, how many hours will it take him to travel 1210 miles?
6	A teacher is looking at his classroom of 20 students. He said "All of the students in this classroom, except for 9 students, have brown hair". Then he added "All of the students in this classroom, except for 13 students, have blond hair". If each student only has one color of hair, how many students in the classroom do not have brown or blond hair?
7	How many ways are there to order the letters in the word "Dragon", spelled D-R-A-G-O-N?
8	Arya is creating an art project using plastic beads. Her pattern is 30% green beads, 10% purple beads, and the remainder are yellow beads. She determined that she needs a total of 60 green beads. How many total beads does she need to finish her project?
9	How many 2-digit prime numbers can be made using only non-prime digits?
10	Kamal had a box of cookies. When the cookies were put into piles of 4, there was one cookie left over. When the cookies were put into piles of 11, there were 3 cookies left over. What is the smallest number of cookies that could be in Kamal's box?

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Key

Team Contest – Answer Key

4th Grade

	Answer
1	31
2	1250 [square meters]
3	163 [cents]
4	15 [cm]
5	22 [hours]
6	2 [students]
7	720 [ways]
8	200 [beads]
9	5 [two digit numbers]
10	25 [cookies]

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4th Grade — March 2022

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 — 2021-22

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Linda Moore Triple Jump

1	Write the following number as an integer: One-million, eighty-two thousand, three hundred forty-one
2	Find the value of: 10 – 9 + 8 – 7 + 6 – 5 + 4 – 3 + 2 – 1
3	Raisa plays three consecutive games of chess without any breaks. The first game lasted 24 minutes, the second game lasted 49 minutes, and then she played the third game. If she started playing the first game of chess at 6:00 AM, and finished playing the last game at 8:05 AM the same morning, how many minutes did the third game last?
4	If the pattern shown here continues, moving left to right, what number will be in the third circle? 
5	Grace walks around the perimeter of her vegetable garden three times. If the garden is rectangular with side lengths of five and seven feet, how many feet did she walk?
6	Brooke, Krish, Lucas and Riddesh have the same summer reading list. They are each reading through the books in order of the list. Riddesh is reading the book in the middle of the list. Krish is two books ahead of Riddesh. For example, IF Riddesh were reading the 1st book, then Krish would be reading the 3rd book. Lucas is 6 books behind Krish. Brooke is 12 books ahead of Lucas. Brooke is reading the last book on the list. How many books are on the list?
7	Using only quarters, dimes, and nickels, how many different ways are there to make 40 cents?
8	A number is randomly chosen from 1 to 100, inclusive (including 1 and 100). As a percentage, what is the probability that the number is divisible by both 2 and 5?
9	The ratio of dogs to cats at an animal shelter was 6:4. After 10 dogs were adopted, the ratio of dogs to cats was 1:1. How many cats are there at the animal shelter?
10	Find the value of the sum of the first 100 positive integers divided by 101, in other words: $$\frac{1+2+3+\cdots+98+99+100}{101}$$

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4th Grade — March 2022

Key

Linda Moore Triple Jump – Answer Key

4th Grade

	Answer
1	1082341
2	5
3	52 [minutes]
4	27
5	72 [feet]
6	17 [books]
7	7 [ways]
8	10 [%]
9	20 [cats]
10	90

"Math Is Cool" Championships — 2021-22

4th Grade — March 2022

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 — 2021-22

4th Grade — March 2022

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 — 2021-22

4th Grade — March 2022

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 — 2021-22

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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 — 2021-22

4th Grade — March 2022

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 — 2021-22

4th Grade — March 2022

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	How many sides does a pentagon have?	5 [sides]
2	What is the product of four and nine?	36
3	How many inches are in two feet?	24 [inches
4	Harper's piano lesson began at 2:45 PM and ended at 3:20 PM the same afternoon. How many minutes long was Harper's piano lesson?	35 [minutes]
5	What is 50% of 150?	
6	The sum of two consecutive integers is 89. What is the smaller of the two integers?	44
7	Eric can make 30 balloon animals in 20 minutes. Working at the same rate, how many balloon animals can Eric make in 30 minutes?	
8	Shen has thirty-five dollars. He buys 5 books which each cost 6 dollars and 10 cents. How many CENTS does Shen have left over?	450 [cents]

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Key

COLLEGE BOWL ROUND #1

#	Problem	Answer
1	What is the product of 9 and 11?	99
2	Svetlana has an unlimited amount of dimes and quarters. What is the greatest number of coins that she can use to pay exactly for an item that costs 85 cents?	7 [coins]
3	How many zeroes are in the number two-hundred-thousand?	5 [zeros]
4	How many minutes after 11:30 AM is 2:05 PM on the same day?	155 [minutes]
5	In Anna's dance group there are 5 dancers. In how many ways can a group of 3 dancers be selected if Anna must be part of the group?	6 [ways]
6	How many multiples of 100 are between 1 and 2022?	20
7	Julian has 12 pieces of string. He cuts half of the strings in half, and cuts the other half of the strings into thirds. How many pieces of string does he have now?	18 [pieces]
8	What is the mean of the following data set? {2, 11, 4, 3}	5
9	What is the next number in the following sequence: 3, 4, 6, 9, 13, 18, …	24
10	Rashonda practices the piano for 30 minutes a day, 5 days a week. How many total hours has she practiced in two-week period?	5 [hours]

"Math Is Cool" Championships — 2021-22

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Key

COLLEGE BOWL ROUND #2

#	Problem	Answer
1	What is the positive difference between 68 and 32?	36
2	At Skyview Elementary School, Mr. Clark's third grade students line up in a straight row. Max is the fourteenth student in line counting from the front of the line, and is the ninth student counting from the back of the line. How many students are in the line?	22 [students]
3	What whole number is equal to twelve-fifths plus eight-fifths?	4
4	How many degrees does the minute hand on an analog clock move from 7:15 PM to 7:35 PM on the same day?	120 [degrees]
5	How many cups are in 4 quarts?	16 [cups]
6	Manuel needs to cut a long steel rod into 35 equal pieces. It takes 3 minutes to make 1 cut. How many minutes will it take to complete all of the cuts?	102 [minutes]
7	Two turtles are worth 5 monkeys. 1 monkey is worth 6 penguins. How many penguins are 4 turtles worth?	60 [penguins]
8	What is the area in square centimeters of a rectangle that measures 7 cm by 6 cm?	42 [sq. cm]
9	A clock chimes once every hour on the hour, starting at 12 AM. How many times will it chime between 2:15 AM and 3:25 PM on the same day?	13 [times]
10	What is the greatest common factor of 12 and 6?	6

"Math Is Cool" Championships — 2021-22

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Key

COLLEGE BOWL ROUND #3

#	Problem	Answer
1	What is "4-squared"?	16
2	What is the sum in degrees of the interior angles of a rectangle?	360 [degrees]
3	What is the range of the following data set? {5, 8, 2, 12, 4, 16}.	14
4	How many different 3-digit numbers can be made using the digits 1, 5 and 7 ? A digit can only be used one time in each number.	6 [numbers]
5	Ming-Na's little brother is one-third of her age. If her brother is 5 years old, how old is Ming-Na in years?	15 [years old]
6	How many prime numbers are between 20 and 40?	4
7	Your softball team pays $10 for a box containing 30 candy bars. You and your teammates sell the candy bars for $1 each. How many complete boxes of candy bars need to be sold in order earn a profit of 80 dollars?	4 [boxes]
8	Kai has sixteen jellybeans in a bag, and four of them are yellow. If he randomly chooses one jellybean from the bag, what is the probability in percent that it is NOT yellow?	75 [%]
9	Two of the three interior angles of a triangle have measures of 30 degrees and 110 degrees. What is the measure of the third angle, in degrees?	40 [degrees]
10	What is the least common multiple of 6 and 15?	30

"Math Is Cool" Championships — 2021-22

4th Grade — March 2022

Key

COLLEGE BOWL ROUND #4

#	Problem	Answer
1	Jose buys a donut for 1 dollar and 32 cents and pays with a 2 dollar bill. How many cents will Jose get in change?	68 [cents]
2	What is the perimeter in inches of an equilateral triangle with a side length of 9 inches?	27 [in]
3	What is the square root of 49?	7
4	The average of 3 numbers is 50. A 4th number is added to the list. The new average of all 4 numbers is 100. What is the 4th number?	250
5	There are five people at a meeting. If each person shakes hands once with each other person, how many total handshakes take place?	10 [handshakes]
6	How many zeroes are in the whole number product of 2 times 4 times 5 times 5 times 5 times 10?	4 [zeros]
7	Monica bakes 4 dozen cookies. She packs them in bags of 6 cookies each. How many bags of cookies does she make?	8 [bags]
8	Biff and Eho are going swimming in a pool that is 6 feet deep throughout. How many inches deep is the swimming pool?	72 [inches]
9	What is the next number in the following sequence? 3, 4, 7, 11, 18, 29, …	47
10	How many quarts are in 3 gallons of water?	12 [quarts]

"Math Is Cool" Championships — 2021-22

4th Grade — March 2022

Key

COLLEGE BOWL ROUND #5

#	Problem	Answer
1	How many ways can you rearrange the letters in the word YES, spelled Y-E-S.	6 [ways]
2	What is the sum of the cubes of the first three counting numbers?	36
3	If Jin Lee eats three rice cakes, and each rice cake contains 54 grains of puffed rice, how many grains of puffed rice did Jin Lee eat?	162 (grains)
4	What is the largest prime factor of 92?	23
5	It takes Antman 20 minutes to prune 3 bushes. At this rate, how many minutes will it take Antman to prune 12 bushes?	80 [minutes]
6	What is the perimeter in millimeters of a regular decagon with a side length of 45 millimeters?	450 [mm]
7	Three Starbursts are worth 2 Tootsie Rolls. 1 Tootsie Roll is worth 4 pieces of gum. How many pieces of gum are 6 Starbursts worth?	16 [pieces of gum]
8	The letters in the word PENTAGON, spelled P-E-N-T-A-G-O-N are put into a bag. If one letter is randomly selected, what is the probability in percent that the letter is an 'N'?	25 [%]
9	What is twice the product of 6 and 7?	84
10	What number goes in the "blank" in the following number pattern: 6, 8, 12, 18, "blank", 36	26

"Math Is Cool" Championships — 2021-22

4th Grade — March 2022

Key

COLLEGE BOWL ROUND #6

#	Problem	Answer
1	What is 11 plus 12 plus 13 plus 14?	50
2	Lily writes all of the numbers between 40 and 90 on a piece of paper. How many times has she written the digit 7 while writing this list?	15 [sevens]
3	What is the positive difference between 13 yards and 40 feet? Express your answer in inches.	12 [inches]
4	The area of a rectangle is 100 square inches. One side length is 5 inches. How many inches are in the perimeter of the rectangle?	50 [inches]
5	What is one-half of one-third of 24?	4
6	Olivia has 7 dimes, 3 quarters, 8 nickels and 12 pennies. How much money does she have in cents?	197 [cents]
7	In how many different orders can three friends sit on a park bench in a row, if two of the friends insist on sitting next to each other?	4 [ways]
8	What is the greatest possible whole-number of degrees in an acute angle?	89
9	Packard wrote 8 math problems, and Sterling wrote 6 more math problems than Packard. How many math problems did they write together?	22 [math problems]
10	What is the smallest positive integer that is divisible by 2, 5 and 7?	70

"Math Is Cool" Championships — 2021-22

4th Grade — March 2022

Key

COLLEGE BOWL – EXTRA QUESTIONS

#	Problem	Answer
1	What is the volume in cubic inches of a rectangular prism with a base of 4 inches, a height of 7 inches, and a width of 2 inches?	56 [cubic inches]
2	What is one-third of 60% of 100?	20
3	What is the mode of the following data set? {7, 4, 3, 21, 9, 7}	7
4	Eduardo drinks 4 cups of water a day. How many days will it take him to drink 2 gallons of water?	8 [days]
5	What is the area in square centimeters of a square with a perimeter of twenty eight cm?	49 [cm^2]
6	What is the quotient of 45 and 5?	9
7	Walker multiplied 50 times 25. What number does he need to add to that product to get a total of two thousand?	750
8	A rectangular backyard patio is 10 meters long and 8 meters wide. Flower pots are placed around the pool, 1 meter apart center to center, including a flower pot in each corner. How many total flower pots are needed?	36 [flower pots]
9	Replace the word "blank" in the following statement with the largest possible positive whole number that makes the statement true: "blank" times 3 is less than 23.	7
10	Mr. Edwards had drumsticks to give out to his music class of 23 students. After giving each student 2 drumsticks, he had 7 left. How many drumsticks did Mr. Edwards have to begin with?	53 [drumsticks]

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