"Math Is Cool" Masters — 2021-22

4th Grade — May 4th 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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4th Grade — May 4th 2022

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:**		

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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	75 [minutes]	How many minutes are there between 10:45 AM and 12 noon on the same day?
2	9752	What is the largest counting number that can be made by using all of the following digits once each? Five, seven, two and nine .
3	13 [vertices	Brayden draws three triangles and one rectangle on his paper, with none of the shapes overlapping. How many total vertices does he draw?
4	13	What is the smallest whole number you could multiply 8 by to get a product that is greater than one hundred?
5	34 [dimes]	Jacob has three dollars and forty cents in dimes. How many dimes does Jacob have?
6	338	What is the product of 26 and 13?
7	11	What is the median of the following set of six numbers? { 10, 15, 8, 22, 5, 12 }
8	45000	How many even 5-digit counting numbers are there?

"Math Is Cool" Masters — 2021-22

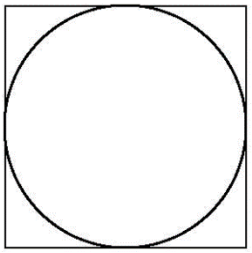
4th Grade — May 4th 2022

Individual Contest

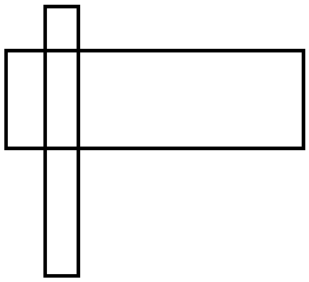
Record all answers on the colored cover sheet. 35 minutes, 40 problems, ~92% of individual score.
No talking during this individual test. A 5-minute time warning will be given.

	Questions 1-30: 2 points each
1	What digit is in the hundreds place of the following number: 64,938
2	Evaluate: 351 – 97
3	Josue's favorite whole number is greater than 40 but less than 50 and is divisible by 5. What is Josue's favorite whole number?
4	Packard is 6 feet 2 inches tall. How many inches tall is he?
5	How many diagonals does a rectangle have?
6	How many even numbers are between 25 and 55?
7	What is the next number in this arithmetic sequence? 27, 25, 23, …
8	What is the first prime number that is greater than 20?
9	If two of the interior angles of a triangle have measures of 70 degrees and 30 degrees, what is the measure of the third angle (in degrees)?
10	Saathvik went to a petting zoo that had a total of 25 animals, as shown in the table. How many llamas were at the petting zoo? <table><tr><th>Animal</th><th>Number</th></tr><tr><td>Baby goat</td><td>6</td></tr><tr><td>Miniature horse</td><td>2</td></tr><tr><td>Llama</td><td>?</td></tr><tr><td>Pig</td><td>4</td></tr></table>
11	Which of the following is the largest number? 4932 5061 5132 4982
12	What is the perimeter in meters of a regular pentagon with a side length of 4 meters?
13	Gregg bales hay for 3 hours each day. If it will take Gregg 41 days to bale all of his hay, how many hours will it take him to bale all of his hay?
14	Sana wants to swap one of the numbers on the top line with one of the numbers on the bottom line so that the sums of the numbers on each line is the same. What is the sum of the two numbers that must be swapped? <table><tr><td>8</td><td>9</td><td>3</td><td>10</td><td>6</td></tr></table> <table><tr><td>16</td><td>1</td><td>4</td><td>2</td><td>7</td></tr></table>

Continued on next page.

15	Meredith earned \$12 dollars one week and \$23 the next week. If she gives $\frac{1}{5}$ of her earnings to her mother, how much money in dollars does Meredith have left?
16	Suya goes to bed at 9:46 PM, and reads until 10:22 PM the same night, when she falls asleep. How long did Suya read in bed before falling asleep, in minutes?
17	What is 20% of 300?
18	What is the largest two-digit perfect square integer?
19	If the average of Joe's four sisters' ages is 15 years, what is the sum of their ages in years?
20	One of three brothers, Abe, Bruno or Carl ate the last brownie from the brownie pan. When asked by their father, they gave the following responses: Abe: I didn't eat it! Bruno: Carl ate it! Carl: Abe ate it! Abe is the only one telling the truth. Who ate the last brownie? Answer as an integer using the following code: Abe = 1 Bruno = 2 Carl = 3 Cannot determine = 4
21	A circle is inscribed in a square with side length 10 units. The area of the circle can be written as $A\pi$ (A times π) square units, where A is an integer. What is the value of A? 
22	Sahana has 4 siblings. How many different ways can she organize them in a straight line?
23	Silas can stack 4 cups per second. If he continues at this rate, how many cups can he stack in 2 minutes?
24	What value of x makes the following true? $14 + 8 = 24 - x$
25	There are 35 marbles in a bag. Seven are yellow, 4 are pink, 12 are white, and the rest are orange. If I draw a single marble randomly from the bag, on average how many times would I pull out an orange marble out of 35 tries?
26	Gill Bates loves computers. He loves them so much that he buys twice as many computers each day compared to the previous day. On day one, he bought 2 computers. On day two he bought 4, and on day three he bought 8. How many computers did Gill buy on day 6?
27	Ruhani has 5 pennies, 2 dimes and 3 nickels in her pocket. If she randomly selects one coin, what is the probability in percent that it is a penny?
28	Coffee is being poured into a large urn at a rate of 3 milliliters (mL) per second. After five minutes, how many milliliters of coffee will be in the urn?

Continued on next page.

29	A shape consists of two overlapping rectangles. How many total rectangles are in this shape? 
30	The Math Is Cool test writers are writing questions. They have to write 24 questions for the next test. They can write 1 question every 5 minutes. If they take a one minute break between every question that they write, how many minutes will it take them to finish the questions?

Challenge Questions: 3 points each

31	Given the data set {7, 22, 6, 43, 19}, what is the sum of the median and the range of the data?
32	Edmond is chasing his evil counterpart, Joseph. Edmond runs at 18 mph and Joseph runs at 14 mph. If Joseph gets a two-hour head start, how many hours will Edmond have to run to catch up to him, assuming they both run at a constant rate?
33	The clock shows that the time is 1:30 pm. What is the measure, in degrees, of the smaller angle between the minute hand and the hour hand?
34	Mikaila has 49 cupcakes. She gives 24 cupcakes to her friend, Kaylee. Then, Mikaila gives 20% of her remaining cupcakes to their friend Jonah. After that, she gives $\frac{1}{4}$ of her remaining cupcakes to Maddax. How many cupcakes does Mikaila have left?
35	My rectangular phone has a perimeter of 88 centimeters. The length is 8/3 times longer than the width. What is the surface area of the front side of my phone in square centimeters?
36	A candy jar is full of lollipops. One-sixth of them are grape-flavored, 1/3 of them are lime-flavored, 3/10 of them are strawberry-flavored, and the rest are cotton-candy flavored. The jar has between 160 and 200 lollipops. How many lollipops are cotton-candy flavored? Assume that there is a whole number of each lollipop flavor.
37	A new function is defined as follows: a & b = $\frac{a!+b!}{a-b}$ What is the value of 4 & 2?
38	Emily only likes positive integers that are a multiple of 17 and Christina only likes positive integers that have a 2 in the ones place. What is the second smallest number that they both like?
39	Biff and Eho are hosting a science fair. Tickets for children cost $3, and tickets for adults cost $5. On Saturday, the total ticket sales are $374. What is the fewest number of children that could have attended the fair on Saturday?
40	A palindrome is a positive integer that reads the same in either direction, like 121. How many four-digit palindromes are there?

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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	9
2	254
3	45
4	74 [inches]
5	2
6	15
7	21
8	23
9	80 (degrees)
10	13
11	5132
12	20 (meters)
13	123 [hours]
14	17
15	28 [$]

	Answer
16	36 (minutes)
17	60
18	81
19	60 [years]
20	2 [Bruno]
21	25
22	24 (ways)
23	480 [cups]
24	2
25	12 [times]
26	64 (computers)
27	50 [%]
28	900 [mL]
29	11
30	143 (minutes)

	Answer
31	56
32	7 (hours)
33	135 (degrees)
34	15 (cupcakes)
35	384 [cm^2]
36	36 (lollipops)
37	13
38	272
39	3 [children]
40	90 (palindromes)

4th Grade

May 4th 2022

"Math Is Cool" Masters – 2021-22

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

May 4th 2022

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

"Math Is Cool" Masters — 2021-22

4th Grade — May 4th 2022

Team Multiple Choice Contest

USE THE FOLLOWING MAP AND KEY TO SOLVE PROBLEMS #1 THROUGH #3.

Cowachella Musical Performance Schedule and Ticket Prices:

Performer	Scheduled Show Times			
Hereford Trio	9:15 AM	12:45 PM	4:15 PM	5:45 PM
Texas Longhorns	8:15 AM	10:15 AM	5:15 PM	6:15 PM
Angus Red	12:00 PM	1:15 PM	2:30 PM	3:45 PM

Ticket Prices	Morning (Before 12 PM)	Afternoon (12 PM or later)
Adult	$5.00	$6.00
Child	$3.00	$4.00

1 Geronimo and his friends want to go to the local music festival (Cowachella) and see the 9:15 AM Hereford Trio show. If they need 3 Adult tickets and 5 Child tickets, how much do they need to pay?

A) $25 B) $30 C) $50 D) $8 E) Answer not given

2 Rowdy wants to start by attending the 8:15 AM Texas Longhorns show, which is scheduled to last for 45 minutes. How many minutes, would he need to wait until the start of the 1:15 PM Angus Red show?

A) 250 min B) 255 min C) 300 min D) 315 min E) Answer not given

3 Baylor decides to randomly pick one of the scheduled shows to attend. What is the probability that she ends up attending an afternoon show?

A) 65% B) 75% C) 85% D) 90% E) Answer not given

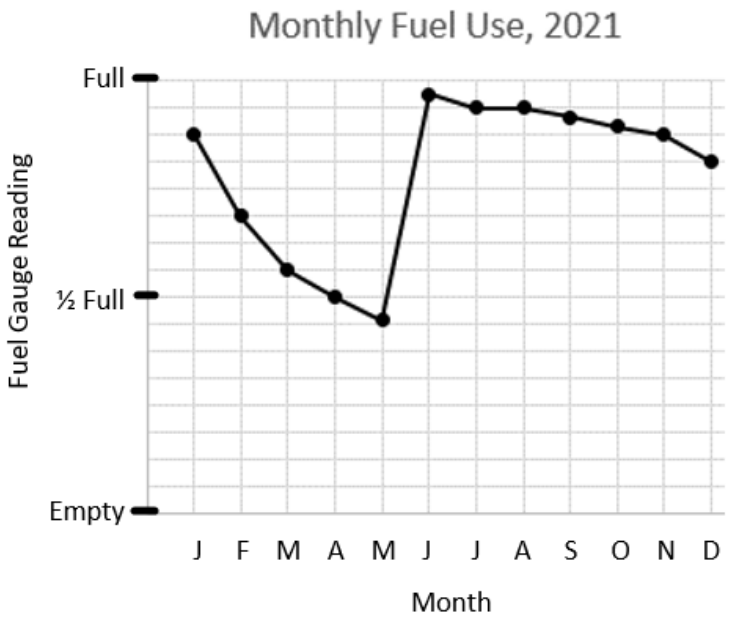
Continued on Next Page

	USE THE FOLLOWING INFORMATION TO SOLVE PROBLEMS #4 THROUGH #6. A positive integer N has the following kinds of divisors: Prime divisors: The set of prime numbers that divide N. For example, if N = 75, the prime divisors are 3 and 5. Positive divisors: The set of positive integers that divide N. For example, if N = 75, the positive divisors are: 1, 3, 5, 15, 25 and 75. Proper divisors: The set of proper divisors is the set of positive divisors that are different from N. For example, if N = 75, the proper divisors are: 1, 3, 5, 15 and 25.
4	How many positive divisors does 18 have? A) 3 B) 4 C) 5 D) 6 E) Answer not given.
5	How many more proper divisors than prime divisors does 18 have? A) 1 B) 2 C) 3 D) 4 E) 5
6	A 'repdigit' is an integer which only contains one repeated digit, such as 22, 333, or 4444. How many of the following numbers are positive divisors of all 3-digit repdigits? 1, 3, 5, 11, 37, 101, 121 A) 0 B) 1 C) 2 D) 3 E) 4

Continued on Next Page

USE THE FOLLOWING INFORMATION TO SOLVE PROBLEMS #7 THROUGH #10.

The following graph shows the remaining fuel level on the first day of each month in the propane fuel tank at the Repp household in West Richland, WA. When the fuel tank is full, it holds 480 gallons. The tank was refilled during the month of May.



7 According to the graph, during which month of the year did the amount of fuel in the tank decrease most rapidly?

A) January B) February C) May D) NovemberE) Answer not given

8 How many gallons of fuel were used in the month of March?

A) 15 B) 30 C) 40 D) 50 E) Answer not given

9 Propane costs $3.27 a gallon. What was the cost of the fuel used from July 1st through December 1st?

A) $98.10 B) $150.21 C) $196.20 D) $294.30 E) Answer not given

10 What was the median number of gallons of fuel in the tank at the beginning of each month for January through December, 2021?

A) 420 B) 425 C) 430.5 D) 440 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	B
4	D
5	C
6	D
7	A
8	B
9	C
10	A

"Math Is Cool" Masters — 2021-22

4th Grade — May 4th 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.

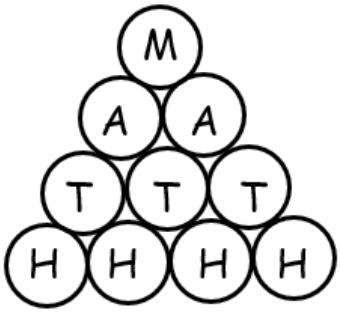
STUDENTS: DO NOT WRITE IN SHADED REGIONS

		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:**		

"Math Is Cool" Masters — 2021-22

4th Grade — May 4th 2022

Team Contest

1	Evaluate: $7^2 + 3 \times 17$
2	What is the range of the following data set? { 10, 15, 8, 22, 5, 12}
3	On the planet Porrima, a year is divided into 16 months, each with exactly 21 days. How many days are in a year on the planet Porrima?
4	A rectangle has a length and width that are whole numbers. If the area of the rectangle is 11 square feet, what is its perimeter in feet?
5	A bag contains black and white marbles, and the ratio of black to white marbles is 8 to 3. If there are 33 white marbles, how many black marbles are there in the bag?
6	How many different pairs of positive integers have a sum of 67? The order of the pairs is not important, a + b is the same as b + a.
7	How many numbers are there in the following finite sequence? 2, 8, 14, 20, …, 134
8	In how many ways can the word MATH be read from the diagram by starting at the M, choosing each next letter from the row below, and only moving to circles that are tangent (touching) to the current circle? 
9	A rectangle has side lengths of 19 and 47. Ishan cuts the rectangle to obtain the largest possible square and another rectangle. He continues to cut the remaining rectangle in a similar manner until only squares remain. How many total squares does Ishan have at the end?
10	How many three-digit counting numbers have a tens digit that is equal to the number of 2s used to write the number?

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4th Grade — May 4th 2022

Final Score *(out of 10)*

Key

Team Contest – Answer Key

4th Grade

	Answer
1	100
2	17
3	336 [days]
4	24 [feet]
5	88 [black marbles]
6	33 [pairs]
7	23 [numbers]
8	8 [ways]
9	13 [squares]
10	106 [numbers]

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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.

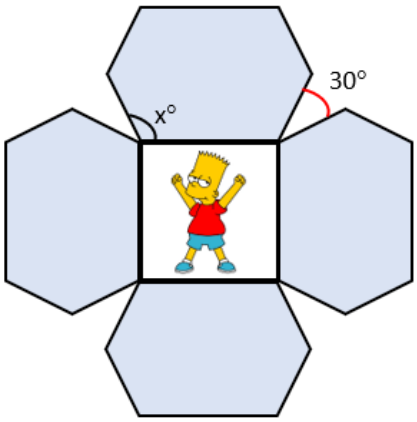
STUDENTS: DO NOT WRITE IN SHADED REGIONS

	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" Masters — 2021-22

4th Grade — May 4th 2022

Linda Moore Triple Jump

1	The video game Amidst Us sold 550 copies in January, 600 copies in February, and 800 copies in March. What is the average number of copies of Amidst Us sold over those three months?
2	What is the area in square centimeters of a right triangle with leg lengths of 10 cm and 24 cm?
3	There are 300 4th graders and 450 5th graders at a math competition. If one student is randomly selected to receive a special prize, what is the probability in percent that it is a 4th grader?
4	Four towns are located on a straight road. Alpha is equidistant to (the same distance from) Beta and Gamma. Gamma is equidistant to Alpha and Delta. If the distance from Delta to Alpha is 100 miles, what is the distance in miles from Gamma to Beta?
5	What is the seventh term of the geometric sequence that starts: 3, 6, 12, 24, … ?
6	Eho's Chair and Stool Emporium sells chairs, which have 4 legs, and stools, which have 3 legs. When counting inventory, Eho notes that he has 12 pieces of furniture on the showroom floor, and 43 legs in total. How many chairs are there?
7	Four identical hexagons are used to make a picture frame for a square photo, as shown in the figure. Each triangular region between the hexagons has a measurement of 30°. What is the measure in degrees of angle x? 
8	A spider climbs a 190-ft tall cliff at a rate of 11 feet per day, but it slides back down 2 feet every night when it sleeps. From its morning start on Day 1 at the bottom of the cliff, on which Day number will the spider reach the top of the cliff?
9	Shanice is organizing 3 different history books, 5 different math books, and 2 different Spanish books on her shelf. How many different ways can she arrange the books on her shelf such that the books of each subject are together?
10	The number 33306 can be written as a product of two positive consecutive integers. What is the smaller of the two integers?

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Key

Linda Moore Triple Jump – Answer Key

4th Grade

	Answer
1	650 [copies]
2	120 [cm^2]
3	40 [%]
4	100 [miles]
5	192
6	7 [chairs]
7	120 [degrees]
8	21 [days]
9	8640 [ways]
10	182

"Math Is Cool" Masters — 2021-22

4th Grade — May 4th 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" Masters — 2021-22

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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" Masters — 2021-22

4th Grade — May 4th 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" Masters — 2021-22

4th Grade — May 4th 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" Masters — 2021-22

4th Grade — May 4th 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" Masters — 2021-22

4th Grade — May 4th 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 minutes are there between 10:45 AM and 12 noon on the same day?	75 [minutes]
2	What is the largest counting number that can be made by using all of the following digits once each? Five, seven, two and nine .	9752
3	Brayden draws three triangles and one rectangle on his paper, with none of the shapes overlapping. How many total vertices does he draw?	13 [vertices
4	What is the smallest whole number you could multiply 8 by to get a product that is greater than one hundred?	13
5	Jacob has three dollars and forty cents in dimes. How many dimes does Jacob have?	
6	What is the product of 26 and 13?	338
7	What is the median of the following set of six numbers? { 10, 15, 8, 22, 5, 12 }	
8	How many even 5-digit counting numbers are there?	45000

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4th Grade — May 4th 2022

Key

COLLEGE BOWL ROUND #1

#	Problem	Answer
1	How many quarters are equivalent to 425 pennies?	17
2	Find the mean (average) of the following data set: {80, 77, 83, 80}	80
3	Fabian counts backwards from 100 by eights. The first number he says is 100, then 92, and so on. What is the next number Fabian will say that is evenly divisible by 5?	60
4	There are 2 green marbles and 3 black marbles in a bag. If one marble is drawn at random, what is the probability in percent that it is not green?	60 [%]
5	In a bowl of Starburst candy, one out of every seven Starbursts is red. If there are nine red Starbursts in the bowl, what is the total number of Starbursts in the bowl?	63 [Starbursts]
6	A decagon has the following side lengths in centimeters: 1, 2, 3, 4, 5, 6, 7, 8, 9, and 10. If an equilateral pentagon has the same perimeter as the decagon, what is the side length of the pentagon in centimeters?	11 [cm}
7	There are 20 students in a class. The ratio of boys to girls is 2:3. How many boys are in the class?	8 [boys]
8	How many numbers between 1 and 100 are divisible by 7?	14
9	Find the 9th term in the following arithmetic sequence: 2, 5, 8, …	26
10	Evaluate: 1 – 2 + 3 – 4 + 5 – 6 + 7 – 8 + 9 – 10	-5

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Key

COLLEGE BOWL ROUND #2

#	Problem	Answer
1	*Fantasia* is the longest animated Disney movie, with a run time of 2 hours and 4 minutes. How long is *Fantasia* in seconds?	7440 [seconds]
2	What is the length of a rectangle in centimeters that has an area of 80 cm^2 and a width of 10 centimeters?	8 [cm}
3	How many perfect square numbers are greater than 10 and less than 100?	6
4	How many different ways are there to make $20 using an unlimited supply of $10 bills, $5 bills and $1 bills?	9
5	On a test with 200 problems, Sameer answered 76% of the questions correctly, left 4% of the questions blank and got the remaining answers incorrect. A correct answer is worth 2 points, a blank answer is 0 points, and an incorrect answer is -1 point. What was Sameer's grade on the test, in points?	264 [points]
6	In Eleanor's chicken coop, there are 4 red chickens for every 5 black chickens. Eleanor has more than 60 chickens in the coop. What is the smallest whole number of chickens that she could have?	63 [chickens]
7	Two fair coins are flipped. What is the probability in percent that both of them come up tails?	25 [%]
8	Using only pennies, nickels, dimes and quarters, what is the smallest number of coins needed to pay exact change for an ice-cream cone that costs $1.44?	11 [coins]
9	What is the next term in the following number sequence? 10, 8, 11, 9, 12, …	10
10	Find the mode of the following data set: {20, 20, 21, 19, 22, 19, 21, 21}	21

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Key

COLLEGE BOWL ROUND #3

#	Problem	Answer
1	How many yards are equivalent to 417 feet?	139 [yards]
2	What is the probability in percent that a randomly selected integer from 1 to 10 inclusive (including 1 and 10) is not divisible by 5?	80 [%]
3	On an ice floe, there are some families of penguins. Each family consists of two parent penguins and two baby penguins. If there are 20 baby penguins in total, how many parent penguins are there?	20 [penguins]
4	Parth and Ingrid have 109 Pokeman cards combined. Parth has 25 more Pokeman cards than Ingrid. How many Pokeman cards does Ingrid have?	42 [cards]
5	Shiv saved $250 and his sister saved twice as much as him. Shiv's brother saved $100 less than Shiv. What was the average savings of the three siblings in dollars?	300 [$]
6	Find the sum of the 2nd and 5th terms in the following arithmetic sequence: 9, ___, 25, 33, ___, …	58
7	When Yuna divides a number by 3 and subtracts 5 from the result she gets a result of 7. What number did Yuna start with?	36
8	Emilio has a ticket in row 26 to watch a baseball game. The row has 80 seats total. The seats numbered 1 to 14 are occupied, as well as the seats from 20 to 31, seat 57 and the seats from 60 to 66. How many open seats can Emilio choose from?	46 [seats]
9	What is the total surface area in square inches of a rectangular shoebox with length 12 inches, width 6 inches and height 4 inches?	288 [square inches]
10	A car traveled at 55 miles per hour for three hours. How many miles did the car travel?	165 [miles]

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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]

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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

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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

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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 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