"Math Is Cool" Masters — 2023-24

4th Grade — May 18th 2024

Sponsored by:

GENERAL INSTRUCTIONS applying to all tests:

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

FINAL SCORES AND AWARDS

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

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

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

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

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

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

"Math Is Cool" Masters — 2023-24

4th Grade — May 18th 2024

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" Masters — 2023-24

4th Grade — May 18th 2024

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

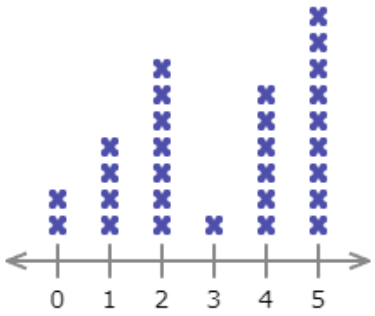
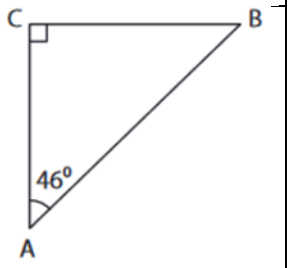
	Answer	
1	10 [students]	There are forty students in the orchestra, and one-quarter of them play the viola. How many students play the viola?
2	81	What is the largest perfect square less than one hundred?
3	25 [= z]	Solve for z: three times seven equals z minus four
4	99999	What is the next number in the following sequence? Five, sixty-six, seven hundred seventy-seven, eight thousand eight hundred eighty-eight, and so on
5	135 [minutes]	How many minutes are in two point two five hours?
6	20 [cents]	A one pound bag of frozen corn costs three dollars and twenty cents. How many cents does one ounce of the corn cost?
7	28 [degrees]	A right triangle has an angle measuring sixty-two degrees. In degrees, what is the measurement of the smallest angle in the triangle?
8	11[$]	Sunnyside Elementary 5th grade students are going to watch a new movie. They ordered one large popcorn for seven dollars and forty movie tickets. They spent a total of four hundred and forty-seven dollars. In dollars, how much does one movie ticket cost?

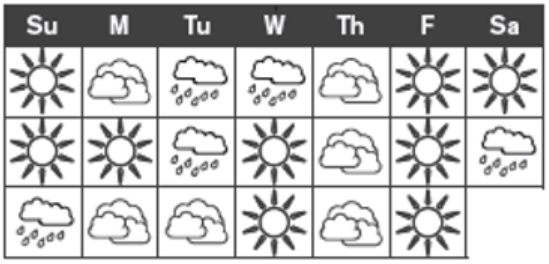
"Math Is Cool" Masters — 2023-24

4th Grade — May 18th 2024

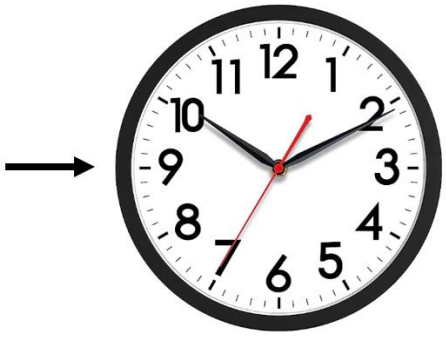
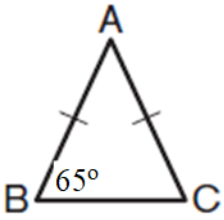
Individual Contest

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

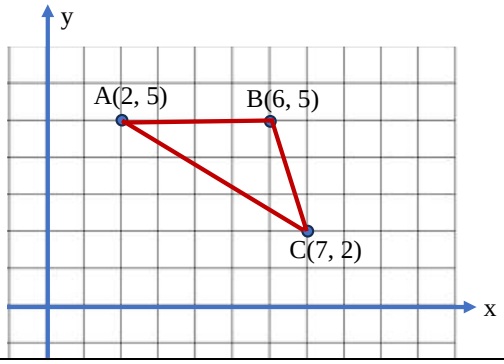
	Questions 1-30: 2 points each
1	Evaluate: 100×7
2	Enzo is 6 feet 8 inches tall. What is his height in inches?
3	There are 6 and 5/6 gallons of water in Aashi's fish tank. If she adds 1 and 1/6 gallons more water to the tank, how many gallons of water will the tank contain?
4	Mr. Sampson asked his students how many times each of them had been to a movie theater in the last year, and the results are displayed in the following graph, with each 'x' representing one student. How many students had been to a movie theater exactly 4 times?  Number of trips to a movie theater
5	In degrees, what is the measure of ∠B (angle B) in the following right triangle? 
6	What is 10% of 400?
7	What is the next number in the following arithmetic sequence? 35, 28, 21, 14, and so on
8	The radius of a circle is 49 inches. In inches, what is the diameter of the circle?
9	How many odd whole numbers are there between 54 and 100?
10	What is 721,293 rounded to the nearest hundred thousand?
11	Bennett's car can travel 48 miles per gallon of gasoline. Bennett plans to visit his aunt, who lives 240 miles away. How many gallons of gasoline will Bennett's car need for this round-trip journey to and from his aunt?
	Continued on next page.

12	Dr. Wood is a pediatrician, and she weighed the children who recently visited her office. The children's weights in pounds are: 23, 29, 36, 37, 44, 48, 53, 62, 68, 78, 85, 97, 99. She wants to represent the data in the stem-and-leaf plot shown here. What is the missing number that goes in the box in this stem-and-leaf plot? **Stem** | **Leaf** 2 | 3 9 3 | 6 7 4 | 4 8 5 | ☐ 6 | 2 8 7 | 8 8 | 5 9 | 7 9
13	For a scouting service project, Oliver has raised $285.50 for a local senior center. Additionally, he runs a 5-mile race and raises $4.50 for every mile. In dollars, how much money did Oliver raise in total?
14	Zender has ten boxes, five erasers, and four pens. He puts each eraser into a different box, and each pen into a different box. Two of the boxes end up containing both a pen and an eraser. How many boxes contain nothing?
15	Annabel recorded the weather of her home city for twenty days in October as shown below. It was either sunny, cloudy, or rainy. On what percentage of the days did it rain?   = Sunny  = Cloudy  = Rainy
16	The sum of two whole numbers is 6, and the two numbers are 2 units apart on the number line. What is the larger of the two numbers?
17	Yovani's room is rectangular with dimensions 12 feet long by 9 feet wide. He wants to cover the room with a carpet. The carpet is sold at a price of $3.00 per square foot. In dollars, how much will it cost him to buy enough carpet to exactly cover the floor?
18	Four people can finish a project in six days, when each person works at the same rate. If three people instead work at this same rate, how many days will it take to finish this project?
19	Ishaan's average score for two tests is 84 points. If his score is 90 points on the third test, what is his average score of all three tests, in points?
20	$\angle A$ is complementary to $\angle B$. If $\angle B$ measures sixty degrees, what is the measure of $\angle A$ in degrees?
21	Cloud has three nickels, two dimes and one quarter. Finn has one nickel, one dime and two quarters. In cents, how much money do Cloud and Finn have, combined?

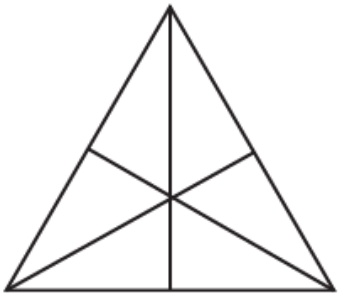
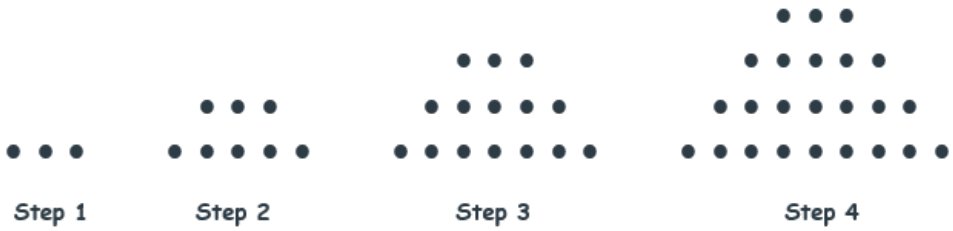
Continued on next page.

22	In the following clock face, leave six consecutive (next to each other) numbers in a row in their current positions. Rearrange the other six numbers in such a way that the sum of every possible pair of adjacent numbers is a prime number. What number will be in the position originally occupied by the 9? 
23	Olivia has three red Skittles, two blue Skittles and five green Skittles in her pocket. If Olivia randomly picks one Skittle from her pocket, what is the probability in percent that the picked Skittle is green?
24	Niko is 5 years older than his brother Edison. Seven years ago, Edison was half as old as Niko. How old is Edison now in years?
25	In isosceles triangle ABC shown here, the length of AB equals the length of AC, and $\angle B = 65$ degrees. What is $\angle C$ in degrees? 
26	What is the median of the following set of numbers? {5, 16, 14, 24, 10, 30, 7}
27	How many distinct (different) prime factors does the number 2024 have?
28	Veena has one dozen eggs and Caylin has two dozen eggs. As a whole number, what is the average number of eggs that they have?
29	There are two zeros in the year 2010. How many years between 2001 and 2100 inclusive (including 2001 and 2100) have this feature?
30	What is the ones digit of the number that results from the following multiplication problem? $8 \times 7 \times 6 \times 5 \times 4 \times 3 \times 2 \times 1$

Challenge Questions: 3 points each

31	How many positive integer divisors does 405 have?
32	Each small square in the following plot is 1 square inch. What is the area of the triangle with the vertices at A(2,5), B(6,5) and C(7,2) in square inches? 

Continued on next page.

33	The length of a swimming pool is the greatest 2 digit prime number (in feet), and its width is the smallest 2 digit prime number (in feet). In square feet, what is the area of this swimming pool?
34	A drawer contains five socks: two red and three orange. What is the probability as a percent that two socks randomly pulled out of the drawer will be the same color?
35	Mike has 55 candies. He gives 25 candies to his friend Tom. Then, Mike gives 20% of his remaining candies to his friend Adam. Next, he gives a quarter of his remaining candies to Ed. How many candies does Mike have left?
36	The product of the digits of a given two-digit whole number is 18. When the digits exchange their places, the new number is 27 more than the original one. What is the original two-digit number?
37	Nayeli has some Ping-Pong balls in a box. Every turn she removes two-thirds of the balls, adds 2, and then triples the number of remaining balls. After 4 turns there are 54 balls in the box. How many Ping-Pong balls did the box contain at the beginning?
38	In the figure as shown, how many triangles of any size are there? 
39	The following figure shows the first four steps of a dot pattern. How many more dots are in Step 30 of the pattern than are in Step 24 of the pattern? 
40	Clive lives 30 miles from the WinCo store. If he drives to the store at 37.5 miles per hour, at what speed in miles per hour does he need to drive back home to achieve an average of 50 miles per hour for the round trip?

"Math Is Cool" Masters – 2023-24

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	700
2	80 [in]
3	8 [gallons]
4	6 [students]
5	44 [degrees]
6	40
7	7
8	98 [inches]
9	23
10	700,000
11	3
12	10 [gallons]
13	308 [$]
14	3 [boxes]
15	25 [%]

	Answer
16	4
17	324 [$]
18	8 [days]
19	86 [points]
20	30 [°]
21	125 [cents]
22	5
23	50 [%]
24	12 [years]
25	65 [°]
26	14 [= median]
27	3 [distinct prime factors]
28	18 [= average]
29	19 [years]
30	0 [= units digit]

	Answer
31	10 [divisors]
32	6 [square inches]
33	1067 [square feet]
34	40 [%]
35	18 [candies]
36	36
37	30 [ping pong balls]
38	16 [triangles]
39	336 [more dots]
40	75 [miles per hour]

4th Grade

May 18th 2024

"Math Is Cool" Masters – 2023-24

Total Correct (all columns)

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

Individual Contest – Score Sheet

STUDENTS: DO NOT WRITE IN SHADED REGIONS

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

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

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

4th Grade

May 18th 2024

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

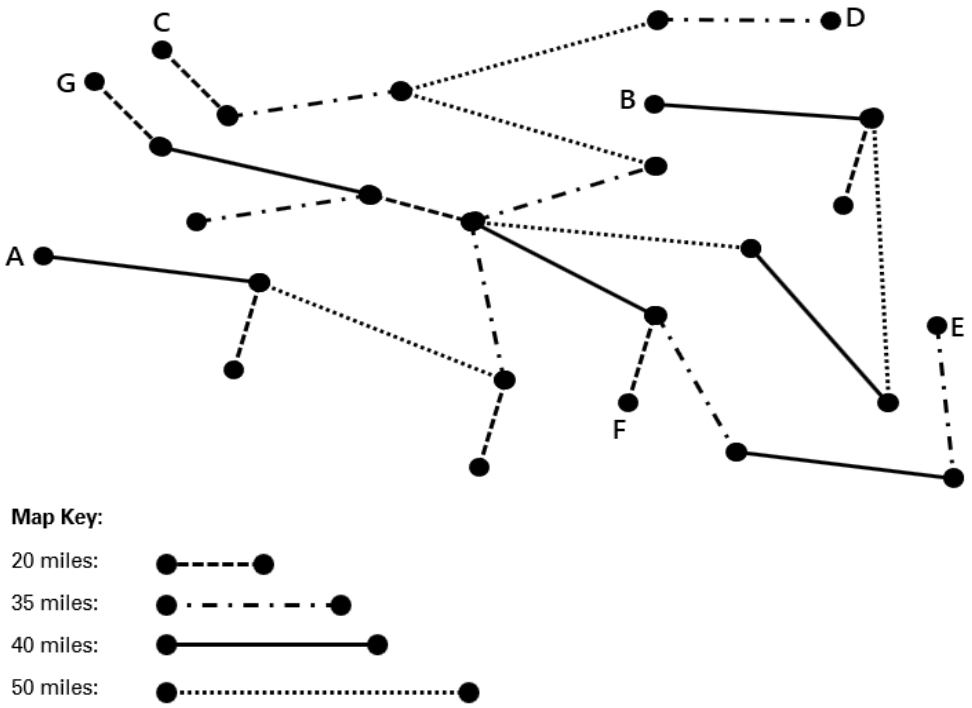
"Math Is Cool" Masters — 2023-24

4th Grade — May 18th 2024

Team Multiple Choice Contest

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

The following diagram is a tree graph, which shows the road network between towns. Each town is indicated by a circle, and the road lengths are indicated in the Map Key.



1	What is the shortest route, in miles, between town A and town F? A) 175 B) 185 C) 205 D) 210 E) Answer not given.
2	Kimmel drives from town C to town G on the shortest route possible at an average rate of 40 miles per hour. If he left town C at 11:10 am, at what time will he arrive at town G later that day? A) 4:00 pm B) 4:10 pm C) 4:40 pm D) 5:10 pm E) Answer not given.
3	What is the longest possible distance, in miles, between any two towns shown on the map? The route taken must not retrace itself at any point. A) 295 B) 305 C) 320 D) 350 E) Answer not given.

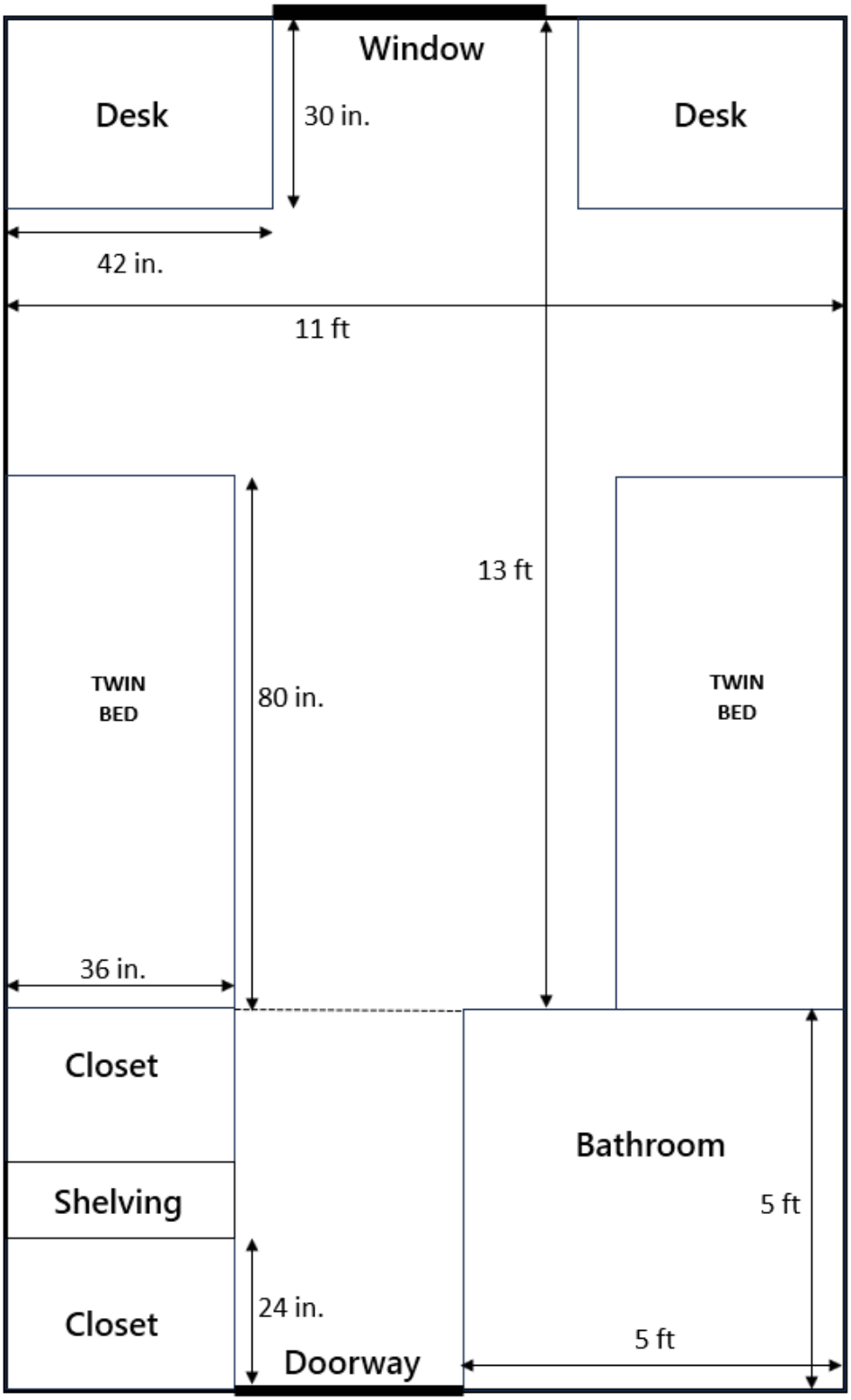
Continued on Next Page

	USE THE FOLLOWING INFORMATION TO SOLVE PROBLEMS #4 THROUGH #6. In the dice game 'Pig', players roll a single standard 6-sided die, numbered 1 through 6. A player's turn consists of rolling the die and scoring as many points as the number of dots showing on the top of the die, unless they roll a '1'. In that case they lose all points accumulated in that turn, and it is the next player's turn. If they roll anything other than a '1', they can add the points to the current points from their turn, and either roll again, or 'bank' the points and add them to their previous total. Once they have 'banked' their points, then it is the next player's turn. Example: Sheldon rolls 2, 2, 6, 4, and banks 14 points. He adds the 14 points to his previous 10 points for a total of 24 points. Raj rolls 3, 5, 1, turn is over, and banks 0 points. He still has his previous total of 15 points.
4	A new game starts between Aziz and Benito, so the score is 0 to 0. Aziz rolls the die a total of 5 times, then banks his score. What is the maximum number of points that he could have now? A) 10 B) 24 C) 30 D) 36 E) Answer not given.
5	Benito takes his first turn, and rolls the die a total of 7 times, then banks his score, which is 39. What is the minimum number of 6's that he must have rolled? A) 2 B) 3 C) 4 D) 5 E) Answer not given.
6	Aziz takes his second turn. He does not roll a 1 on his first or second roll. What is the probability that he rolled a 3 on his first roll and a 4 on his second roll? A) 1/10 B) 1/12 C) 1/25 D) 1/36 E) Answer not given.

Continued on Next Page

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

Felix and Kirby are sharing a dorm room for their freshman year at Princeton University. The floor plan of their room is shown here. Both desks are identical, the beds are identical, and the closets are identical. All dimensions are given in feet (ft) or inches (in).



7	What is the length of the room, in feet, from the window to the doorway? A) 13 ft B) 15 ft C) 18 ft D) 20 ft E) Answer not given.
8	Each bed has an option to be elevated by hanging them from the ceiling, to provide additional floor space. In square feet, how much additional floor space will be provided by elevating both beds? A) 20 ft^2 B) 40 ft^2 C) 240 ft^2 D) 480 ft^2 E) Answer not given.
9	The shelving unit extends from the floor to the ceiling, which is 8 feet high. What is the volume of the shelving unit, in cubic feet? A) 24 ft^3 B) 48 ft^3 C) 56 ft^3 D) 72 ft^3 E) Answer not given.
10	The shelving unit contains 6 equally spaced shelves, and Felix and Kirby decide that they will each take 3 shelves. Kirby insists on taking the top shelf. In how many ways can they distribute the remaining shelves so that each of them gets 3? A) 5 B) 8 C) 10 D) 12 E) Answer not given.

"Math Is Cool" Masters — 2023-24

4th Grade — May 18th 2024

Key

Team Multiple Choice Contest – Answer Key

4th Grade

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

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

"Math Is Cool" Masters — 2023-24

4th Grade — May 18th 2024

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

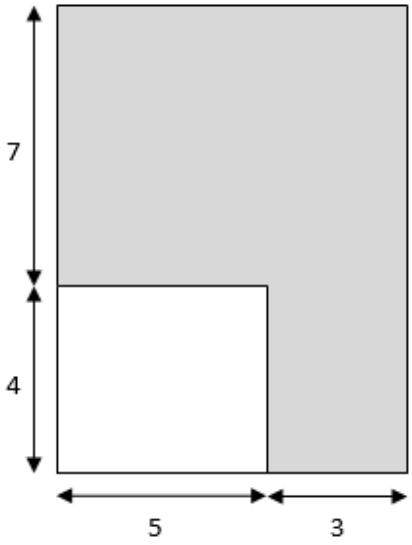
		Scorer 2	Scorer 1
Answer		-1, 0, or 2	-1, 0, or 2
1			
2			
3			
4			
5			
6			
7			
8			
9			
10			
4th Grade	**TOTAL:**		

"Math Is Cool" Masters — 2023-24

4th Grade — May 18th 2024

Team Contest

1 The figure shows two rectangles, with lengths given in units. In square units, what is the area of the unshaded region?

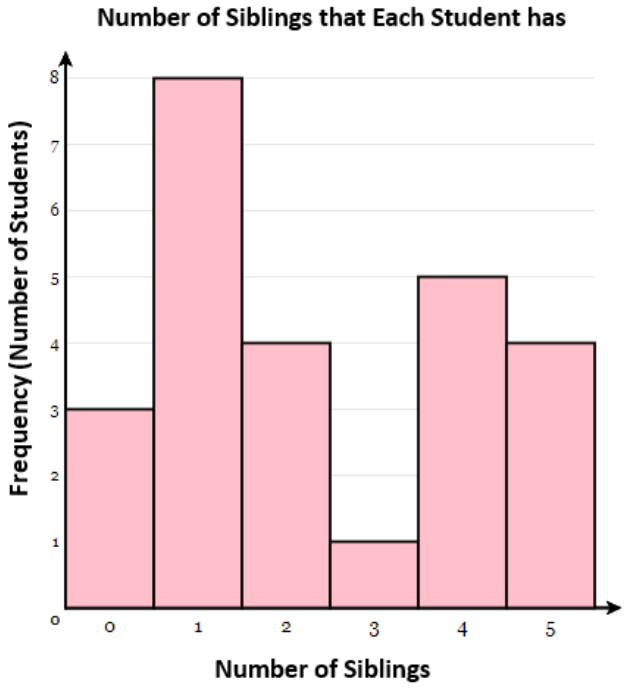


2 A number has the digits 7, 3, and 1, each used exactly once. To the nearest hundred, the number rounds to 400. What is the number?

3 What missing number goes in the box to make a true statement?

$(4 \times 1) + (4 \times 5) = \square \times 6$

4 The following histogram shows how many siblings each of the 25 students in Mr. Chang's 4th grade class has. What is the greatest number of siblings that a student has?



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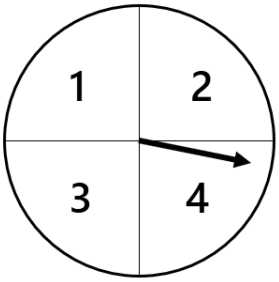
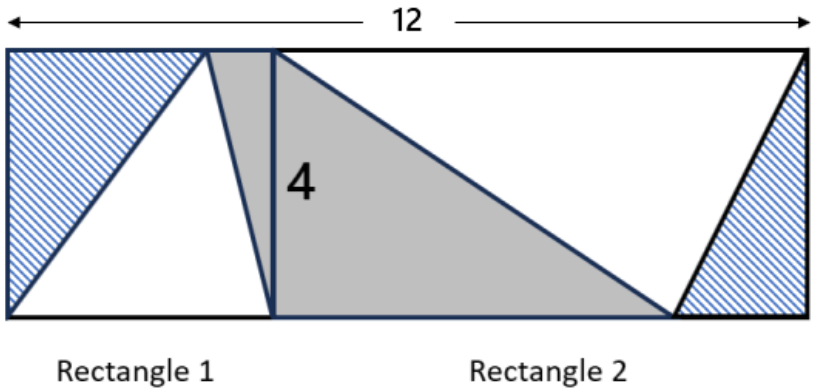
5	A spinner has four equal sections. If it is spun one time, what is the probability in percent that it does not land on 2 or 3? 
6	Two rectangles have a common side length of 4 units, and a combined length of 12 units. Each rectangle is divided into three triangles. The combined area of the two striped triangles is 8 square units. What is the combined area of the gray shaded triangles, in square units? 
7	What number comes next in the sequence that begins as follows? 5, 7, 15, 17, 35, 37, 75, 77, and so on
8	Gustavo got 800 jellybeans in his Easter basket. He decided to eat exactly 31 of them every day. After many days of this, he discovered that he did not have 31 jellybeans left to eat, so he ate the rest. How many jellybeans did he eat that day?
9	Shen has some hamsters and some cages. If he puts four hamsters into each cage, there is one cage left over. If he puts three hamsters into each cage, there is one hamster left over. What is the sum of the number of hamsters and the number of cages?
10	A palindrome is a whole number that reads the same forwards as backwards, such as 22 or 616. The product of a 2-digit palindrome and a 3-digit palindrome is 41,085. What is the sum of the two palindromes?

"Math Is Cool" Masters — 2023-24

4th Grade — May 18th 2024

Key

Team Contest – Answer Key

4th Grade

	Answer
1	20 [sq. units]
2	371 [= the number]
3	4 [= missing number]
4	5 [siblings]
5	50 [%]
6	16 [square units]
7	155
8	25 [jellybeans]
9	21 [= sum]
10	802 [= sum]

"Math Is Cool" Masters — 2023-24

4th Grade — May 18th 2024

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.

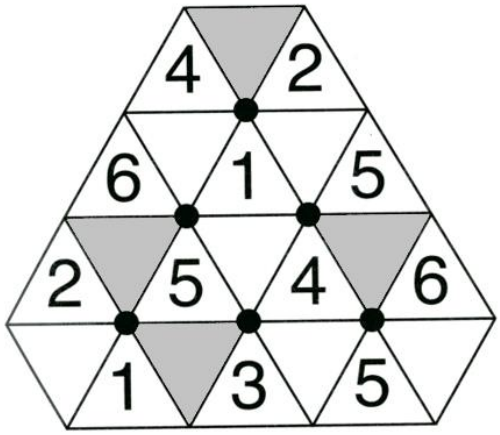
STUDENTS: DO NOT WRITE IN SHADED REGIONS

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

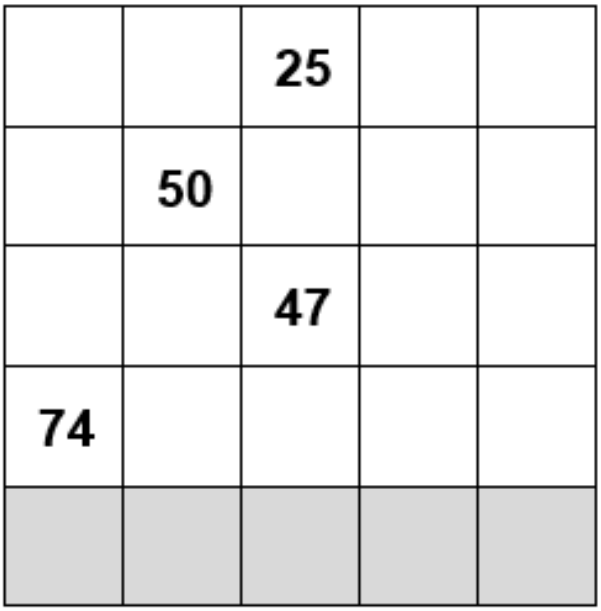
"Math Is Cool" Masters — 2023-24

4th Grade — May 18th 2024

Linda Moore Triple Jump

1	The sum of two numbers is 12. The product of the two numbers is 35. What is the larger number of the two?
2	How many centimeters are in 4 meters?
3	A number sequence starts with 6, and adds 4 each time. The last number in the sequence is 58. How many total numbers are in the sequence? 6, 10, 14, …, 58
4	Yolia has five different colored pairs of socks: purple, blue, red, green and orange. For crazy-sock day at school, in how many different ways can she pick two different colors of socks to wear? The order of the colors does not matter.
5	A square tile has a perimeter of 16 centimeters. What is the area in square centimeters of a square tile with twice that perimeter?
6	The following figure is made up of six overlapping hexagons, each of which has a black dot in the middle surrounded by six triangles. The whole numbers 1 through 6 are to be placed into the triangles of each hexagon. The numbers can go in any order, but they cannot be repeated within any single hexagon. What is the sum of the four numbers in the shaded triangles? 
7	The fraction 1/3 can be written as a repeating decimal. What is the sum of the first 100 digits that appear after the decimal point?
8	In degrees, what is the measurement of the smaller angle between the two hands of a clock when it is exactly 7:22 pm?
9	Biff and Eho play a game, where they each flip a coin and try to predict what the other person flipped, heads or tails. They both win if at least one of them has a correct prediction. Biff always guesses the same thing that he flipped, and Eho always guesses the opposite of what he flipped. As a percentage, what is the probability that that they win in any one game?

Continued on next page.

10	In the following array of numbers, each row and each column forms an arithmetic sequence of numbers, with the same number being added each time across the row or down the column. What is the sum of the five numbers in the last row, indicated by the shaded squares? 

"Math Is Cool" Masters — 2023-24

4th Grade — May 18th 2024

Key

Linda Moore Triple Jump – Answer Key

4th Grade

	Answer
1	7 [= larger no]
2	400 [cm]
3	14 [numbers]
4	10 [ways]
5	64 [sq cm]
6	18 [= sum]
7	300 [= sum]
8	89 [°]
9	100 [%]
10	345 [= sum]

"Math Is Cool" Masters — 2023-24

4th Grade — May 18th 2024

Final Score *(out of 10)*

Room # _____ **School Name** _____ **Team #** _____

Linda Moore Triple Jump – 15 minutes – ~15% of team score

When you are prompted to begin, tear off the three colored answer sheets and give a copy of the test to each of your team members and begin testing. Record all answers on this colored answer sheet. This Submittal #1 will be collected after 5 minutes.

SUBMITTAL #1

STUDENTS: DO NOT WRITE IN SHADED REGIONS

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

"Math Is Cool" Masters — 2023-24

4th Grade — May 18th 2024

Final Score *(out of 10)*

Room # _____ School Name _____ Team # _____

Linda Moore Triple Jump – 15 minutes – ~15% of team score

This Submittal #2 will be collected after 10 minutes.

SUBMITTAL #2

STUDENTS: DO NOT WRITE IN SHADED REGIONS

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

"Math Is Cool" Masters — 2023-24

4th Grade — May 18th 2024

Final Score *(out of 10)*

Room # _____ **School Name** _____ **Team #** _____

Linda Moore Triple Jump – 15 minutes – ~15% of team score

This Submittal #3 will be collected after 15 minutes.

SUBMITTAL #3

STUDENTS: DO NOT WRITE IN SHADED REGIONS

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

"Math Is Cool" Masters — 2023-24

4th Grade — May 18th 2024

Room # _____ School Name _____ Team # _____

Total Score for Each Round

College Bowl #1 (10 Possible)	College Bowl #2 (10 Possible)	College Bowl #3 (10 Possible)

DO NOT USE TALLY MARKS ON THIS SHEET. WRITE THE TOTAL SCORE FOR EACH ROUND.

"Math Is Cool" Masters — 2023-24

4th Grade — May 18th 2024

Room # _____ School Name _____ Team # _____

Total Score for Each Round

College Bowl #1 (10 Possible)	College Bowl #2 (10 Possible)	College Bowl #3 (10 Possible)

DO NOT USE TALLY MARKS ON THIS SHEET. WRITE THE TOTAL SCORE FOR EACH ROUND.

"Math Is Cool" Masters — 2023-24

4th Grade — May 18th 2024

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	There are forty students in the orchestra, and one-quarter of them play the viola. How many students play the viola?	10 [students]
2	What is the largest perfect square less than one hundred?	81
3	Solve for z: three times seven equals z minus four	25 [= z]
4	What is the next number in the following sequence? Five, sixty-six, seven hundred seventy-seven, eight thousand eight hundred eighty-eight, and so on	99999
5	How many minutes are in two point two five hours?	
6	A one pound bag of frozen corn costs three dollars and twenty cents. How many cents does one ounce of the corn cost?	20 [cents]
7	A right triangle has an angle measuring sixty-two degrees. In degrees, what is the measurement of the smallest angle in the triangle?	
8	Sunnyside Elementary 5th grade students are going to watch a new movie. They ordered one large popcorn for seven dollars and forty movie tickets. They spent a total of four hundred and forty-seven dollars. In dollars, how much does one movie ticket cost?	11[$]

"Math Is Cool" Masters — 2023-24

4th Grade — May 18th 2024

Key

College Bowl Round #1

#	Problem	Answer
1	What is the product of four and twelve?	48
2	Mr. Tosch has seven kids and wants to distribute his sixty-three candies between them equally. How many pieces will each of them get?	9 [pieces]
3	What is the area in square inches of a square with side length seven inches?	49 [square inches]
4	If two x plus five equals sixty-three, what is the value of three x minus eleven?	76
5	In how many distinct ways can you rearrange the letters in the word "COOL", spelled C O O L?	12 [ways]
6	A palindrome is a whole number that reads the same forwards and backwards. How many palindromes are between thirty and fifty-eight?	3 [palindromes]
7	Charles is solving math problems at Math Is Cool. He is doing the individual test, which has forty questions. If it takes him three minutes to solve each question, how many questions will he have left to solve after thirty-three minutes have elapsed?	29 [questions]
8	Biff has fifteen apples, and then gives sixty percent of them to Eho. How many apples does Biff have left?	6 [apples]
9	Evaluate: Nine hundred seventy-five plus eight hundred sixty-four.	1839
10	How many ounces are in three pounds?	48 [ounces]

"Math Is Cool" Masters — 2023-24

4th Grade — May 18th 2024

Key

COLLEGE BOWL ROUND #2

#	Problem	Answer
1	Leo drives for two and a half hours at sixty miles per hour. How many miles total did he travel?	150 [miles]
2	What is the next number in the sequence that begins: one, four, nine, sixteen, and so on	25
3	Ben plays tennis for two hours, six days a week. How many total minutes will he play for in two weeks?	1440 [minutes]
4	If x equals eleven, what is the value of six x minus seventeen?	49
5	If Peter flips 2 fair coins, what is the probability as a percent that they both land on heads?	25 [%]
6	The area of a circle is twenty-five times pie square units, and its circumference can be written as A times pie units. What is the value of A?	10 [units]
7	It takes Jax twenty minutes to read one chapter of his novel. If his novel has forty-five chapters, and he reads one hour every day, how many days will it take him to get through the entire book?	15 [days]
8	Evaluate: seven times eight plus eleven	67
9	Round the number twenty four thousand, six hundred and seventeen to the nearest hundred.	24600
10	What is twice the sum of three and six?	18

"Math Is Cool" Masters — 2023-24

4th Grade — May 18th 2024

Key

College Bowl Round #3

#	Problem	Answer
1	What is three squared?	9
2	When rolling a fair ten-sided die, numbered one to ten, what is the probability, in percent, of rolling a three?	10 [%]
3	Jaylen has twelve marbles in a bag. Four are green, two are yellow, and the remainder are blue. How many more blue marbles are there than green marbles?	2 [marbles]
4	What is the product of the first four prime numbers?	210
5	Leon has a string measuring twenty-five centimeters, and cuts it into pieces of length fifty millimeters. How many pieces can he make without wasting any string?	5 [pieces]
6	Josie writes down the numbers from ten to twenty-two, including ten and twenty-two. How many times does she write down the digit two?	5
7	To make two gallons of lemonade, it takes twenty-four cups of water, eight cups of lemon juice, and two cups of sugar. If Mrs. Stephenson wishes to make nine gallons of lemonade, how many cups of lemon juice are needed?	36 [cups of lemon juice]
8	How many seconds are in ten minutes?	600 [seconds]
9	What is the side length in inches of an equilateral triangle that has a perimeter of eighty-seven inches?	29 [inches]
10	What is the largest three-digit whole number that is divisible by five?	995

"Math Is Cool" Masters — 2023-24

4th Grade — May 18th 2024

Key

College Bowl Round #4

#	Problem	Answer
1	What is the average of ten, twelve, eleven and seven?	10 [= average]
2	What is the next number in the sequence that begins: Twenty-six, thirty-one, thirty-six, forty-one, and so on.	46
3	Seven quarters, three dimes, five nickels, and eleven pennies equals how many total cents?	241 [cents]
4	What is the sum of all of the multiples of seven between one and forty?	105 [= sum]
5	A faucet releases five liters of water per minute in the winter, and ten liters per minute in the summer. If it takes the faucet four minutes to fill a bucket in the winter, how many minutes would it take in the summer to fill the same bucket?	2 [minutes]
6	A regular octogen and a regular hexagon have the same perimeter. If the side length of the octogen is twelve inches, what is the side length of the hexagon in inches?	16 [inches]
7	How many positive factors does the number twenty-eight have?	6 [factors]
8	On a nature walk, Rosie collected thirty-seven stones. Fifteen stones were gray, eight stones were white, and the rest of the stones were black. How many stones were black?	14 [stones]
9	Thirty-two is what percent of sixty-four?	50 [percent]
10	A biker traveled at thirty-five miles per hour for five hours. How many miles did they travel?	175 [miles]

"Math Is Cool" Masters — 2023-24

4th Grade — May 18th 2024

Key

College Bowl Round #5

#	Problem	Answer
1	What is the sum of the five smallest even whole numbers?	30
2	In inches, what is the perimeter of a regular decagon with side length thirteen inches?	130 [inches]
3	What is the probability, as a percent, that a random whole number chosen from one to ten, inclusive, is odd?	50 [%]
4	Colt tripled his favorite number, then added seven, and then halved the result. His final result was seventeen. What favorite number did he start with?	9
5	Gary, Barry, and Larry all are going on a trip, and each brought a certain amount of money. Gary brought twice as much as Barry, and Barry brought one hundred dollars less that Larry. If Larry brought three hundred dollars, how many dollars do the three of them have in total?	900 [$]
6	What number comes next in the sequence that begins as follows: One, negative three, nine, negative twenty-seven, eighty-one, and so on.	-243
7	What is the greatest common factor of twelve and eighteen?	6
8	How many yards are equivalent to six hundred eighteen feet?	206 [yards]
9	Find the value of twenty squared minus five squared.	375
10	In square units, what is the area of a right triangle with legs of length nine and forty units?	180 [sq units]

"Math Is Cool" Masters — 2023-24

4th Grade — May 18th 2024

Key

College Bowl Round #6

#	Problem	Answer
1	Not including forty, what is the largest even number that divides into forty without a remainder?	20
2	Find the sum of ten times twelve plus three times four.	132
3	What is the average of six and fourteen?	10
4	How many pints are in two gallons plus three quarts?	22 [pints]
5	A rectangle has sides of length five and ten units. One side length is decreased by three units and the other is increased by three units. What is the largest possible final area of the rectangle, in square units?	56 [sq units]
6	What is the sum of all the prime numbers between forty and fifty?	131
7	What is the range of the following set of numbers? Twenty-three, fifty-four, one, eleven, thirty-two, sixty-eight, one hundred, ninety-six	99 [= the range]
8	In degrees, what is the measurement of one of the interior angles of a rectangle?	90 [°]
9	Jay and Om are playing a dice game. Each turn they both roll a six-sided die and the player with the higher number adds the number they rolled to their score until someone's score totals twenty-one or more. If they roll the same number, they both add the number to their score. What is the least number of turns the game could take before someone wins?	4 [turns]
10	How many days are in one dozen weeks?	84 [days]

"Math Is Cool" Masters — 2023-24

4th Grade — May 18th 2024

Key

COLLEGE BOWL – EXTRA QUESTIONS

#	Problem	Answer
1	What is the sum of the next two terms in the sequence that begins as follows: one, four, seven, ten, and so on	29 [= sum]
2	What is one-third of one-half of forty-eight?	8
3	Find the value of x if two x plus one equals three x.	[x=] 1
4	What is the product of seventeen and twenty-three?	391
5	Evan has a bag that has six total Starburst candies, two pink and 4 yellow. What is the least number of Starbursts Evan would have to randomly take out to ensure he has at least 1 pink Starburst?	5 [Starbursts]
6	What is twelve thousand three hundred forty-five minus six thousand seven hundred eighty-nine?	5556
7	In cubic inches, what is the volume of a cube with a side length of eight inches?	512 [cubic inches]
8	Lily earns twelve dollars per hour and Rylan earns twice as much as Lily. How many dollars does Rylan earn in four hours?	96 [$]

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