

# “Math is Cool” Masters – 2014-15

May 16, 2015

Total Correct  
KEY

**STUDENT NAME:** \_\_\_\_\_ **School Name:** \_\_\_\_\_  
**Proctor Name:** \_\_\_\_\_ **Team #:** \_\_\_\_\_ **Room #:** \_\_\_\_\_

## 5th Grade Individual Contest – Score Sheet

	Answer	1 or 0	1 or 0
1	[\$] 1149.72		
2	113 [times]		
3	850 [tomatoes]		
4	14		
5	25 [figures]	1	1
6	5/12		
7	120 [min]		
8	1230		
9	629730		
10	38 [min]		
11	orange		
12	126		
13	4 [slices]		
14	122 [°]		
15	3 [people]		
<b>1-15 TOTAL:</b>			

## DO NOT WRITE IN SHADED REGIONS

	Answer	1 or 0	1 or 0
16	2:08 PM		
17	[\$] 14.40		
18	63		
19	131 [min]		
20	3		
21	4 $\frac{1}{4}$ [pints]		
22	300 [snowballs]		
23	[\$] 18.50		
24	9 [pencils]		
25	3 [prime factors]		
26	÷ [division]		
27	690 [min]		
28	12 [choc bars]		
29	[\$] 88		
30	7 [°F]		
<b>16-30 TOTAL:</b>			

	Answer	1 or 0	1 or 0
31	6 [months]		
32	12 [houses]		
33	40 [feet]		
34	21 [slug bugs]		
35	55 [mph]		
36	12 (or 6) [feet]		
37	340 (or 350) [miles]		
38	5 [minutes]		
39	3:53.18		
40	963531		
<b>31-40 TOTAL:</b>			

5th Grade

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Total Correct

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**Proctor Name:** \_\_\_\_\_ **Team #:** \_\_\_\_\_ **Room #:** \_\_\_\_\_

## 5th Grade Individual Contest – Score Sheet

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

### DO NOT WRITE IN SHADED REGIONS

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

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

5th Grade

# “Math is Cool” Masters – 2014-15

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May 16, 2015

5th Grade Mental Math Contest

**Follow along as your proctor reads these instructions to you. Your Mental Math score sheet is on the back.**

## **GENERAL INSTRUCTIONS applying to all tests:**

- *Good sportsmanship is expected throughout the competition by all involved. Bad sportsmanship may result in disqualification.*
- *Calculators or any other aids may not be used on any portion of this contest.*
- *Unless stated otherwise:*
  - *For problems dealing with money, a decimal answer should be given.*
  - *Express all rational, non-integer answers as reduced common fractions.*
- *For fifth and sixth grade, all fractions and ratios must be reduced.*
- *Counting or natural numbers refer to the numbers 1,2,3,4 and so on and do NOT include 0.*
- *Units are not necessary unless it is a problem that deals with time and, in that case, am or pm is needed. However, if you choose to use units, they must be correct.*
- *Leave all answers in terms of  $\pi$  where applicable.*
- *Do not round any answers unless stated otherwise.*
- *Record all answers on the colored cover sheets in the answer column only.*
- *Make sure all answer sheets have all the information filled out at the top of the 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 also be scored as a 0.*

## Mental Math – 30 sec per question

**8 problems read orally to everyone - Approximately 8% of Individual Score - 25% of team score**

*You may NOT be seated next to anyone from your school. If you are MOVE NOW to avoid being disqualified! 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/her pencil down, the maximum wait time is 30 seconds after completion of the second reading of the question before another question is asked. You may continue to work on a problem while the next question is being read. The value of each question is a one or zero. Each student will be asked the same eight questions. Individual scores used to determine individual placing will be determined by the sum of the Mental Math score and the Individual Test score for each individual. In addition, the top three Mental Math scores from one team will be totaled and doubled and will contribute to 25% of the team score.*

# “Math is Cool” Masters – 2014-15

Sponsored by:  
5th Grade – May 16, 2015  
Mental Math Contest

## Mental Math – 30 sec per question

**8 problems read orally to everyone - Approximately 8% of Individual Score - 25% of team score**

*You may NOT be seated next to anyone from your school. If you are MOVE NOW to avoid being disqualified! 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/her pencil down, the maximum wait time is 30 seconds after completion of the second reading of the question before another question is asked. You may continue to work on a problem while the next question is being read. The value of each question is a one or zero. Each student will be asked the same eight questions. Individual scores used to determine individual placing will be determined by the sum of the Mental Math score and the Individual Test score for each individual. In addition, the top three Mental Math scores from one team will be totaled and doubled and will contribute to 25% of the team score.*

#	Problem
1	Josiah ran 50 yards. How many feet did he run?
2	What is the product of 15 and 26?
3	What is three-fourths of five-eighths?
4	My garden fence creates a six feet by four feet rectangle. If I reuse all of this fencing to make a new garden in the shape of an equilateral triangle, what is the length of each side of the new garden, in feet?
5	If one percent of the 2000 students at Westside High School volunteered at the Math is Cool tournament, how many students volunteered?
6	Georgia has 75 pieces of bubble gum. If she gives 5 pieces to each of 6 friends, how many pieces of bubble gum does she have left?
7	How many positive numbers less than fifty are divisible by either 8 or 3, but not both?
8	What is the largest three-digit number with three distinct digits that are all prime numbers?

# “Math is Cool” Masters – 2014-15

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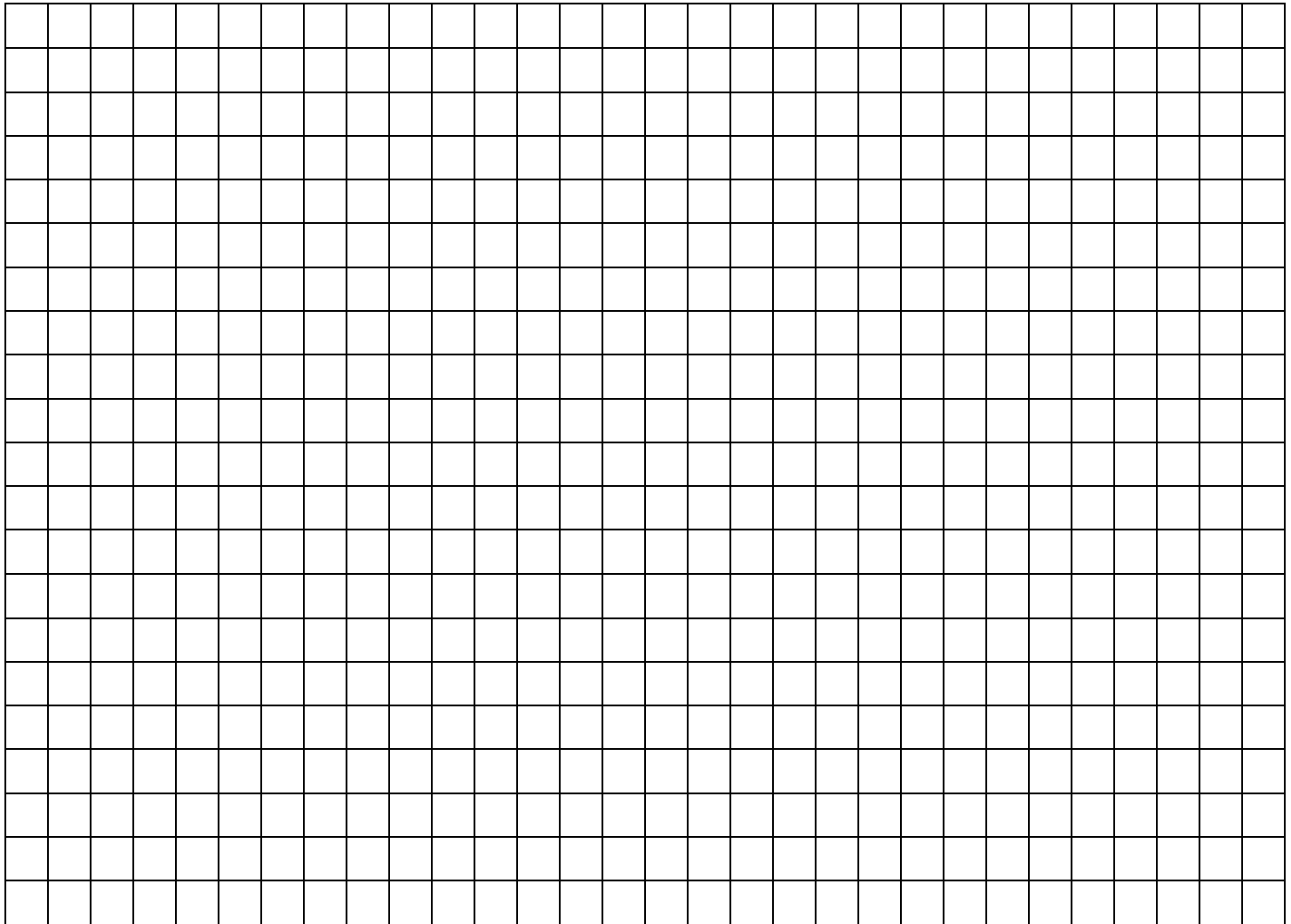
May 16, 2015

Individual Contest – 5th Grade

**Tear this cover sheet and scratch paper off and fill out the top of the colored answer sheet prior to the start of the test. The graph below is for your use, if needed.**

## **INDIVIDUAL TEST - 35 minutes**

*You may NOT be seated next to anyone from your school. If you are MOVE NOW to avoid being disqualified! 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 raw score will be 2 points for correct answers to problems 1-30 and 3 points for 31-40. Record your answers on the score sheet. No talking during the test. You will be given a 5 minute time warning.*



# “Math is Cool” Masters – 2014-15

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5th Grade – May 16, 2015  
Individual Contest

Record all answers on the colored cover sheet.

Questions 1-30: 2 points each	
1	The floor of a coffee shop in Cashmere, WA is covered with 114,972 pennies. How much is this in dollars?
2	The national fish of Hawaii is the humuhumunukunuaopua'a. How many times does this word have to be written to write the letter "u" 1017 times?
3	Emily picks tomatoes from her 50 tomato plants. If each tomato plant produces 17 tomatoes, how many tomatoes does Emily pick?
4	Solve for J in the following equation: $J + 5 = 19$
5	A geometry teacher drew some quadrilaterals on the chalkboard. There were 5 trapezoids, 12 rectangles, 5 squares, and 8 rhombuses. What is the least number of figures the teacher could have drawn?
6	Louisa has 5 fiction books and 7 nonfiction books on a table by her front door. As she rushes out the door, she takes a book at random. As a fraction, what is the probability that the book she grabs is fiction?
7	Fred can bike 6 miles in 45 minutes. How many minutes does it take him to bike 16 miles?
8	What is $7 + 77 + 777 + 3 + 33 + 333$ ?
9	Which of the following numbers is divisible by 9 with no remainder: 436918, 824617, 629730, 214979?
10	Suzy runs uphill at a speed of 10 minutes per mile and downhill at a speed of 9 minutes per mile. If Suzy runs uphill for 2 miles, and then turns around and runs back downhill for 2 miles, how many minutes was Suzy's entire run?
11	Bosco is counting boxcars on a passing train. He notices the colors of the cars create a repeating pattern: brown, orange, yellow, brown, orange, yellow, .... What color is the 125 <sup>th</sup> car that he counts?
12	What is 35 times 18 divided by 5?
13	On "PI" day, six friends ordered three pies. Each pie is cut into eight slices. If everyone gets an equal amount, how many slices of pie does each person get?
14	In a triangle, the sum of the measures of two of the angles is 58 degrees. What is the measure of the third angle, in degrees?
15	A hot water heater holds 80 gallons of water. If the dishwasher uses 6 gallons, the washing machine uses 25 gallons and a person showering uses 14 gallons, how many people can take a complete shower after the dishwasher and washing machine have been run?
16	Jack and Jill are meeting at the movie theatre for a 2:00 PM movie. Jack arrives 15 minutes early. Jill arrives 23 minutes after Jack. At what time does Jill arrive?
17	Gasoline costs \$2.10 per gallon. Melisa has a discount card that gives her a 50 cent discount per gallon. How much, in dollars, will it cost Melisa to fill her tank with 9 gallons?

	[Express answer as a decimal.]
18	What is the least common multiple of 9 and 21?
19	Piper runs a half-marathon, 13.1 miles, at a 10 minute per mile pace. How long does it take her to complete the half-marathon, in minutes?
20	What is the remainder when 54321 is divided by 6?
21	The Fibonacci math team is celebrating its win at Eho's ice cream parlor. Eho uses $\frac{1}{2}$ pint of ice cream in each milkshake and $\frac{1}{4}$ pint of ice cream in each ice cream cone. The team orders 7 cones and 5 milkshakes. As a mixed number, how many pints of ice cream did Eho have to use to serve the team?
22	Bif can make snowballs at a rate of 30 per minute. Eho can make snowballs at a rate of 40 per minute. Eho starts making snowballs 3 minutes after Bif starts. Both Bif and Eho stop making snowballs 6 minutes after Bif started. Together, how many snowballs did Bif and Eho make?
23	A grandmother gave each of her 7 granddaughters 7 quarters and each of her 5 grandsons 5 quarters. How many total dollars did the grandmother give her grandchildren? [Express answer as a decimal.]
24	Debbie has 42 pencils, Linda has 52 pencils and Dawn has 36 pencils. What is the least number of pencils Linda can give Dawn so that Dawn has more pencils than either Debbie or Linda?
25	How many prime factors does 1182 have?
26	Which arithmetic operation (+, -, x, or ÷) does the symbol @ represent in order to make the following equation true? $(8@2)^3 - (4@1)^2 = 48$
27	If sunrise is at 7:26 AM and sunset is at 6:56 PM, how many minutes of daylight are there?
28	Rudy is trading candy with a friend. 2 chocolate bars are equal to 5 caramels. 6 caramels are equal to 8 lollipops. If Rudy has 40 lollipops to trade, how many chocolate bars can he get?
29	A cheese pizza cost \$10 and a pepperoni pizza costs \$12. One pizza feeds 3 people. If the WHS Math is Cool team has 24 members and half the team eats cheese pizza and the other half eats pepperoni pizza, how much would it cost to feed the entire team, in dollars?
30	The high temperatures in Houghton, Michigan for one week of February were (2°F, 5°F, 17°F, 10°F, 0°F, 6°F, and 9°F). What was the average high temperature in degrees Fahrenheit?

## Challenge Questions: 3 points each

31	The membership fees for the gym consist of a monthly charge of \$14 and a one-time new member fee of \$16. Sam made a payment of \$100 to pay his gym fees for a certain number of months, including the new member fee. How many months of membership did Sam include in his payment?
32	Ezra has forgotten the address of his friend's house, but knows it contains the four numbers 1, 2, 3, 1. How many different houses could it be?
33	A circular running track is being built in a fenced-in athletic field 100 feet wide and 150

	feet long. If a border of 10 feet is needed between the outside edge of the track and the fence, what is the radius, in feet, of the largest track that can be built?
34	Katie and her mom are counting slug bugs. Katie has ten times as many slug bugs as her mom. After Katie and her mom each see one more slug bug, Katie has seven times as many as her mom. How many slug bugs does Katie have now?
35	The odometer of a car reads 15951, a palindrome. If the next time the odometer shows another palindrome is after 2 more hours of driving, at what speed was the car traveling for those 2 hours, in miles per hour?
36	Shia has 36 feet of fence to put around her rectangular flowerbed. How long, in feet, will the flowerbed have to be so that she has 72 square feet of area to plant flowers?
37	The Western Express and the East Coast Special both depart Chicago at the same time. The Western Express travels due west at 55 miles per hour with no stops for 10 hours. The East Coast Special travels due east at 40 miles per hour, but stops every hour for 15 minutes. How far apart, in miles, are the trains after 4 hours?
38	Carl's Clean Carpet team can clean the carpet in a room that is 10 feet by 10 feet in 20 minutes. How long, in minutes, would it take them to clean a walk-in closet that is 5 feet by 5 feet?
39	A swim medley relay is a relay race combining the times of four swimmers each swimming one of the following strokes: butterfly, breast stroke, backstroke and freestyle. If Adam swam the butterfly in 55.32 seconds, Brad swam the breast stroke in 68.20 seconds, Carl swam the backstroke in 59.65 seconds and Dave swam the freestyle in 50.01 seconds, what was the total time of the medley relay team? [Answer in M:SS.DD format where M is minutes, SS is seconds and DD is hundredths of seconds.]
40	When Vlad was a boy in Russia, he used to ride the bus and play a game with the bus tickets that were numbered with 6 digit numbers, from 000001 to 999999. A bus ticket was considered to have a "lucky" number if the sum of the first 3 digits was equal to the sum of the last 3 digits. Find the difference between the largest possible lucky number with six different digits (that is, no number is used twice in the six digit number) and the smallest possible lucky number with six different digits.



# “Math is Cool” Masters – 2014-15

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5th Grade – May 16, 2015

Team Multiple Choice Contest

USE THE FOLLOWING TABLES TO ANSWER QUESTIONS 1-3.

## Movie Theatre Ticket Prices

	Evening ( after 6pm)	Matinee (before 6 pm)
Adult Admission	\$11.00	\$8.50
Child Admission (ages 3 - 12)	\$ 8.00	\$8.00

## Movie Theatre Show Times

	Show Times						
Insurgent	12:55 PM	3:30PM	6:10PM	8:50PM			
Cinderella	12:15PM	1:15PM	3:45PM	4:45PM	6:15PM	8:45PM	
Home	1:00PM	2:45PM	3:10PM	5:20PM	7:15PM	7:30PM	9:40PM

## Snack Prices

	Small	Medium	Large
Popcorn	\$3.75	\$5.00	\$7.50
Soda	\$2.50	\$3.50	\$4.00

**1** The Leyva-Sanchez family is going to see the movie Insurgent. The family has two parents and four kids: Melisa, age 17, Isabela, age 14, Maria, age 12, and Antonia, age 5. They decide to view the 3:30 PM show. How much will it cost to purchase movie tickets for the whole family?

A) \$50.00    B) \$60.00    C) \$48.50    D) \$49.00    E) Answer not given.

**2** After purchasing their tickets, the family has \$20.00 leftover for popcorn and snacks. If the family buys one large popcorn, what is the most number of sodas they can buy?

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

**3** Maria and Antonia decide they would rather go to the 3:45 PM showing of Cinderella. Each movie has 5 minutes of previews beginning at the posted show time before the movie starts. Cinderella has a run time of 105 minutes and Insurgent has a run time of 119 minutes. How many minutes will the rest of the family have to wait for Maria and Antonia, after Insurgent ends?

A) 0 minutes    B) 5 minutes    C) 14 minutes    D) 15 minutes    E) Answer not given.

**USE THE FOLLOWING FOR ANSWERING QUESTIONS 4-6.**

Emily and her friends are participating in a fitness and skill competition consisting of 5 events. Participants are awarded medals based on their results across all events. A participant is eligible for a medal based on the level reached of the lowest qualifying event. For example, a participant meeting the standards for Gold in 4 events and Silver in one event would be eligible for a Silver medal. If a participant does not meet the scoring standard in any one event, the participant is not eligible for any medal.

**Event scoring standards**

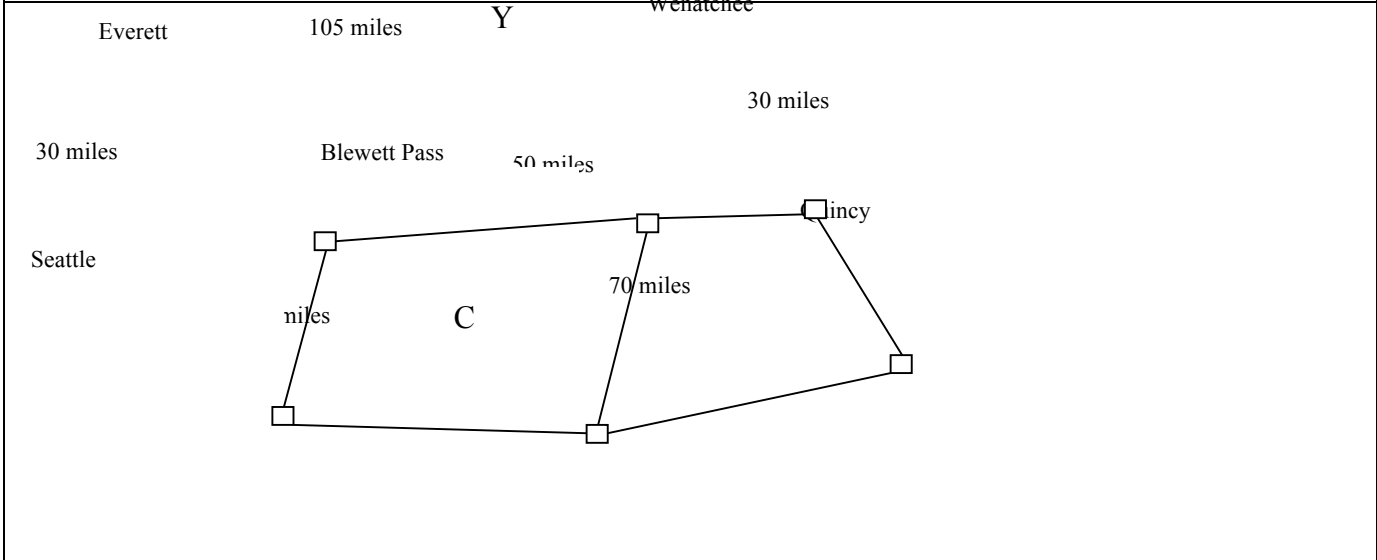
Level	11 x 10m sprint	Flexed arm hang	Target shooting	1000 m run	100 m swim
Gold	35 - 42 sec	65 - 86 sec	5 hits	2:50 - 3:45 min	Under 4 min
Silver	43 - 48 sec	45 - 64 sec	4 hits	3:46 - 4:40 min	Under 4 min
Bronze	49 - 60 sec	05 - 44 sec	3 hits	4:41 - 6:30 min	Under 4 min

**Participant Results**

Participant	11 x 10 m sprint	Flexed arm hang	Target shooting	1000 m run	100 m swim	Medal earned
Emily	40 sec	80 sec	3	3:32	3:24	?
Percy	41	82	5	?	3:12	Silver
Frederick	37	?	5	3:15	3:10	Gold
Sara	45	44 sec	4	4:41	4:12	?

<b>4</b>	<p>What color medal did Emily receive?</p> <p>A) Gold      B) Silver      C) Bronze      D) No medal received      E) Answer not given.</p>
<b>5</b>	<p>What time could Percy not have received in the 1000 m run?</p> <p>A) 3:47      B) 3:42      C) 3:59      D) 4:40      E) Answer not given.</p>
<b>6</b>	<p>If the average time for all four participants in the flexed arm hang was 72 sec, what was Frederick's time in the flexed arm hang?</p> <p>A) 82 sec      B) 80 sec      C) 72 sec      D) 44 sec      E) Answer not given.</p>

**USE THE MAP FOR ANSWERING QUESTIONS 7-10.**



7	<p>What is the shortest distance, in miles, from Wenatchee to Seattle?</p> <p>A) 150 miles B) 155 miles C) 160 miles D) 180 miles E) Answer not given.</p>
8	<p>Jane is driving from Wenatchee to Seattle over Blewett Pass (Blewett Pass is on the road from Y to C). The peak of Blewett Pass is located 40 miles from Wenatchee. If Jane takes a break at the peak, what fraction of the distance does she still have to travel?</p> <p>A) 4/15 B) 2/15 C) 3/5 D) 11/15 E) Answer not given.</p>
9	<p>Instead of driving, Samantha decides to travel by Amtrak, which arrives in Seattle at 10:25 AM. If Jane drives her car to Seattle at an average speed of 60 mph, what is the latest time does she can leave Wenatchee to arrive in Seattle at the same time as Samantha?</p> <p>A) 6:25 AM B) 7:25 AM C) 7:55 AM D) 7:52 AM E) Answer not given.</p>
10	<p>Jane's car gets 30 miles per gallon and has a 10 gallon gas tank. Jane begins her journey with her gas tank half full. After traveling 105 miles, Jane stops to fill her gas tank full. If gas costs \$3.00 per gallon, and Jane pays with a \$50 bill, how much change will she receive?</p> <p>A) \$47.00 B) \$20.00 C) \$25.50 D) \$24.50 E) Answer not given.</p>

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5th Grade – May 16, 2015

Team Contest

1	The math club was selling T shirts at a recent competition. Tie dye shirts sold for \$20 and solid color shirts sold for \$10. The team collected \$250 for all the T shirts sold. If only three of the T shirts sold were tie dye, what was the total number of T shirts the math club sold?
2	Sophia lives in a dorm where all the residents are bearcats. There are 8 rooms on each floor and there are 5 floors in the building starting with the first floor. There are 3 bearcats in a room on an odd floor and only 2 bearcats in a room on an even floor. How many bearcats live in the building?
3	30% of the tiles are loose in Rosa's kitchen floor. If the floor is a rectangle 25 tiles in length and 16 tiles in width, how many tiles are loose?
4	Chef Emil made a pan of lasagna for a banquet. He makes 10 cuts along the length of the rectangular pan and 6 cuts along the width. How many pieces does he have?
5	Biff's bicycle shop contains 3 tricycles and a combination of 38 unicycles and bicycles. If Eho counts 64 wheels in Biff's shop, how many unicycles are in Biff's shop?
6	Esme has forgotten her 4 digit numerical passcode to her iPad. Fortunately she does remember a few characteristics of her passcode: a) Her passcode is odd b) Her passcode has four unique digits c) Odd and even digits alternate d) The first two digits form a number that is the square of the last digit e) The first digit is the third digit cubed What is her passcode?
7	Franz has 500 Swiss francs, Juergen has 500 euros, and Alfred has 500 dollars. If 1 dollar equals 0.88 euros, and 1 euro equals 1.08 Swiss francs, who has the largest amount of money?
8	Sam thought of a number. He squared it and then doubled it. Then he added one to his original number and squared it and found that this number was only one more than his first calculation. What was Sam's original number?
9	Bonnie is dealt six cards from a standard deck. Two of the cards are hearts and four of the cards are clubs. What is the probability that the next card she is dealt will be a club?
10	In football, a touchdown is worth 6 points and a field goal is worth 3 points. In addition, <b>after</b> scoring a touchdown, a team has the option of kicking an extra point for 1 point or attempting a 2 point conversion. If the Seahawks scored 28 points in one game, how many different ways could they have done this? Do not consider order of touchdowns and field goals.

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5th Grade – May 16, 2015

## Relay Contest

**RELAYS** - 5 minutes per relay – 15% of team score

*There is no talking during this event and you must always be facing forward. Person #1 will be given an answer sheet(s) and will need to fill out the top. The proctor will hand out a strip of paper to each person. These need to be face down on your desk until it is time for the relay to start. Once the relay begins, everyone may turn over their strip of paper and begin working. You may write on the strip of paper to come up with your answer. However, when person #1 figures out his/her problem, he/she will record **just his/her final answer** on the answer sheet and pass only the answer sheet back to the person behind. This continues until person #4 puts an answer on the answer sheet and gives it to the proctor. A correct answer from person #1, #2 and #3 is worth 1 point each. A correct answer from person #4 is worth 2 points making each relay worth 5 points. You will see the expression **TNYWG** [Proctor: write this on the board] which means: “the number you will get”. This is where you put your teammate’s answer that they pass back to you, and then you should be able to solve your question. Once the relay begins, turn over your strip of paper and **make sure you have the right person number**. Remember, no talking and remain facing forward to avoid being disqualified!*

	<b>Relay #1</b>	<b>Answer</b>
Person 1	Shelly bought 48 ounces of sugar. How many pounds of sugar did she buy?	3 [pounds]
Person 2	Marlene has 2 quarters, 14 dimes, 9 nickels and 15 pennies. If she can only have more nickels, how many nickels does she need to have TNYWG dollars?	10 [nickels]
Person 3	What is the product of TNYWG and the sum of the numerator and denominator of the reduced fraction $\frac{14}{21}$ ?	50
Person 4	Tom has TNYWG toy cars. Six cars are blue 14 cars are yellow and twice as many cars are red than are green. How many green cars does he have?	10 [green cars]
	<b>Relay #2</b>	<b>Answer</b>
Person 1	Five cows and 3 chickens crossed the road. How many feet made it to the other side of the road?	26 [feet]
Person 2	When the sum of 326 and 210 is divided by the TNYWG, what is the remainder?	16
Person 3	Mrs. Generous is buying each of the students in her school a box of chocolates with TNYWG pieces of chocolate in each. Each of the 5 classrooms have 12 students in them. How many pieces of chocolate in total will she buy for the students at her school?	960 [pieces of chocolate]
Person 4	Bill bought five pumpkins with an average weight of five 4 pounds and two pumpkins that weighed 29 pounds together. What is the positive difference between TNYWG and the average of all the pumpkins that Bill bought?	953

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5th Grade – May 16, 2015

## COLLEGE KNOWLEDGE BOWL ROUND #1 - SET 1

#	Problem	Answer
1	What is the positive difference between one thousand two hundred thirty-four and eight hundred seventy-six?	358
2	What is two raised to the sixth power.	64
3	When my secret number is tripled, then cut in half, the final result is four hundred fifty. What is my secret number?	300
4	How many multiples of 7 are between 0 and 100?	14
5	What is the mean of the data set eleven, [PAUSE] thirty, [PAUSE] seven?	16
6	What is the sum of the prime numbers between twenty-five and thirty-five?	60
7	What is the tenth term of an arithmetic sequence that begins four, eleven, eighteen, twenty-five, and so on?	67
8	A single marble is drawn from a bag containing two red, three white, and seven blue marbles. As a reduced fraction, what is the probability that the marble is not white?	$\frac{3}{4}$
9	How many diagonals can be drawn in a regular octagon?	20 [diagonals]
10	If Anne is taller than Ben, Carl is shorter than Donaji, Eve is between Carl and Frank in height, Ben is taller than Donaji, and Carl is taller than Frank, who is the shortest in this group.	Frank

# "Math is Cool" Masters – 2014-15

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5th Grade – May 16, 2015

## COLLEGE KNOWLEDGE BOWL ROUND #2 – SET 2

#	Problem	Answer
1	As a decimal, what is the sum of thirty-four, three-point-four, point-four-three, and four-point-three-four?	42.17
2	What is nine-squared minus seven-squared?	32
3	If two-X plus three equals four-X minus five, what is the value of X?	4
4	Two circles and two lines are drawn in a plane. What is the largest number of regions into which they can divide the plane?	14
5	What is the perimeter, in meters, of an equilateral triangle with sides measuring 39 m?	117 [m]
6	What is two times three-squared plus two times three plus two?	26
7	What is the seventh term of a geometric sequence that begins three, six, twelve, twenty-four, and so on?	192
8	A single card is drawn from a standard fifty-two-card deck. Expressed as a reduced fraction, what is the probability that it is red or a four (or both)?	7/13
9	What is the mode of the data set one, [PAUSE] three, [PAUSE] eight, [PAUSE] five, [PAUSE] one, [PAUSE] eight, [PAUSE] four, [PAUSE] eight, [PAUSE] six, [PAUSE] two?	8
10	Amy sits by Brad, Cindy sits somewhere to Delia's right, [PAUSE] Ernie sits somewhere to Frannie's left, [PAUSE] Brad sits somewhere to Ernie's right, [PAUSE] Frannie sits immediately to Cindy's left, [PAUSE] and Ernie does not sit by Delia. Who sits on the left and who is on the right of the table?	Ernie (left), Cindy (right)

# “Math is Cool” Masters – 2014-15

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5th Grade – May 16, 2015

## COLLEGE KNOWLEDGE BOWL ROUND #3 – SET 3

#	Problem	Answer
1	What is the product of three hundred twelve and seventy-nine?	24,648
2	What is the sum of the number of sides on a parallelogram, the number of inches in a foot, and the number of days in December?	47
3	It takes Xavier two hours to make a widget, and it takes Wylie three hours to make a widget, how many <b>minutes</b> would it take them to make a widget if they worked together?	72 [min]
4	What is the perimeter, in meters, of an isosceles triangle with sides measuring nine meters and twenty-seven meters?	63 [meters]
5	What is the measure, in degrees, of an angle that is complementary to an angle measuring nineteen degrees?	71 [degrees]
6	What is the remainder when 387 is divided by 23?	19
7	What is the next term in the sequence one hundred, [PAUSE] eighty-nine, [PAUSE] seventy-seven, [PAUSE] sixty-four, [PAUSE] fifty, [PAUSE] BLANK?	35
8	When two fair coins are flipped, what is the probability that they both show tails?	1/4
9	What is the median of the data set six, [PAUSE] nine, [PAUSE] three, [PAUSE] two, [PAUSE] two, [PAUSE] seven, [PAUSE] two?	3
10	A cube of green plastic is painted white, then cut into sixty-four smaller cubes. How many of the smaller cubes are white on exactly one side?	24 [cubes]



# "Math is Cool" Masters – 2014-15

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## COLLEGE KNOWLEDGE BOWL ROUND #4 – SET 4

#	Problem	Answer
1	What is the quotient when one thousand three hundred sixty-three is divided by twenty-nine?	47
2	Arrange the variables A, B, C and D in ascending numerical order if A is the sum of eighty-four and fourteen, B is the difference of eighty-four and fourteen, C is the product of eight and fourteen, and D is the quotient of eighty-four and fourteen.	DBAC
3	If four chickens can lay nine eggs in six days, how many days would it take six chickens to lay sixty-three eggs?	28 [days]
4	A rectangle has a perimeter of sixty meters and an area of two hundred sixteen square meters. If all sides are integers when measured in meters, how many meters long is the longest side?	18 [m]
5	What is the circumference, in meters, of a circle with an area measuring eighty-one PI (pronounced "pie") square meters?	18 PI [meters]
6	How many counting numbers are factors of seventy-two?	12 [numbers]
7	What is the sum of the eight smallest positive even numbers?	72
8	When two fair six-sided dice are rolled, what is the probability that they show different numbers on their top faces?	$\frac{5}{6}$
9	What is the range of the data set five, [PAUSE] eleven, [PAUSE] nineteen, [PAUSE] eleven, [PAUSE] thirty, [PAUSE] fourteen, [PAUSE] eleven, [PAUSE] fourteen, [PAUSE] six?	25
10	Lucy and Gru notice one another when they are nine hundred meters apart, and immediately begin running towards one another. If Lucy runs at eleven meters per second and Gru runs at seven meters per second, how many seconds will it take them to reach one another?	50 [seconds]

# “Math is Cool” Masters – 2014-15

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## COLLEGE KNOWLEDGE BOWL ROUND #5 – SET 5

#	Problem	Answer
1	What number is three times the difference between ninety-one and sixty-two?	87
2	As a reduced fraction, what is five sixths of nine tenths?	$\frac{3}{4}$
3	Grace has 6 apples and cuts each of them into 8 equal pieces. She eats 6 pieces and gives 7 pieces away to Rigel. If she could stick the remaining pieces back together again, how many whole apples could she make?	4 [whole apples]
4	What is the largest possible area, in square meters, of a parallelogram with a perimeter measuring thirty-six meters?	$81 \text{ m}^2$
5	The vertices of a regular polygon are labeled with letters in clockwise and alphabetical order from A to N. A line is drawn through vertex K that divides the polygon into two congruent halves. What is the letter of the other vertex that the line passes through?	D
6	How many factors of one hundred twenty are multiples of four?	8
7	When you survey everyone in a room, fourteen like video games and nineteen like television. If twenty-seven like neither and twelve like both, how many people are in the room?	48 [people]
8	A number changer box changes any number X into ninety minus four-X. If the number 8 is put into the box, what number comes out?	58
9	The sum of two numbers is ninety-eight, and their difference is four. What is the smaller of the two numbers?	47
10	If nine horses can be exchanged for fifteen ponies, how many horses could you get for one hundred ponies?	60 [horses]

# “Math is Cool” Masters – 2014-15

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## COLLEGE KNOWLEDGE BOWL ROUND #6 – SET 6

#	Problem	Answer
1	As a mixed number, what is the quotient of four-and-one-sixth and two-and-a-half?	$1\frac{2}{3}$
2	Express one thousand two hundred in scientific notation.	$1.2 \times 10^3$ , or one point two times ten to the third.
3	If, on Jupiter, there are 7 months in a year, then how many years is 53 months?	$7\frac{4}{7}$ [years]
4	What is the area, in square meters, of a circle circumscribed about a square with sides measuring four meters?	$8\pi$ [m <sup>2</sup> ]
5	What is the measure, in degrees, of an interior angle of a regular polygon with ten sides?	144 [degrees]
6	What is the sum of the distinct prime numbers in the prime factorization of four hundred fifty?	10
7	What is the range of the following set of numbers: 6, 2, 1, 5, -3, 4, and 0?	9
8	Evaluate five-Y-times-the-quantity-four-Y-plus-three if Y equals two.	110
9	What is the volume, in cubic meters, of a right rectangular pyramid whose base measures four meters by six meters, and whose height is two meters?	$16$ [m <sup>3</sup> ]
10	What is the measure of the smaller angle between the minute and hour hands on a twelve-hour analog clock at 9:10 PM?	145 [degrees]

# “Math is Cool” Masters – 2014-15

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## COLLEGE KNOWLEDGE BOWL ROUND – EXTRA

#	Problem	Answer
1	What is the largest prime factor of one-hundred two?	17
2	What is the tens digit of the product of the first ten counting numbers?	0
3	A cake recipe calls for three eggs, two and a half cups of flour, and two-thirds cups of sugar, but Emma wants to make a cake one-third the size of the full recipe. As a common fraction, how many cups of flour should Emma use?	$\frac{5}{6}$ [cup(s)]
4	What is ten less than the largest three-digit counting number plus ten more than the largest two-digit counting number?	1098
5	A trapezoid of height 5 units has bases with lengths of 12 and 14 units. What is the area of this trapezoid, in square units?	65 [sq un]
6	The sum of two consecutive odd numbers is 84. What is the larger of the two numbers?	43
7	How many cups are in three-quarters of a gallon?	12 [cups]

Extra

Final Score:

**KEY**

(Out of 8)

# "Math is Cool" Masters -- 2014-15

Student Name \_\_\_\_\_

Team # \_\_\_\_\_

School Name \_\_\_\_\_ Proctor Name \_\_\_\_\_ Room # \_\_\_\_\_

5th Grade

## Mental Math – 30 sec per question

**8 problems read orally to everyone - Approximately 8% of Individual Score - 25% of team score**

*You may NOT be seated next to anyone from your school. If you are MOVE NOW to avoid being disqualified! 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/her pencil down, the maximum wait time is 30 seconds after completion of the second reading of the question before another question is asked. You may continue to work on a problem while the next question is being read. The value of each question is a one or zero. Each student will be asked the same eight questions. Individual scores used to determine individual placing will be determined by the sum of the Mental Math score and the Individual Test score for each individual. In addition, the top three Mental Math scores from one team will be totaled and doubled and will contribute to 25% of the team score.*

	<b>Answer</b>	<b>1 or 0</b>	<b>1 or 0</b>
<b>1</b>	150 [feet]		
<b>2</b>	390		
<b>3</b>	15/32		
<b>4</b>	20/3 [feet]		
<b>5</b>	20 [students]		
<b>6</b>	45 [pieces]		
<b>7</b>	18 [numbers]		
<b>8</b>	753		

# "Math is Cool" Masters – 2014-15

5th Grade – May 16, 2015

Final Score:

**KEY**

First Score

(out of 20)

School Name \_\_\_\_\_ Team # \_\_\_\_\_

Proctor Name \_\_\_\_\_ Room # \_\_\_\_\_

## 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 2 points for a correct letter response, 0 points for leaving it blank and -1 point for an incorrect response. When you are prompted to begin, tear off the colored sheet, pass out a copy of the test to each team member, and begin testing. **Since this is a multiple choice test, ONLY a letter response should be listed as an answer on the answer sheet.***

**Correct responses are worth 2 points, incorrect responses are worth -1 point and no response is 0 points.**

### DO NOT WRITE IN SHADED REGIONS

	Answer	-1, 0 or 2	-1, 0 or 2
1	A		
2	B		
3	E [1 minute]		
4	C		
5	B		
6	A		
7	A		
8	D		
9	C		
10	D		

# "Math is Cool" Masters – 2014-15

5th Grade – May 16, 2015

Final Score:

# KEY

First Score

(out of 10)

School Name \_\_\_\_\_ Team # \_\_\_\_\_

Proctor Name \_\_\_\_\_ Room # \_\_\_\_\_

## Team Contest – Score Sheet – 15 minutes – 30% of team score

*When you are prompted to begin, tear off the colored 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 the colored answer sheet.*

### DO NOT WRITE IN SHADED REGIONS

	Answer	1 or 0	1 or 0
1	22 [Tshirts]		
2	104 [bearcats]		
3	120 [tiles]		
4	77 [pieces]		
5	21 [unicycles]		
6	8129		
7	Juergen		
8	2 (or 0) [or both]		
9	9/46		
10	10 [ways]		

# “Math is Cool” Masters -- 2014-15

5th Grade – May 16, 2015

**KEY**

## RELAY # 1

Answer for person # 1	Answer for person # 2	Answer for person # 3	Answer for person # 4
<b>3 [pounds]</b>	<b>10 [nickels]</b>	<b>50</b>	<b>10 [green cars]</b>
1 or 0	1 or 0	1 or 0	2 or 0

## RELAY # 2

Answer for person # 1	Answer for person # 2	Answer for person # 3	Answer for person # 4
<b>26 [feet]</b>	<b>16</b>	<b>960 [pieces]</b>	<b>953</b>
1 or 0	1 or 0	1 or 0	2 or 0



Final Score:

(Out of 8)

# “Math is Cool” Masters -- 2014-15

Student Name \_\_\_\_\_

Team # \_\_\_\_\_

School Name \_\_\_\_\_ Proctor Name \_\_\_\_\_ Room # \_\_\_\_\_

5th Grade

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	<b>Answer</b>	<b>1 or 0</b>	<b>1 or 0</b>
<b>1</b>			
<b>2</b>			
<b>3</b>			
<b>4</b>			
<b>5</b>			
<b>6</b>			
<b>7</b>			
<b>8</b>			

# "Math is Cool" Masters – 2014-15

5th Grade – May 16, 2015

Final Score:

First Score

(out of 20)

School Name \_\_\_\_\_ Team # \_\_\_\_\_

Proctor Name \_\_\_\_\_ Room # \_\_\_\_\_

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**DO NOT WRITE IN SHADED REGIONS**

	Answer	-1, 0 or 2	-1, 0 or 2
1			
2			
3			
4			
5			
6			
7			
8			
9			
10			

# “Math is Cool” Masters – 2014-15

5th Grade – May 16, 2015

Final Score:

First Score

(out of 10)

School Name \_\_\_\_\_ Team # \_\_\_\_\_

Proctor Name \_\_\_\_\_ Room # \_\_\_\_\_

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	Answer	1 or 0	1 or 0
1			
2			
3			
4			
5			
6			
7			
8			
9			
10			