

"Math is Cool" Masters - 2005-06

Sponsored by:

6th Grade - May 20, 2006

Individual Contest

GENERAL INSTRUCTIONS

*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. On all tests, except multiple choice, express all rational, non-integer answers as reduced common fractions unless stated otherwise or it is a problem dealing with money and in that case, a decimal answer should be given. For fifth and sixth grade, all fractions and ratios must be reduced. 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 π 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.***

INDIVIDUAL TEST - 35 minutes

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. Each problem is scored as a 1 or 0. Express all rational, non-integer answers as common fractions unless stated otherwise or it is a problem dealing with money and in that case, a decimal answer should be given. For fifth & sixth grade, make sure all fractions and ratios are reduced. Units are not needed except on questions that deal with time and, in that case, a.m. or p.m. is needed. If you choose to use units, you must use them correctly. Record your answers on the score sheet. No talking during the test. You will be given a 5 minute warning.

Record all answers on the colored cover sheet.

| | |
|---|--|
| 1 | If one clown can hold 4 balloons, how many clowns does it take to hold 32 balloons? |
| 2 | Diesel costs \$3.29 a gallon. How much, in dollars, will it cost to fill a diesel tank that holds 33 gallons? [Express answer as a decimal.] |
| 3 | Evaluate: $5(3 + 5) - 6$ |
| 4 | Write the following mixed number as a reduced fraction: $3\frac{5}{8}$ |
| 5 | It takes the sound of thunder five seconds to travel a mile. How far away, in miles, is the thunder if it takes the sound 55 seconds to reach you? |
| 6 | Compare the following pairs of numbers using $<$, $=$ or $>$. $5/6$ <input type="text"/> $7/8$ |

| | |
|----|--|
| 7 | Yes or No? Is a triangle with sides of length 6, 8, and 10 a right triangle? |
| 8 | Marcy went to the pet store and bought a rabbit and a goldfish, she spent \$24.00. The rabbit cost twice as much as the goldfish, how much, in dollars, did she pay for the rabbit? [Express answer as a decimal.] |
| 9 | Joe wants to buy the largest number of pieces of candy as possible. One type of candy sells for 18¢ for 5 pieces and another type sells for 13¢ for 4 pieces. What is the largest number of pieces of candy he can buy for 77¢ if the candy must be bought in those increments? |
| 10 | Joe has been making \$2500 a month. He received a 4% pay raise. How much, in dollars, is he now making each month? [Express answer as a decimal.] |
| 11 | On the first day Eho walked for 3 hours 32 minutes. On the second day he walked for 6 hours 55 minutes and on the last day he walked for 2 hours and 48 minutes. How many total hours did he walk? [Express answer as a mixed number.] |
| 12 | Joe has a garden that was 30 feet by 40 feet. He put a sidewalk around the garden that was 3 feet wide. What is the outside perimeter of the sidewalk, in feet? |
| 13 | For every 100 families with TV sets, 12 families like watching sports. In a town of 23,400 families who all have TV sets, how many families would like watching sports? |
| 14 | At the end of a board game, Al had \$57 of game dollars. During the game he had won \$200, lost \$150, won \$25, lost \$10, and lost \$35. How much money did Al have at the start, in dollars? [Express answer as a decimal.] |
| 15 | If a notebook holds 70 pages, how many pages would eight and one-half notebooks hold? |
| 16 | How many lines of symmetry does a square have? |
| 17 | Bessie is one year younger than her husband Hank. The product of their ages is 650. How old is Bessie, in years? |
| 18 | A school charges \$7.00 for adult tickets and \$4.00 for student tickets to a school play. The cost of the production of the play was \$800. The drama club made \$1140 after the cost of the production was deducted. How many student tickets were sold if 410 tickets were sold in all? |
| 19 | Biff and Eho were tossing fair coins. Biff tossed his fair coin 23 times while Eho tossed his fair coin 22 times. What is the probability that Biff gets more heads than Eho? |
| 20 | The ratio of boys to girls on the Mt. Spokane Math Team was 2:3. Four boys joined the team and the ratio changed to 4:5. How many boys are now on the Mt. |

| | |
|----|--|
| | Spokane Math Team? |
| 21 | A clothing store is selling shirts for \$20.00. They decided to raise the price of the shirt by 20%. A few days later they decided to raise the price another 20%. What is the new price of the shirt, in dollars? [Express answer as a decimal.] |
| 22 | Annie bought a calculator for \$121.17. She paid \$125.00. The store was out of dollar bills and all they had was quarters, dimes, nickels and pennies. What is the smallest number of coins she could receive as change? |
| 23 | Mara bought some flowers to plant in her garden. When she separated the plants into groups of three, she had one plant left over. When she separated the plants into groups of five, she had one plant left over. When she separated the plants into groups of eight, she had none left over. What is the smallest number of plants that Mara could have bought? |
| 24 | Patrick, Tony and Neil live in a row of three houses on the same street. Walking past their houses, they pass a white house first, then a green house, then a blue house. Patrick lives next door to the green house. Tony does not live next door to his friend who lives in the blue house. Who lives in the blue house? |
| 25 | Two numbers have a sum of 9 and a product of 20. What is the smallest of these two numbers? |
| 26 | A 6-inch diameter pizza costs \$8.00 while a 12-inch diameter pizza costs \$16.00. Which pizza is the better deal? If you feel the 6-inch diameter pizza is the better deal write down 6 as your answer. If you feel the 12-inch diameter pizza is the best deal write down 12 as your answer. If you feel neither is a better deal (they are the same value), write down neither. |
| 27 | Fred and Ed went on a three day hike. Each day they hiked 10 miles. The first day it took them 3 hours of hiking to travel 10 miles. The next day it took 5 hours. If the average rate of speed for the entire trip was 2.5 miles per hour, how many hours did it take them to hike the 10 miles on the third day? |
| 28 | How many numbers between 10 and 50 (inclusive) are divisible by 2, 3 or 5? |
| 29 | A bag contains red, green and blue marbles. Joe is told 60% of the marbles are blue and that the bag contains 23 red marbles and 33 green marbles. How many blue marbles are in the bag? |

Challenge Questions

| | |
|----|---|
| 30 | Of the 64 proctors volunteering today, all are on the Mt. Spokane Math Team. 36 are taking AP Calculus, 18 are taking AP Biology, 16 are taking AP English, 4 are taking AP Biology and AP Calculus, 7 are taking AP Biology and AP English and 5 are taking AP Calculus and AP English. Seven are not taking any AP courses. How many are taking all |
|----|---|

| | three courses AP Biology, AP Calculus and AP English at the same time? | | | | | | | | | | | | |
|-------|--|-------|-------|-------|------|----|----|-----|----|----|-------|----|---|
| 31 | A 200 acre wheat field averaged 40 bushels per acre. A 150 acre wheat field averaged 60 bushels per acre. What was the overall average, bushels per acre, on the 350 acres? [Express answer as a decimal to the nearest whole number.] | | | | | | | | | | | | |
| 32 | Let A = the area of a trapezoid with a height of 6 and one base length of 8 and another base length of 5. Let B = the area of a rectangle with diagonal of length 13 and a side length of 5. Find A + B. | | | | | | | | | | | | |
| 33 | In a river with a steady current, it takes a frog 20 minutes to swim a certain distance upstream, but it takes her only 10 minutes to swim back. How many minutes would it take a stick to float this same distance downstream? | | | | | | | | | | | | |
| 34 | Each of my 4 cards is one color on one side and a different color on the other side in the following combinations: red/green, green/purple, purple/orange, and orange/blue. I lay 3 of the cards out on the table and hide the 4 th card. The cards on the table are showing the colors orange, purple, and blue. Name the 2 colors on the card I hid. | | | | | | | | | | | | |
| 35 | An open cubical box with inside dimensions 5 inches on each edge is just filled with cubes 1 inch on each edge. How many of the 1-inch cubes are not touching the sides or the bottom of the box? | | | | | | | | | | | | |
| 36 | For this problem, the symbol \S between two numbers, x and y , is defined as follows: $x \S y = (x + y) \div 2$. As in ordinary arithmetic, do operations within parentheses before operations outside parentheses. Find $(11 \S (8 \S 2)) \S 22$. | | | | | | | | | | | | |
| 37 | A goat was born in the year x^2 and died on her 84 th birthday in the year $(x+2)^2$. What year was the goat born? | | | | | | | | | | | | |
| 38 | <p>Animals on the Hochstatter Farm:</p> <table border="1" style="margin-left: 40px;"> <thead> <tr> <th></th> <th>BROWN</th> <th>BLACK</th> </tr> </thead> <tbody> <tr> <th>Goat</th> <td>18</td> <td>12</td> </tr> <tr> <th>Cow</th> <td>30</td> <td>20</td> </tr> <tr> <th>Horse</th> <td>12</td> <td>8</td> </tr> </tbody> </table> <p>Question A: Given that an animal is black on the Hochstatter farm, what is the probability the animal is a cow?</p> <p>Question B: What is the probability that an animal picked at random on the Hochstatter farm is a horse?</p> <p>Question C: What is the probability that an animal on the Hochstatter farm is a brown goat?</p> <p style="text-align: center;">What is A + B + C?</p> | | BROWN | BLACK | Goat | 18 | 12 | Cow | 30 | 20 | Horse | 12 | 8 |
| | BROWN | BLACK | | | | | | | | | | | |
| Goat | 18 | 12 | | | | | | | | | | | |
| Cow | 30 | 20 | | | | | | | | | | | |
| Horse | 12 | 8 | | | | | | | | | | | |
| 39 | At a grade school, only two students have the same (two letter) initials. What is the largest number of students that could possibly attend this school with different names? | | | | | | | | | | | | |
| 40 | The GCF of two numbers is 1742. Both numbers are even and neither is divisible by the other. What is the sum of the smallest that these numbers could be? | | | | | | | | | | | | |

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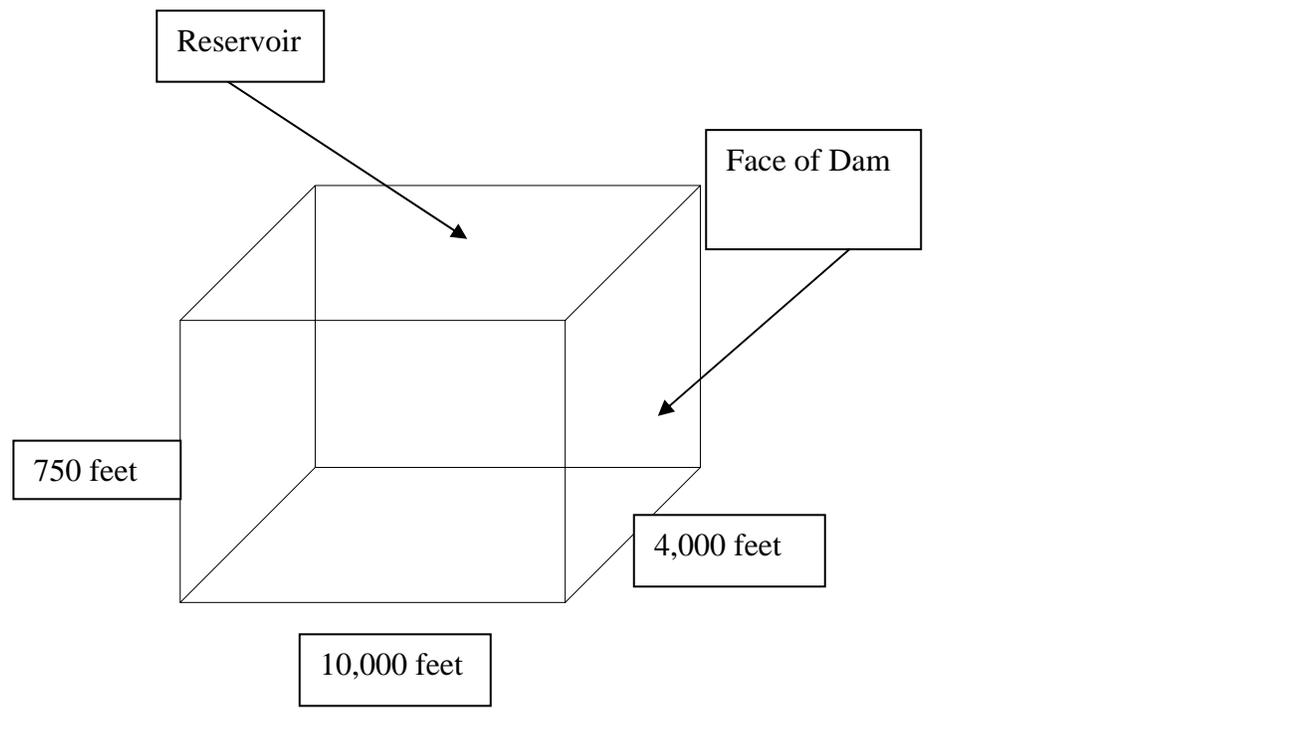
6th Grade - May 20, 2006

Team Multiple Choice Contest

TEAM MULTIPLE CHOICE - 15 minutes

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.

Water flows into the reservoir at 5,000 cubic feet per minute (cfm). When all 20 adjustable spillway gates, gates at the base of the dam that allow water to flow out of the reservoir, are open one foot, a total of 1000 cfm of water is released.



| | |
|----------|---|
| 1 | What is the maximum volume of water the reservoir will hold, in cubic feet? A) 10×10^7 B) 7.5×10^6 C) 3×10^6 D) 3×10^{10} E) Answer not given |
| 2 | A new hydro-electric power plant was added to the dam, consuming 1,000 cfm to produce 10 mega watts of power for the nearby town. During the summer, however, 20 mega watts are needed for the heavy air conditioning use. How many cfm of water must flow through the power plant to accommodate this need? A) 2,000 B) 2,500 C) 2,200 D) 2,400 E) Answer not given |

| | |
|---|---|
| 3 | <p>What consistent height, in feet, must all the spillway gates be open to keep the reservoir level constant?</p> <p>A) 4.5 B) 5 C) 6 D) 4 E) Answer not given</p> |
| 4 | <p>If the reservoir water level is at 700 feet but needs to be raised to 725 feet, how many minutes will it take with all the spillway gates open at 1 foot?</p> <p>A) 250,000 B) 275,000 C) 2,000 D) 30,000 E) Answer not given</p> |
| 5 | <p>Divers have realized that only 15 of the 20 spillway gates are operating. What consistent height, in feet, must the 15 gates be open to allow the reservoir to remain at a constant height?</p> <p>A) 6 B) $20/3$ C) 7 D) 7.5 E) Answer not given</p> |
| 6 | <p>The reservoir water level has been raised to 750 feet. The fish ladders work up to a height of 730 feet. All spillway gates are open at 7 feet to try to meet the power demands of the nearby city. How long, in minutes, will the fish ladder function?</p> <p>A) 400,000 B) 500,000 C) 600,000 D) 700,000 E) Answer not given</p> |
| 7 | <p>A man is fishing in a boat on the reservoir. If all the spillway gates are open to 10 feet for 1 million minutes, how far, in feet, will the boat drop?</p> <p>A) 100 B) 125 C) 150 D) 175 E) Answer not given</p> |
| 8 | <p>How many tons of water is in a full reservoir, if 1 cubic foot of water equals 8 gallons, 1 gallon equals 8 pounds, and 2,000 pounds equals 1 ton?</p> <p>A) 9×10^8 B) 9.6×10^8 C) 8.6×10^8 D) 8×10^8 E) Answer not given</p> |
| 9 | <p>Because of the massive surface area, the dam managers decide to install a manmade island in the middle of the dam. The only available island is a perfect square 1,000 feet on a side that will extend to the bottom of the reservoir. How much higher must the dam be raised to accommodate the old volume of water in a full reservoir to the nearest whole foot?</p> <p>A) 19 B) 21 C) 23 D) 25 E) Answer not given</p> |

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6th Grade -May 20, 2006

Team Contest

TEAM TEST - 15 minutes (note change in point value!)

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 2 or 0. Express all rational, non-integer answers as fractions unless stated otherwise. For fifth & sixth grade, make sure all fractions and ratios are reduced. Units are not needed except on questions that deal with time and, in that case, a.m. or p.m. is needed. If you choose to use units, you must use them correctly.

| | |
|----|---|
| 1 | Kate had 5 coin purses, each with the same amount of money inside, but each with a different number of coins. If the total amount of money in all the purses was \$1.40, what was the smallest possible total number of coins in all the purses? |
| 2 | When Alice went through the mirror into Looking-Glass Land, she found many strange things. One of them was the practice of using negative digits to write numbers. For example, the bar under the digit 4 in $2\bar{4}5$ indicates that the 4 is negative. In our system, using only positive digits, this number would be $(2 \times 100) + [(-4) \times 10] + (5 \times 1) = 165$. Using only positive digits for your answer, find the sum of the Looking-Glass numbers $\bar{3}8\bar{4}$ and $7\bar{2}\bar{2}$. |
| 3 | Find the number of degrees in the <u>larger</u> angle between the hour hand and the minute hand of a clock showing 8:30. |
| 4 | In July, David worked math problems every day except July 4 th , 7 th , and 14 th (when he took time off to celebrate Independence Day, Saba Saba, and Bastille Day). Each day, he worked the number of problems that corresponded to the date — for example, 1 problem on July 1st, 20 problems on July 20th, and so on. How many math problems did David work in July? |
| 5 | How many positive multiples of 15 less than 10,000 are square numbers? |
| 6 | What is the largest prime factor of 999? |
| 7 | The average of 38 and the average of 12 and x is 20. What is x ? ("Average" refers to arithmetic mean.) |
| 8 | In how many ways can Anna, Ben, Cam, Denny, and Ella stand in a row if Anna must stand next to Ella and Ben refuses to stand next to Denny? |
| 9 | In this problem, the letters \underline{a} , \underline{b} , and \underline{c} stand for digits, not necessarily different. Given that $3\underline{a}6 - 18\underline{b} + \underline{c}64 = 413$, find the 3-digit number \underline{abc} . |
| 10 | A palindromic year is a year that doesn't change when its digits are reversed. A Galapagos tortoise was hatched in January 1881, which we will call PY1 (palindromic year 1). The next palindromic year in its lifetime will be PY2, and so on. How many years old would the tortoise be in January of PY4, assuming it is still living? |

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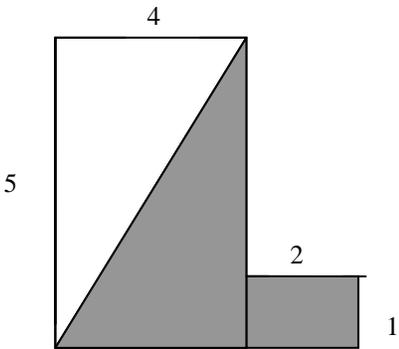
6th Grade -May 20, 2006

Relay Contest

RELAYS - 5 minutes per relay

*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!*

| | Relay #1 | Answer | | | | | | | | | | | | |
|----------|---|------------|---|---|--|---|--|--|---|--|--|---|--|---|
| Person 1 | <p>Given the piece of paper that can be folded up to form a cube, what numbered face will be opposite the number 6 face when folded?</p> <table border="1" style="margin-left: auto; margin-right: auto;"> <tr> <td>7</td> <td>2</td> <td>9</td> </tr> <tr> <td></td> <td>3</td> <td></td> </tr> <tr> <td></td> <td>4</td> <td></td> </tr> <tr> <td></td> <td>6</td> <td></td> </tr> </table> | 7 | 2 | 9 | | 3 | | | 4 | | | 6 | | 3 |
| 7 | 2 | 9 | | | | | | | | | | | | |
| | 3 | | | | | | | | | | | | | |
| | 4 | | | | | | | | | | | | | |
| | 6 | | | | | | | | | | | | | |
| Person 2 | <p>Find the sum of the mode and median of the set of data below.</p> <p>8, TNYWG, 5, 1, 12, TNYWG, 10</p> | 8 | | | | | | | | | | | | |
| Person 3 | <p>Grace purchased 10 plants at a nursery for her mom. Some cost \$(TNYWG) and the rest cost \$4. The total cost was \$52. How many \$(TNYWG) plants did Grace buy?</p> | 3 [plants] | | | | | | | | | | | | |
| Person 4 | <p>Let $\text{☺}(a,b) = \sqrt{a^2 + b^2}$ for all real numbers a and b. Find $\text{☺}(0,5) + \text{☺}(\text{TNYWG},4)$.</p> | 10 | | | | | | | | | | | | |

| | Relay #2 | Answer |
|----------|--|---------------|
| Person 1 | <p>What is the area of the total shaded portions of the rectangles shown below?</p>  | 12 |
| Person 2 | <p>Given a jar of 6 red, 2 yellow, 4 green and TNYWG white marbles, what is the probability of getting a red marble when one marble is drawn?</p> | $\frac{1}{4}$ |
| Person 3 | <p>Evaluate: $\frac{8 + 8 \div 2 \times TNYWG}{\sqrt{9}}$</p> | 3 |
| Person 4 | <p>Find the sum of the perimeter of a square with side length (TNYWG \times 3) and the perimeter of a regular octagon of side length $\sqrt{72} \times 2$.</p> | 132 |

"Math is Cool" Masters - 2005-06

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6th Grade -May 20, 2006

Final Score:

KEY

School Name _____ Team # _____

Proctor Name _____ Room # _____ Division: _____

Mental Math Contest

When it is time to begin, I 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 from 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 may answer only four questions, and then another member of your team will come up, until each team member has had a turn. If your team has fewer than 4 members, missing team members will receive a zero.

| PERSON 1 NAME: | | 1 or 0 |
|----------------|---|-----------------------|
| 1.1 | Find the product of 5 cubed and 2 squared. | 500 |
| 1.2 | What is the sum, in degrees, of the exterior angles of a regular hexagon? | 360 [°] |
| 1.3 | How many ways can you arrange 2 different algebra books and 3 different geometry books on a shelf if the algebra books and the geometry books must stay together? | 24 [ways] |
| 1.4 | How many times is the digit 2 used in the numbers 1 through 30? | 13 [times] |
| PERSON 2 NAME: | | |
| 2.1 | What is the least common multiple of 12 and 16? | 48 |
| 2.2 | What is the area of a trapezoid whose height is 8 and bases have a sum of 12? | 48 |
| 2.3 | Solve for x: Square root of x minus 4 equals 21. | 625 |
| 2.4 | Evaluate: Permutation of 10 objects choose 2 divided by Combination of 5 objects choose 2. | 9 |
| PERSON 3 NAME: | | |
| 3.1 | What percentage of the numbers, 1 through 10, are prime? | 40 [%] |
| 3.2 | The sum of the diameter and the radius of a certain circle is 9. What is the circumference of this circle? | 6π |
| 3.3 | Find the result after 20 is divided by 1/2 and 10 is added to the quotient. | 50 |
| 3.4 | What is the month and day of the sixty-eighth day of a leap year? | March 8 th |
| PERSON 4 NAME: | | |
| 4.1 | What percent of 60 is 18? | 30 [%] |
| 4.2 | What is the sum of the absolute value of negative 8 and twice two cubed? | 24 |
| 4.3 | How many perfect squares are between 10 and 150? | 9 |
| 4.4 | Find the area of a right triangle with one leg of length 5 and a hypotenuse of 13. | 30 |

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6th Grade - May 20, 2006

Division 1 & 2

COLLEGE KNOWLEDGE BOWL ROUND #1

| # | Problem | Answer |
|---------------------------------------|---|-----------------|
| 1 | In how many distinct ways can you arrange the letters of the word cocoa (spelled C-O-C-O-A)? | 30 [ways] |
| 2 | Find the sum of the number of faces, edges, and vertices of a square pyramid. | 18 |
| 3 | In a certain rectangle, the width is $\frac{1}{3}$ of the length. If the perimeter is 40 inches, what is the length, in inches? | 15 [inches] |
| 4 | What is the smallest positive integer to have a remainder of 10 when divided by 16? | 10 |
| 5 | Jeremy had exactly 50¢, but he could not make change for a quarter. Then he lost 3 of his coins. How many cents does he have now? Give all possible answers. | 20 [¢] |
| 6 | Amanda read Chapter 5 of Exciting Math Bedtime Stories to Grace. Chapter 5 started at the top of page 231 and ended at the bottom of page 301. How many odd-numbered pages did Amanda read? | 36 [pages] |
| 7 | The sign at Cougar Country Drive-In advertises Cub Burgers at zero point 99 cents each. If they really mean this, how many Cub Burgers could you buy for 5 dollars, ignoring tax? | 505 [burgers] |
| Extra Problem - Only if Needed | | |
| 8 | Express the sum of $\frac{3}{8}$ and $\frac{8}{3}$ as a reduced common fraction. | $\frac{73}{24}$ |

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6th Grade -May 20, 2006

Division 1 & 2

COLLEGE KNOWLEDGE BOWL ROUND #2

| # | Problem | Answer |
|---------------------------------------|--|---------------------|
| 1 | There are only dogs and cats at the vet clinic, and there are four times as many cats as dogs. If there are 60 animals at the clinic, how many are cats? | 48 [cats] |
| 2 | What is the total number of dots on a standard cubical die? | 21 [dots] |
| 3 | Two standard dice are rolled. Find the probability that the two numbers showing will be different. | $\frac{5}{6}$ |
| 4 | Maria draws a circle of radius 7, then inscribes in it two congruent circles as large as possible without overlapping them. What is the total length of the circumferences of the 3 circles? | 28π [units] |
| 5 | Subtract 2006 from 6002. | 3996 |
| 6 | Find the sum of the base 3 numbers two-zero-one base 3 and one-one-one base 3. Give your answer in base 3. | $1012_{[3]}$ |
| 7 | How many perfect squares less than 500 have a units digit of 1? | 5 [perfect squares] |
| Extra Problem - Only if Needed | | |
| 8 | Subtract the number of ounces in a pound from the number of inches in a yard, then multiply by the number of pints in a gallon. | 160 |

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6th Grade -May 20, 2006

Division 1 & 2

COLLEGE KNOWLEDGE BOWL ROUND #3

| # | Problem | Answer |
|---|---|------------------|
| 1 | The sum of two numbers is 835. The difference between these two numbers is 7. What is the larger of the two numbers? | 421 |
| 2 | Annie has 93¢. She has three times as many pennies as dimes, twice as many dimes as nickels, and no other coins. How many coins does Annie have? | 27 [coins] |
| 3 | In what quadrant of the coordinate plane does the point negative 2 comma 4 lie? | 2 or 2nd |
| 4 | A trapezoid has height 6 cm and one base of length 7 cm. The area of the trapezoid is 24 square cm. What is the length of the other base, in centimeters? | 1 [cm] |
| 5 | How many positive integers less than or equal to 50 are neither perfect squares nor perfect cubes? | 41 [integers] |
| 6 | What is the smallest positive integer by which you could multiply 540 to make the product a multiple of 56? | 14 |
| 7 | Two radii (or radiuses) of a circle intersect at an angle of 75° . How many degrees are in the larger arc of the circle they intercept? | 285 [°] |
| | Extra Problem - Only if Needed | |
| 8 | Find 80% of $\frac{1}{4}$ of 2.4. Give your answer as a decimal. | 0.48 |

"Math is Cool" Masters - 2005-06

6th Grade -May 20, 2006

Final Score:

KEY

First Score

School Name _____ Team # _____

Proctor Name _____ Room # _____

STUDENT NAME _____ **Division:** _____

Individual Contest - Score Sheet

DO NOT WRITE IN SHADED REGIONS

| | Answer | 1 or 0 | 1 or 0 |
|----|---------------|--------|--------|
| 1 | 8 [clowns] | | |
| 2 | [\$] 108.57 | | |
| 3 | 34 | | |
| 4 | 29/8 | | |
| 5 | 11 [miles] | | |
| 6 | < | | |
| 7 | Yes | | |
| 8 | [\$] 16.00 | | |
| 9 | 22 [pieces] | | |
| 10 | [\$] 2600 | | |
| 11 | 13 1/4 [hrs] | | |
| 12 | 164 [ft] | | |
| 13 | 2808 [fam] | | |
| 14 | [\$] 27 | | |
| 15 | 595 [pgs] | | |
| 16 | 4 [lines] | | |
| 17 | 25 [years] | | |
| 18 | 310 [tickets] | | |
| 19 | 1/2 | | |
| 20 | 24 [Boys] | | |
| | | | |

| | Answer | 1 or 0 | 1 or 0 |
|----|----------------|--------|--------|
| 21 | [\$] 28.80 | | |
| 22 | 19 [coins] | | |
| 23 | 16 [plants] | | |
| 24 | Patrick | | |
| 25 | 4 | | |
| 26 | 12 | | |
| 27 | 4 [hours] | | |
| 28 | 29 [num] | | |
| 29 | 84 [blue mar] | | |
| 30 | 3 [stu] | | |
| 31 | 49 [bus/acre] | | |
| 32 | 99 | | |
| 33 | 40 [mins] | | |
| 34 | red/green | | |
| 35 | 36 [cubes] | | |
| 36 | 15 | | |
| 37 | 400 | | |
| 38 | 22/25 | | |
| 39 | 677 [students] | | |
| 40 | 8710 | | |
| | | | |

"Math is Cool" Masters - 2005-06
 6th Grade - May 20, 2006

School Name _____ Team # _____

Proctor Name _____ Room # _____

Division: _____

Final Score:
KEY

First Score
 (out of 18)

Team Multiple Choice Contest - Score 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 | D | | |
| 2 | A | | |
| 3 | B | | |
| 4 | A | | |
| 5 | B | | |
| 6 | A | | |
| 7 | B | | |
| 8 | B | | |
| 9 | A | | |
| | | | |

"Math is Cool" Masters - 2005-06

6th Grade - May 20, 2006

Final Score:

KEY

First Score

(out of 20)

School Name _____ Team # _____

Proctor Name _____ Room # _____

Div: _____

Team Contest - Score Sheet

DO NOT WRITE IN SHADED REGIONS

| | Answer | 2 or 0 | 2 or 0 |
|----|-----------------|--------|--------|
| 1 | 35 [coins] | | |
| 2 | 454 | | |
| 3 | 285[°] | | |
| 4 | 471 [problems] | | |
| 5 | 6 [multiples] | | |
| 6 | 37 | | |
| 7 | [x =] -8 | | |
| 8 | 24 [ways] | | |
| 9 | 372 | | |
| 10 | 231 [years old] | | |
| | | | |

"Math is Cool" Masters -- 2005-06

KEY

6th Grade -May 20, 2006

School: _____ Team # _____

Proctor: _____ Room # _____ Div _____

RELAY # 1

| Answer for person # 1 | Answer for person # 2 | Answer for person # 3 | Answer for person # 4 |
|--------------------------|--------------------------|--------------------------|--------------------------|
| 3 | 8 | 3 [plants] | 10 |
| 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 |
|--------------------------|--------------------------|--------------------------|--------------------------|
| 12 | 1/4 | 3 | 132 |
| 1 or 0 | 1 or 0 | 1 or 0 | 2 or 0 |

"Math is Cool" Masters - 2005-06

6th Grade - May 20, 2006

Final Score:

First Score

School Name _____ Team # _____

Proctor Name _____ Room # _____

STUDENT NAME _____ **Division:** _____

Individual Contest - Score Sheet

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 | | | |
| 16 | | | |
| 17 | | | |
| 18 | | | |
| 19 | | | |
| 20 | | | |
| | | | |

| | Answer | 1 or 0 | 1 or 0 |
|----|--------|--------|--------|
| 21 | | | |
| 22 | | | |
| 23 | | | |
| 24 | | | |
| 25 | | | |
| 26 | | | |
| 27 | | | |
| 28 | | | |
| 29 | | | |
| 30 | | | |
| 31 | | | |
| 32 | | | |
| 33 | | | |
| 34 | | | |
| 35 | | | |
| 36 | | | |
| 37 | | | |
| 38 | | | |
| 39 | | | |
| 40 | | | |
| | | | |

"Math is Cool" Masters - 2005-06

6th Grade - May 20, 2006

Final Score:

First Score

(out of 18)

School Name _____ Team # _____

Proctor Name _____ Room # _____

Division: _____

Team Multiple Choice Contest - Score 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 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| 5 | | | |
| 6 | | | |
| 7 | | | |
| 8 | | | |
| 9 | | | |
| | | | |

"Math is Cool" Masters - 2005-06

6th Grade - May 20, 2006

Final Score:

First Score

(out of 20)

School Name _____ Team # _____

Proctor Name _____ Room # _____

Div: _____

Team Contest - Score Sheet

DO NOT WRITE IN SHADED REGIONS

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

"Math is Cool" Masters - 2005-06

Sponsored by:
6th Grade -May 20, 2006

Final Score:

(Out of 16)

School Name _____ Team # _____

Proctor Name _____ Room # _____ Division: _____

*When it is time to begin, I 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 erase or cross out answers once you have written an answer down.** If there are eraser marks 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 from the second reading of the question before another question is asked. The value of each question is a one or zero. Each student will be asked four questions, then another member of your team will come up.*

| PERSON 1 NAME: | | 1 or 0 |
|----------------|--|--------|
| 1.1 | | |
| 1.2 | | |
| 1.3 | | |
| 1.4 | | |
| PERSON 2 NAME: | | |
| 2.1 | | |
| 2.2 | | |
| 2.3 | | |
| 2.4 | | |
| PERSON 3 NAME: | | |
| 3.1 | | |
| 3.2 | | |
| 3.3 | | |
| 3.4 | | |
| PERSON 4 NAME: | | |
| 4.1 | | |
| 4.2 | | |
| 4.3 | | |
| 4.4 | | |

Relay Answers

6th Grade

Mental Math

6th Grade

College Bowls

6th Grade

Division

1 & 2