



**MONTANA COUNCIL OF TEACHERS OF MATHEMATICS**  
**2015 MATH CONTEST**  
**TEAM 7 - 8**

**DIRECTIONS: DO NOT WRITE ON THIS TEST. Place the best answer for each question on the separate answer sheet.**

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- Americans use 50 million tons of paper made from 850 million trees each year. What is the approximate weight of the paper produced by one tree?  
A) 17 tons      B) 58.82 lbs.      C) 0.06 lbs.      D) 117.6 lbs.      E) none of these
- The number of bacteria in the dish tripled every month. If there were 1500 bacteria at first, approximately how many bacteria were there after 10 months?  
A)  $2.66 \times 10^8$       B)  $8.86 \times 10^7$       C)  $2.95 \times 10^7$       D)  $8.86 \times 10^5$       E) none of these
- A lottery game advertises a jackpot of \$41 million. The chances of winning are 1 in 7.1 million. How many lottery tickets must Bob buy if he wanted to have a 1 in 71 chance to win?  
A) 1000 tickets      B) 100 tickets      C) 1 million tickets      D) 100,000 tickets      E) none of these
- On a TV game show, a contestant is paid \$7 for each correct answer, but must pay back \$5 for each wrong answer. After answering 24 questions on the show, Sam broke even (\$0). How many questions did he answer correctly?  
A) 12      B) 14      C) 8      D) 10      E) none of these
- Triangle ABC has vertices A (2,1), B (3,0), and C (4,2). The triangle is reflected over the line  $y = x$  to form triangle A'B'C'. What is the sum of the x-coordinates of the vertices of triangle A'B'C'?  
A) 3      B) 6      C) 4      D) 12      E) none of these
- Kathy got an average of 89% on five tests in math. Is it possible for her to have gotten a 45% on one of the five tests?  
A) yes, if she earned 100% on 3 of the others      B) yes, if she earned 44% on one of the others  
C) yes, if she earned 100% on all of the others      D) yes, if she earned at least 89% on all of the others  
E) no, it is not possible
- How many of the first 1 million positive integers are perfect cubes?  
A) 10      B) 100      C) 1000      D) 10,000      E) none of these
- Find the distance between A(2, -4) and B(-1, 2) to the nearest tenth.  
A) 3.6      B) 7.2      C) 2.2      D) 6.1      E) none of these
- The perimeter of rectangle ABCD is 16. If all its side lengths are whole numbers, its area could not be which of the following numbers?  
A) 7      B) 8      C) 12      D) 15      E) none of these
- The average age of the four Miller children is 13. Joe is 8 and Nancy is 12. How old are the twins?  
A) 19      B) 17      C) 15      D) 13      E) none of these

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11. To serve four, a recipe calls for  $\frac{1}{4}$  cup of sugar. How much sugar do you need to serve fourteen?  
A)  $\frac{1}{3}$  cup      B)  $\frac{7}{8}$  cup      C)  $\frac{3}{4}$  cup      D)  $\frac{1}{2}$  cup      E) none of these
12. Whitney uses 100 grams of lemon juice, 100 grams of sugar, and 400 grams of water to make lemonade. There are 25 calories in 100 grams of lemon juice and 386 calories in 100 grams of sugar. Water contains no calories. How many calories are in 200 grams of her lemonade?  
A) 129      B) 137      C) 174      D) 411      E) none of these
13. How many different isosceles triangles with integer side lengths have a perimeter of 23?  
A) 2      B) 4      C) 6      D) 11      E) none of these
14. An English teacher is planning a field trip to see a play. There will be 10 adults attending the play along with the students. The cost for admission is \$7.50 per student and \$9.00 per adult. If the total cost for admission is \$930, how many students can attend the play?  
A) 93      B) 112      C) 124      D) 130      E) none of these
15. If a bicycle wheel has a diameter of 28 inches, to the nearest ten, how many revolutions will it make in one mile?  
A) 60      B) 360      C) 720      D) 910      E) none of these
16. What edge length will create a cube that has a numerically equivalent volume and surface area?  
A) 4      B) 5      C) 6      D) 8      E) none of these
17. If it is 9:00 pm now, what time will it be in 100 hours?  
A) 1:00 am      B) 5:00 am      C) 9:00 am      D) 8:00 am      E) none of these
18. I am a three digit number. I am greater than 300. I am not divisible by 5. I am divisible by 3 and 9. I am less than 500. I am not a square. What number am I?  
A) 324      B) 441      C) 484      D) 576      E) none of these
19. What is the sum of all the two-digit multiples of seven?  
A) 389      B) 525      C) 574      D) 728      E) none of these
20. Points A and B are 10 units apart. Points A and C are 4 units apart. What is the sum of the minimum distance and maximum distance that points B and C could be from one another?  
A) 6      B) 14      C) 20      D) there is not enough information provided
21. All the shirts at the Shirt Shack were marked up 20%. Then, they had a sale where they marked everything down 20%. What is the percent change from the original price to the sale price?  
A) 0%      B) 4%      C) 40%      D) 96%      E) none of these
22. Monty saves 20% by buying a CD on sale for \$6.36. What was the original price of the CD?  
A) \$7.95      B) \$9.54      C) \$7.99      D) \$8.48      E) none of these
23. How many lines of symmetry can be drawn in a regular octagon?  
A) 4      B) 8      C) 16      D) 32      E) none of these
24. How many 1 inch caramel cubes can fit inside a rectangular box with dimensions 4, 3, and 2 inches?  
A) 12      B) 16      C) 36      D) 8      E) none of these
25. A square has side lengths of 7 inches. What is the length of its diagonal?  
A) 14      B) 49      C) 7      D) 98      E) none of these

**2015 TEAM 7 - 8 Answer Key**

1. D
2. B
3. D
4. D
5. A
6. C
7. B
8. E
9. B
10. E
11. B
12. B
13. D
14. B
15. C
16. C
17. A
18. E
19. D
20. C
21. B
22. A
23. B
24. E
25. E