



**MONTANA COUNCIL OF TEACHERS OF MATHEMATICS**  
**2012 MATH CONTEST**  
**7 - 8 Team Test**

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

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Use this information for problems 1-2

Alicia, Beth, Colton, Desiree, and Ellen each arrive at school in a different way. One rides in a car pool, one rides a bike, one walks every day, one rides in the family car, and one rides the school bus. Colton does not ride in a motor vehicle. Beth enjoys the bus ride along the country road. Ellen is last to be picked up on the car pool route. Alicia lives across the street from the school

1. Who rides a bike to school?  
A) Ellen                      (B) Beth                      (C) Colton                      (D) Desiree
2. Who rides in their family car?  
(A) Alicia                      (B) Beth                      (C) Colton                      (D) Desiree

Use this information for problems 3-5

According to the US Census in 2010:  
Montana had a population of 989, 415 and covers an area of 147,042 square miles.  
South Dakota had a population of 814,180 and covers an area of 77,116 square miles.  
North Dakota had a population of 672,591 and covers an area of 70,700 square miles.  
Wyoming had a population of 563,636 and covers an area of 97,814 square miles.

3. Find the rate of people per square mile for Montana. Round to the nearest person.  
(A) 7 people per sq. mile                      (B) 67 people per sq. mile  
(C) 1 person per sq. mile                      (D) 15 people per sq. mile
4. Find the rate of people per square mile for North Dakota. Round to the nearest person.  
(A) 1 person per sq. mile                      (B) 10 people per sq. mile  
(C) 9 people per sq. mile                      (D) 15 people per sq. mile
5. Which of the four states was more densely populated in 2010?  
(A) Montana                      (B) South Dakota                      (C) North Dakota                      (D) Wyoming
6. What is the sixth term in the sequence? 2, - 6, 18, - 54, ...  
(A) 162                      (B) -162                      (C) - 486                      (D) 486
7. How many diagonals does a 7-sided polygon have?  
(A) 7                      (B) 14                      (C) 20                      (D) 720
8. The Buckle is having a clearance sale. \$80 jeans were 50% off and now are an additional 20% off. How much do the jeans cost now?  
(A) \$56                      (B) \$24                      (C) \$32                      (D) \$48

9. Sal raises pigs and chickens. He has 400 creatures with a total of 1,240 legs. How many pigs does Sal raise?  
 (A) 220 (B) 180 (C) 360 (D) 880

**Use this information for problems 10-11**

You bought a 10-pound sack of sugar. The sack is a rectangular prism 9 inches by 8 inches by 5 inches. You have 2 cylinder-shaped canisters in which the sugar can be poured. Canister A has a radius of 3 inches and a height 10 inches. Canister B has a radius of 4 inches and a height of 10 inches. Use 3.14 as pi.

10. What is the volume of the sack of sugar?  
 (A)  $360 \text{ in}^3$  (B)  $3600 \text{ in}^3$  (C)  $220 \text{ in}^3$  (D)  $320 \text{ in}^3$
11. What is the volume of the canister better suited to hold the sugar?  
 (A)  $502.4 \text{ in}^3$  (B)  $282.6 \text{ in}^3$  (C)  $244.92 \text{ in}^3$  (D)  $351.68 \text{ in}^3$
12. You can choose from four types of sandwiches for lunch, two types of chips, and three types of pop. How many possible lunch combinations of sandwich, chips, and pop can you have?  
 (A) 56 (B) 24 (C) 32 (D) 48

**Use this information for problems 13-14**

View Poll Results: What are your favorite types of music?

Rock n' Roll	14
Electronic	8
Pop	6
Jazz	7
"World"	5
Classical	4
Hip Hop/Rap	4
Country	5
Other	10

13. What fraction did **not** choose Country, Classical, World, or Other?  
 (A)  $8/21$  (B)  $37/63$   
 (C)  $13/21$  (D)  $5/9$
14. If 7200 people are surveyed, how many would you expect to choose Rock n' Roll?  
 (A) 32,400 (B) 914  
 (C) 1600 (D) 2000
15. Matt made two 6-sided dice and labeled each of them with these numbers: -2, -1, 0, 1, 2, 3. Suppose this pair of dice was tossed 1,000 times and the numbers on the two top faces were added. Which sum would probably be the most common?  
 (A) 1 (B) 2 (C) -1 (D) -2
16. The dimensions of a packing box are 10 feet by 15 feet by 20 feet. Each edge of the box will be fastened with packing tape. How many feet of tape are needed?  
 (A) 360 feet (B) 180 feet (C) 3000 feet (D) 45 feet
17. Tony got \$2 on his first birthday. On his second birthday he will get the amount from his previous birthday plus as many dollars as he is years old. On his third birthday he gets the amount from his previous birthday plus as many dollars as he is years old. If this pattern continues, how much will Tony receive **on** his 12<sup>th</sup> birthday?  
 (A) \$92 (B) \$376 (C) \$67 (D) \$79
18. If 2 people can paint a house in 3 days, how long will it take 4 people to paint the same house?  
 (A) 6 days (B) 1 day (C) 1.5 days (D) 2 days
19. 2% of 2% of some number is 2. The number is  
 (A) 1000 (B) 2000 (C) 5000 (D) 500

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1. C
2. D
3. A
4. B
5. B
6. C
7. B
8. C
9. A
10. A
11. A
12. B
13. C
14. C
15. A
16. B
17. D
18. C
19. C