

MONTANA COUNCIL OF TEACHERS OF MATHEMATICS
2017 MATH CONTEST
POTLUCK

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

1. If a 20 minute shower uses 13.5 gallons of water, how many gallons of water does a 30 minute shower use?
A) 6.75 B) 19.25 C) 20.25 D) 23.5 E) none of these

The table at right shows the gender and grade level of Marie's 30 friends.

	7th Grade	8 th Grade
Male	2	10
Female	6	12

2. What percent of her friends are female?
A) 12% B) 18% C) 22% D) 40% E) none of these
3. What fraction of Marie's 8th grade friends are male?
A) $\frac{1}{5}$ B) $\frac{1}{3}$ C) $\frac{5}{11}$ D) $\frac{11}{15}$ E) none of these
4. In 2016 there were 7753 enrolled members of the Confederated Salish and Kootenai tribes. If their population increases by 0.2% per year, approximately how many enrolled members should there be in 2020?
A) 7800 B) 7815 C) 8143 D) 8392 E) none of these
5. The Smith family has a lawn 40 feet by 80 feet and they are going remove lawn so that they can put a 4 foot wide sidewalk on one side and across the front. How many square feet of lawn will be replaced with sidewalk?
A) 400 B) 464 C) 480 D) 2736 E) none of these
6. A square is graphed on a coordinate grid. Two of the coordinates of the vertices are (1,1) and (4,2). Which set of coordinates could be another vertex?
A) (0,3) B) (5,3) C) (0,5) D) (3,5) E) none of these
7. A triangle has two side lengths of 5 and 7, what side length is possible for the third side?
A) 1 B) 2 C) 12 D) 14 E) none of these
8. What is the equation that could represent this pattern: 10, 2, -6, -14, -22, ...
A) $y = 10x - 8$ B) $y = 8x - 10$ C) $y = -8x + 18$ D) $y = -8x + 12$ E) none of these
9. The whole school is going to take a field trip. There are a total of 224 students and adults going on the trip. Busses can legally hold 52 passengers each and will cost \$100 per bus. How much will the total cost be for the busses?
A) \$430.76 B) \$431.00 C) \$431.77 D) \$500.00 E) none of these
10. What is the next number in this sequence? -4, 8, -16, 32, ...
A) -2 B) -64 C) 64 D) -128 E) none of these
11. What is the sum of the first 200 positive integers?
A) 10050 B) 20000 C) 20100 D) 40200 E) none of these

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12. If a map scale is 1 cm = 20 miles and two cities are about 375 mm apart on the map, what is the distance between the actual cities (in miles)?

- A) 18.75 B) 60 C) 75 D) 750 E) none of these

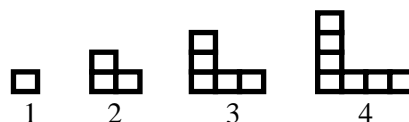
13. Nicole is filling Savannah's pool and it holds 500 gallons of water. She turns on the faucet at 1pm and it appeared to be 1/3 full at 1:20pm. When will it be half full?

- A) 1:25pm B) 1:30pm C) 1:45pm D) 1:50pm E) none of these

14. Nicole is filling Savannah's pool and it holds 500 gallons of water. She turns on the faucet at 1pm and it appeared to be 1/3 full at 1:20pm. How full will the pool be at 1:40pm?

- A) 1/2 B) 3/5 C) 2/3 D) 4/5 E) none of these

This diagram represents the first 4 terms of a sequence.



15. Using the diagram above, how many blocks are needed for the next term?

- A) 8 B) 9 C) 10 D) 11 E) none of these

16. Using the diagram above, which equation could be used to model the sequence?

- A) $f(n) = 2n - 1$ B) $f(n) = 2n + 1$ C) $f(n) = n^2$ D) $f(n) = 2^n$ E) none of these

17. Using the diagram above, how many blocks are needed for the 100th term?

- A) 199 B) 201 C) 10000 D) $\sim 1.27 \times 10^{30}$ E) none of these

18. What is the smallest number divisible by 1, 2, 3, 4, 5, 6 and 12 without remainder?

- A) 1 B) 36 C) 120 D) 180 E) none of these

19. What is the greatest common factor of all the even positive integers?

- A) 1 B) 2 C) 4 D) ∞ E) none of these

20. What is the remainder when you divide the number 123,456,789,123,456,789 by 25

- A) 4 B) 14 C) 64 D) 89 E) none of these

21. How many even factors does this number have? 1,234,567

- A) 0 B) 6 C) 12 D) 120 E) none of these

22. If the point (2, -3) is reflected across the x-axis, where is the reflected point?

- A) (2, 3) B) (-2, -3) C) (-2, 3) D) (2,-3) E) none of these

23. If the point (2, -3) is reflected across the line $y = x$, where is the reflected point?

- A) (2, 3) B) (-3, -2) C) (-3, 2) D) (-2,-3) E) none of these

POTLUCK 2017 Answer Key

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