

MONTANA COUNCIL OF TEACHERS OF MATHEMATICS  
2018 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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1. Which of the following best represents an irrational number?

- A)  $\sqrt{-576}$       B)  $-\sqrt{294}$       C)  $\sqrt{\frac{300}{675}}$       D)  $\sqrt{729}$       E) none of these

2. What is the tenth decimal digit of  $\pi$ ? 3.14□□□□□□□?

- A) 4      B) 5      C) 6      D) 7      E) none of these

3. Jess is jogging and counting her strides. If she takes 32 steps that are each approximately 38 inches in a 20 second interval, what is his rate in miles per hour to the nearest tenth?

- A) 3      B) 3.5      C) 3.8      D) 4.1      E) none of these

4. A trampoline has a metal frame diameter of 14 feet. If the jumping surface is a foot away from the metal, what is the area of the jumping surface of the trampoline to the nearest square foot?

- A) 113 ft<sup>2</sup>      B) 154 ft<sup>2</sup>      C) 452 ft<sup>2</sup>      D) 616 ft<sup>2</sup>      E) none of these

5. If 35% of the students play basketball and the school has 40 students enrolled, how many do **not** play basketball

- A) 14      B) 26      C) 35      D) 114      E) none of these

6. The local swim team is hosting a meet and the top 3 racers will receive a blue, red, or white ribbon. How many different ways can the top 3 places be awarded if there are 6 competitors?

- A) 3      B) 20      C) 120      D) 216      E) none of these

7. When rolling two dice, what is the probability of rolling a sum of 7

- A) 1/36      B) 1/18      C) 1/6      D) 1/2      E) none of these

8. At most, how many Sundays can occur in a calendar year?

- A) 52      B) 53      C) 54      D) 365      E) none of these

9. A can of green beans has a diameter of 6 cm and a height of 6.5 cm, find the surface area to the nearest unit.

- A) 122 cm<sup>2</sup>      B) 179 cm<sup>2</sup>      C) 183 cm<sup>2</sup>      D) 471 cm<sup>2</sup>      E) none of these

10. You received money for your birthday. You spent \$5 and then put half of what was remaining into your piggy bank. You now have \$20 in your pocket. How much did you receive for your birthday?

- A) \$5      B) \$20      C) \$45      D) \$50      E) none of these

11. If  $(x - 2)^2 = 1600$ , which of the following could be the value of  $x - 4$   
 A) -42                      B) -34                      C) 34                      D) 36                      E) none of these

12. What is the product of all of the multiples of 4 between -8 and 12 inclusive?  
 A) -147,456                      B) -12,288                      C) 12,288                      D) 147,456                      E) none of these

13. A straight line that passes through the points  $(p,q)$  and  $(2p, 3q)$  must also pass through which point?  
 A)  $(3p, 4q)$                       B)  $(3p, 5q)$                       C)  $(4p, 6q)$                       D)  $(4p, 8q)$                       E) none of these

14. Your dad said he would buy you a horse if you could afford to feed her. Assume she would need to eat 40 pounds of hay a day and you can get hay for \$65 a ton. How much would you need to budget for the year to feed her?  
 A) \$200                      B) \$350                      C) \$375                      D) \$475                      E) none of these

15. You have \$20 and your mom sends you to the store to buy 3 cans of pears at \$0.79 each, 2 packages of hamburger buns at \$1.98 each, and pound of lunch meat at \$7.99. How much change will you have left?  
 A) \$5.68                      B) \$9.24                      C) \$10.76                      D) \$14.32                      E) none of these

16. How many degrees are in one exterior angle of a regular pentagon?  
 A)  $36^\circ$                       B)  $45^\circ$                       C)  $60^\circ$                       D)  $72^\circ$                       E) none of these

17. If a circle's area is  $4900\pi$  sq inches, what is the circumference of the circle?  
 A)  $7\pi$                       B)  $14\pi$                       C)  $70\pi$                       D)  $140\pi$                       E) none of these

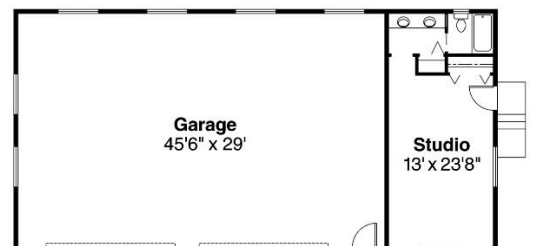
18. Find the sum:  $1^{406} + 1^{406}$   
 A)  $1^{812}$                       B)  $2^1$                       C)  $2^{406}$                       D)  $2^{812}$                       E) none of these

19. Solve the following equation  $-2x + 6 = -8$   
 A) -7                      B) -1                      C) 1                      D) 7                      E) none of these

20.  $3 * 2^3 - 4(8 - 7)^3 \div 2$   
 A) 10                      B) 12                      C) 22                      D) 184                      E) none of these

21. This is the floor plan of your new garage which includes a studio apartment. You plan to paint the garage floor. A gallon of concrete paint covers approximately 350 square feet. How many whole gallons of paint should be purchased?

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



22. Which polygon cannot be drawn as a regular figure?  
 A) circle                      B) heptagon                      C) rectangle                      D) triangle                      E) none of these

**2018 TEAM 7 - 8 Answer Key**

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