

MONTANA COUNCIL OF TEACHERS OF MATHEMATICS
2019 MATH CONTEST
TEAM 7 - 8

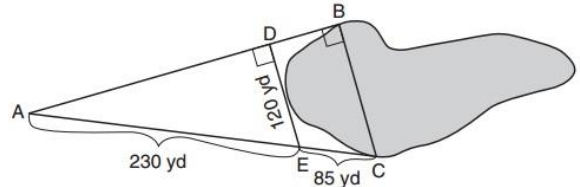
DIRECTIONS: DO NOT WRITE ON THIS TEST. Place the best answer for each question on the separate answer sheet.

1. Which famous mathematician is commonly referred to as “The Father of Geometry”?

- A) Archimedes B) Euclid C) Gauss D) Pythagoras E) none of these

2. To find the distance across a pond, a surveyor found the measurements shown in the diagram at right. Find the distance from B to C . Round to the nearest hundredth.

- A) 44.35 yd B) 164.35 yd C) 205.00 yd
D) 603.75 yd E) none of these



3. What is the number of units in the perimeter of a triangle bound by the x -axis, the y -axis, and the line $y = -\frac{3}{4}x + 3$?

- A) 9.65 B) 10.24 C) 12.00 D) 13.93 E) none of these

4. A 12 inch sub sandwich is cut into three pieces whose lengths are in the ratio 3:1:2. How long is the largest piece?

- A) 2 in B) 4 in C) 6 in D) 8 in E) none of these

5. A four digit number is divisible by 5 but not 10. The tens digit is greater than 4 and is a power of 3. The hundreds digit is greater than 4 and is a power of 2. The thousands digit is less than 4 and is a power of 2 and 3. What is the number?

- A) 1865 B) 1895 C) 6495 D) 6635 E) none of these

6. The point (a, b) is reflected over the x -axis. The coordinates of the new point are (c, d) . What is the value of $ab + cd$?

- A) 0 B) $-ab$ C) $2a$ D) a^2 E) none of these

7. Each small square in the figure to the right has an area of 6 cm^2 . What is the number of square centimeters in the area of the shaded region?

- A) 6 B) 11 C) 36 D) 45 E) none of these



8. Simplify: $\frac{\frac{1}{2} \times 1024}{0.125 \times 2^{12}}$

- A) 1 B) 2.5 C) 4098 D) 16777216 E) none of these

9. For what value of x does $3^{14} = \left(\frac{1}{9}\right)^x$?

- A) -14 B) -7 C) 7 D) 14 E) none of these

10. The average of Diana’s math scores was 86. She scored a 94 on her most recent test, raising her average to 88. How many tests has she taken?

- A) 3 B) 4 C) 5 D) 6 E) none of these

11. A cylindrical drinking glass is 4 inches high and 2 inches across. If an ounce of juice is about 1.8 in^3 , how many ounces of juice will the glass hold? Round your answer to the nearest tenth.

- A) 7.0 B) 14.0 C) 22.6 D) 27.9 E) none of these

12. Chris and Jesse left the Fort Peck Marina dock in their Lund fishing boat and travelled 4 nautical miles south, then turned east and travelled for two more miles. What is the shortest distance they can travel to return to the dock? Round your answer to the nearest tenth.

- A) 3.5 mi B) 4.2 mi C) 4.5 mi D) 6.0 mi E) none of these

13. A dollhouse models a real house at a scale of 1:15. If it takes 20 cans to paint the walls of the real house, how many cans are needed to paint the walls of the doll house? Express your answer as a fraction.

- A) $\frac{4}{45}$ B) $\frac{1}{5}$ C) $\frac{3}{4}$ D) $\frac{4}{5}$ E) none of these

14. Boris has the following coins in his pocket: 4 pennies, 3 nickels, 5 dimes, and 3 quarters. If he reaches in and takes a coin without looking, find the probability that the coin is worth more than 5 cents?

- A) $\frac{8}{15}$ B) $\frac{11}{15}$ C) $\frac{4}{5}$ D) $\frac{125}{144}$ E) none of these

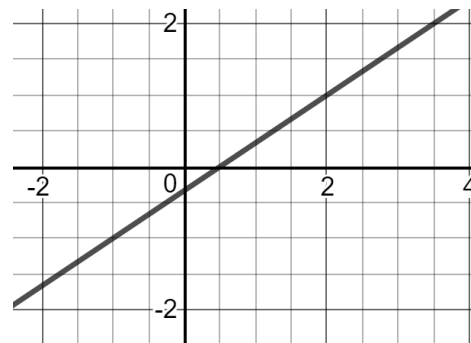
15. Which of the following functions has the greatest rate of change?

A) $y = \frac{3}{5}x - 10$

B)

input	output
14	6
6	1
30	16

C)



- D) they are all equal E) none of these

16. A straight line passes through the three points (3, -4), (5, 1), (7, y). What is the value of y?

- A) $y = -4$ B) $y = -2$ C) $y = 4$ D) $y = 6$ E) none of these

17. What is the value of n if $\frac{1}{4} = \frac{1}{5} + \frac{1}{n}$?

- A) $n = -1$ B) $n = 3$ C) $n = 9$ D) $n = 20$ E) none of these

18. Jed is backpacking into the Bob Marshall Wilderness with a pyramid tent that has a $8' \times 8'$ floor and a height of $6'$. What is the volume of the tent?

- A) 96 ft^3 B) 128 ft^3 C) 192 ft^3 D) 384 ft^3 E) none of these

19. To the nearest square foot, what is the surface area of Jed's tent, including the floor, mentioned in #18?

- A) 128 ft^2 B) 160 ft^2 C) 179 ft^2 D) 256 ft^2 E) none of these

2019 TEAM 7 - 8 Answer Key

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