

MONTANA COUNCIL OF TEACHERS OF MATHEMATICS  
2016 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. MacKenzie was over the moon about winning tickets to a small One Direction concert. In an effort to stay chill around her spaz friends before the concert, she focused on a math problem. She was sitting in the 4<sup>th</sup> row from the front, which was also the 16<sup>th</sup> row from the back. Her seat was the 7<sup>th</sup> from the left side, and also the 25<sup>th</sup> from the right. How many seats were in the auditorium?

- A) 640                      B) 589                      C) 693                      D) 540                      E) none of these

2. Simplify:  $8^2 + 12 - (-5) + 4!$

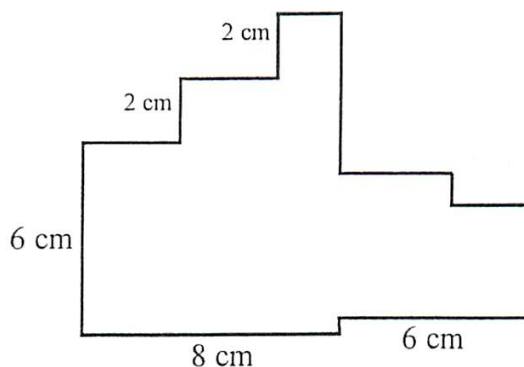
- A) 105                      B) 95                      C) 85                      D) 75                      E) none of these

3. PacSun is having a 70% off sale. If the new sticker price on the hoodie in your hands reads \$23.99, what was the original price of the hoodie (to the nearest penny)?

- A) \$40.97                      B) \$68.97                      C) \$34.97                      D) \$79.97                      E) none of these

4. Find the perimeter, to the nearest centimeter, of the figure to the right. Assume that all segments meet at right angles.

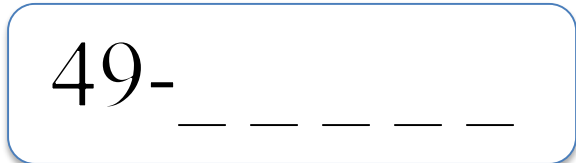
- A) 24 cm                      B) 36 cm                      C) 48 cm  
D) 60 cm                      E) none of these



5. You asked your math teacher when she graduated from high school. She responded using Roman Numerals: MCMXCIV. In what year did she graduate high school?

- A) 1974                      B) 1984                      C) 1994                      D) 2004                      E) none of these

6. Older vehicle license plates in Park County, Montana start with the number 49, followed by four digits and then one letter. If digits can repeat, how many possible license plates can be made?



- A) 100,000                      B) 131,040                      C) 170,586  
D) 260,000                      E) none of these

7. When  $\frac{1}{2}$  is divided by  $\frac{3}{12}$ , the quotient is:

- A)  $\frac{1}{8}$                       B)  $\frac{1}{6}$                       C) 2                      D) 6                      E) none of these

8. Katelyn Frost from Corvallis won the 100 meter dash at the 2015 MHSA Class A track meet with a time of 12.55 seconds. If there are approximately 1609.34 meters in one mile, how fast did Katelyn run in miles per hour? (Round to the nearest hundredth.)

- A) 28.07 mph                      B) 17.82 mph                      C) 14.43 mph                      D) 13.75 mph                      E) none of these

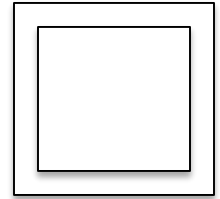
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9. What percent of 4 hours is 8 seconds? Round to the nearest hundredth percent.

- A) 0.06%                      B) 0.22%                      C) 0.56%                      D) 2.22%                      E) none of these

10. In the diagram to the right, the perimeter of the outer square is 20. The perimeter of the inner square is 16. What is the area between the two squares?

- A) 4                      B) 9                      C) 12  
D) 36                      E) none of these



11. Each time she watches The Big Bang Theory, Ann records the number of times she hears the word “Bazinga”. The first 8 episodes yielded this data: 2, 7, 4, 1, 3, 0, 4, 4. If the next episode contains 5 bazingas, which of the following is true?

- A) only the mean changes                      B) only the median changes                      C) the mean & the median both change  
D) neither the mean nor the median changes                      E) None of these

12. Today, your cranky old math teacher is 68 years old. What is the difference between his age today and his age 50 years ago?

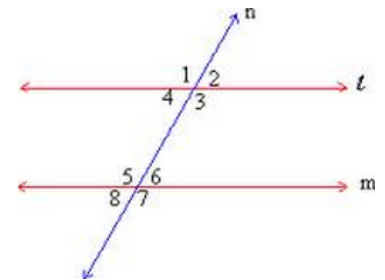
- A) 18 years                      B) 50 years                      C) 68 years  
D) no difference, he was always this old and cranky                      E) none of these

13. Twelve minutes after my English class is half over, two-fifths of the class period remains. My English class takes a total of:

- A) 40 minutes                      B) 60 minutes                      C) 120 minutes                      D) eternity                      E) none of these

14. In the diagram at right, the measure of angle 1 is  $112^\circ$ . Determine the measure of angle 6 if lines  $l$  and  $m$  are parallel.

- A) There is not enough information                      B)  $112^\circ$   
C)  $60^\circ$                       D)  $68^\circ$                       E) None of these



15. The product of an irrational number and a rational number will always be a(n):

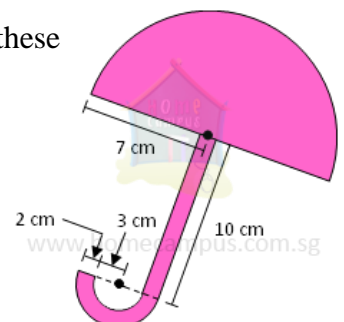
- A) natural number                      B) integer                      C) rational number                      D) non-real number                      E) none of these

16. Simplify to the nearest tenth:  $\frac{3+(-5)*5^2}{14-11(2)}$

- A) -27.9                      B) -8.3                      C) 6.3                      D) 15.3                      E) none of these

17. Find the area of the figure shown at right. Round to the nearest hundredth.

- A)  $132.10 \text{ cm}^2$                       B)  $129.96 \text{ cm}^2$                       C)  $122.10 \text{ cm}^2$   
D)  $104.82 \text{ cm}^2$                       E) none of these



**2016 TEAM 7 - 8 Answer Key**

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