MONTANA COUNCIL OF TEACHERS OF MATHEMATICS
2014 MATH CONTEST
POTLUCK

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

Use this information for the following questions. Jimmy is 3 blocks north and 2 blocks east of school. Sally is 5 blocks south and 4 blocks west of school.

1. What is the shortest distance from Jimmy's house to Sally's house, if you drive on the streets?
   A) 10 blocks B) 14 blocks C) 18 blocks D) 38 blocks E) none of these

2. What is the shortest distance from Jimmy's house to the school, if you drive on the streets?
   A) $\sqrt{5}$ B) $\sqrt{13}$ C) 9 D) 12 E) none of these

3. Can Sally get a signal from the school's Wi-Fi, if the school's Wi-Fi can be reached up to 7 blocks away?
   A) no, not even close B) no, but very close C) yes, but weak
   D) yes, very strong E) not enough information

4. If Jimmy lived on the northeast corner of the subdivision and Jill lived on the southwest corner of the same rectangular subdivision, what is the area of the subdivision?
   A) 14 sq. blocks B) 24 sq. blocks C) 36 sq. blocks D) 48 sq. blocks E) none of these

5. Which set of numbers includes a number with an odd number of positive integer factors?
   A) 2, 8, 10, 12 B) 14, 16, 24, 32 C) 5, 20, 30, 40 D) 87, 93, 101, 140 E) none of these

6. A stock on the stock-market went up 5% on Monday, up 2% on Tuesday, and fell 3% on Wednesday. What is the exact percent change from the start on Monday to the end of Wednesday.
   A) 3.887% B) 4% C) 96% D) 96.113% E) none of these

7. If Bob is making a scale model of his calculator for the school play (they are similar figures). The large model is 100 inches tall, and 40 inches wide. The digits that are written on the keys are half as high as the key. If the width of the actual calculator is 3 inches, and each key is 1/30 as tall as the actual calculator, how tall are the letters on the large model?
   A) 5/8 inch B) 5/16 inch C) 1 2/3 inch D) 2 inches E) none of these

8. Jamie scored 1/3 of her team's points, Betty scored 15% of their points and Barbie scored ¼ of the points. The rest of the team scored 16 points. The team made 60% of its points in the second half by hitting 55% of its shots. How many points did the team score during the entire game?
   A) 48 B) 60 C) 72 D) 80 E) none of these

9. Which of these has the smallest positive difference?
   A) 1.78 and 7/4 B) 1/3 and 0.3 C) 16/5 and 3 D) -3.25 and -7/2 E) not enough information

10. If $3x + 7 = 12$, what does $5x$ equal?
    A) 5/3 B) 4 C) 25/3 D) 25 E) none of these

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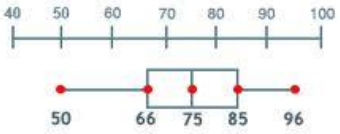
11. If the formula for the volume of a sphere is $= \frac{4}{3}\pi r^3$, which formula could be used to find the radius of a sphere, if you were given the volume.

A) $r = \sqrt[3]{\frac{3V}{4\pi}}$ B) $r = \sqrt[3]{\frac{4V}{3\pi}}$ C) $r = \frac{3\pi}{4}\sqrt[3]{v}$ D) $r = \frac{3}{4\pi}\sqrt[3]{v}$ E) none of these

Use this box-and-whisker graph to answer the following questions.



12. What is the median?

A) 66 B) 75 C) 75.5 D) 85 E) none of these

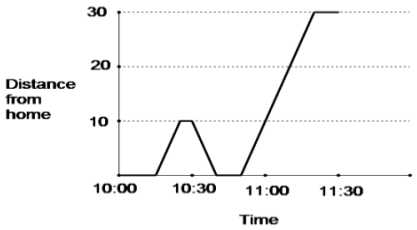
13. Approximately what percent of the data is below 85?

A) 25% B) 50% C) 75% D) 85% E) none of these

14. What is the Interquartile Range of the data set?

A) 9 B) 16 C) 19 D) 46 E) none of these

Use the table on the right to answer the next questions about the drive that Sammy took from her house to the zoo. The distance is in miles.



15. About what time did she leave her house?

A) 10:00 B) 10:15 C) 10:30 D) 10:45 E) none of these

16. About what time did she get to the zoo?

A) 10:45 B) 10:50 C) 11:15 D) 11:30 E) none of these

17. How far is it from Sammy's house to the zoo?

A) 10 miles B) 20 miles C) 25 miles D) 30 miles E) none of these

18. How far did Sammy drive between 10:00 and 11:30?

A) 10 miles B) 30 miles C) 40 miles D) 50 miles E) none of these

19. If Billie knows that she got the first 5 questions right on this test. If she randomly picks a letter (A-E) on the 6th question, what is the probability that she chooses the correct answer for question 6?

A) 1/6 B) 1/5 C) 5/6 D) 1/30 E) none of these

20. If one table seats 4 people and two tables seats 6 people and three tables seats 8 people, What is the minimum number waitresses needed for 21 tables, if each waitress can serve no more than 6 people?

A) 6 B) 7 C) 8 D) 9 E) none of these

POTLUCK 2014 Answer Key

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