



MONTANA COUNCIL OF TEACHERS OF MATHEMATICS
2014 MATH CONTEST
Number Concepts

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

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1. A side of a square is 10 meters longer than the side of an equilateral triangle. The perimeter of the square is 3 times the perimeter of the triangle. What is the length of each side of the triangle?
A) -40 B) 4 C) 10 D) 40 E) none of these
2. In a pie-eating contest Jimmy ate 2 pies in the first 5 minutes. At this rate, how many pies can he eat in one hour?
A) 10 B) 16 C) 18 D) 24 E) none of these
3. When you multiply three prime numbers, what type of number do you always get?
A) prime B) composite C) even D) odd E) not enough info.
4. When you multiply three even numbers, what type of number do you always get?
A) odd B) multiple of 2 C) multiple of 3 D) multiple of 10 E) none of these
5. How many times do you need to increase a number by 10 percent in order to at least double your original number?
A) 6 B) 7 C) 8 D) 9 E) none of these
6. What is the hundredth digit to the right of the decimal point of the decimal representation of $4/7$?
A) 2 B) 8 C) 5 D) 4 E) none of these
7. Which set of decimal values would be most helpful to determine the decimal value of $12/19$?
A) $2/19$ and $10/19$ B) $3/19$ and $4/19$ C) $12/10$ and $12/9$ D) $3/9$ and $9/10$ E) none of these
8. Which of the following would be most helpful in estimating the decimal value of $7/16$?
A) $0.5 = 1/2$ B) $1/10 = 0.1$ C) $1/8 = 0.125$ D) $1/16 = 0.0625$ E) $3/10 = 0.3$
9. There are 20 rows of seats in the stadium. Row one has 20 seats, row two has 21 seats, row three has 22 seats, and the pattern continues. How many seats are in the stadium?
A) 400 B) 440 C) 590 D) 600 E) none of these
10. A set of numbers includes all of the two digit perfect square numbers. How many of the numbers have both digits that are perfect squares?
A) 2 B) 3 C) 4 D) 5 E) none of these
- 11) An organization is raising money by having car washes. Each site must charge the same rate. The organization has agreed that they must charge over \$5 per car. If the first site collects \$198, \$252 at the second site, and \$495 at the third site, how much are they charging for each car wash?
A) \$3 B) \$5 C) \$9 D) \$10 E) none of these

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12. One box of cereal contains 12% more cereal than another box. The larger box contains 3 more ounces of cereal than the smaller box. How much cereal is in the larger box?
A) 22 B) 25 C) 28 D) 31 E) none of these
13. Winnie can paint 120 square yards in the same time that Wayne can paint 40 square yards. How many square feet can Wayne paint during the same time Winnie paints 600 square yards?
A) 80 B) 200 C) 800 D) 1800 E) none of these
14. A bathtub is approximately $4\frac{1}{2}$ feet long, 2 feet wide and 1 foot deep. If the water comes out of a faucet at a rate of $2\frac{1}{2}$ gallons each minute, how long will it take to fill the bathtub $\frac{3}{4}$ full? Hint: 1 gallon of water occupies 0.134 cubic feet.
A) 10 min. B) 20 min. C) 30 min. D) 40 min. E) none of these
15. A cookie recipe calls for $\frac{3}{4}$ cup of milk for 3 dozen cookies. If you are making a very large batch of cookies and have 1 quart of milk (4 cups). How many cookies can you make?
A) 9 cookies B) 16 cookies C) 144 cookies D) 192 cookies E) none of these
16. Erin wants to budget her spending and decides she can spend $\frac{1}{5}$ of her paycheck in the first week. If she instead spends $\frac{1}{4}$ of paycheck during the first week, by what percent of her total paycheck did she exceed her budgeted amount for the first week?
A) 5% B) -5% C) 12% D) 20% E) none of these
17. "I am a three-digit number. I am not a multiple of two. Seven is not one of my factors, but five is. I am less than 125. Who am I?"
A) 102 B) 105 C) 115 D) 120 E) none of these
18. Using the data set: 1, 2, 4, 6, 7, 12, 14, 15, 15, 20, 25. What is the sum of the mode and median?
A) 15 B) 24 C) 26 D) 29 E) none of these
19. Using the data set: 1, 2, 4, 6, 7, 12, 14, 15, 15, 20, 25. What is the positive difference of the mean and median?
A) 1 B) 2 C) 3 D) 4 E) none of these
20. Using the data set: 1, 2, 4, 6, 7, 12, 14, 15, 15, 20, 25. What is the Interquartile range?
A) 7 B) 12 C) 20 D) 22 E) none of these
21. Using the data set: 1, 2, 4, 6, 7, 12, 14, 15, 15, 20, 25. If the number 25 was replaced with 50, what measure would change?
A) mean B) median C) mode D) Interquartile range E) none of these
22. Using the data set: 1, 2, 4, 6, 7, 12, 14, 15, 15, 20, 25. If the two fifteens were removed, what measure would NOT change?
A) mean B) median C) mode D) range E) none of these

Number Concepts 2014 Answer Key

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