



MONTANA COUNCIL OF TEACHERS OF MATHEMATICS
2013 MATH CONTEST
APPLIED

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

- Bob bought a blue balloon for \$9 that was on sale for 25% off. What was the original price?
A) \$15.75 B) \$12.00 C) \$11.25 D) \$9.75
- If 6 items cost \$5.61, what would 10 items cost?
A) \$ 7.29 B) \$ 9.35 C) \$18.70 D) \$ 33.66
- What is the approximate distance between the points; $(-8, 4)$ and $(16, -6)$
A) 8.25 B) 8.5 C) 24.0 D) 26.0
- What is the midpoint of the segment with the endpoints at; $(-8, 4)$ and $(16, -6)$
A) $(4, -1)$ B) $(12, -5)$ C) $(4, -2)$ D) $(12, -1)$
- What is the volume of a cube with a side edge length of 10 cm?
A) 40 cm^3 B) 200 cm^3 C) 600 cm^3 D) 1000 cm^3
- A cube has an edge length of 4 cm. If the volume is doubled (and it is still a cube), what is the approximate length of an edge of the new cube?
A) 5 cm B) 6 cm C) 8 cm D) 10 cm
- Students are picked randomly from the participants at the math contest. There are 200 participants and they can only be chosen once for a door prize. If you have not been chosen for the first ten prizes, what is the probability that you are chosen for the 11th door prize?
A) $11/190$ B) $11/200$ C) $1/190$ D) $1/200$
- Which of the following cannot be the number of sides, if the perimeter is 36 and the length of the side is a whole number?
A) 4 B) 5 C) 6 D) 9
- If $f(x) = -2x^2 + 3x - 5$, what is $f(-4)$?
A) -49 B) -15 C) 15 D) 49
- Tim took two tests and got an 80% and a 90%. Tim has one more test to take. What score must he get on the third test to get an average of 88% on the three tests.
A) 90 B) 92 C) 94 D) 96
- How many different ways can 10 people be arranged in a line?
A) 1 B) 10 C) 1,814,400 D) 3,628,880
- If Jill is 2 miles north of the center of Joplin and drives 5 miles west and 10 more miles north. How far is she from the phone cell tower in the center of Joplin (straight line distance)?
A) 13 miles B) 14 miles C) 16 miles D) 17 miles
- Randy lives in a town with consecutively numbered streets and avenues every 660 feet. Randy drives from his house at the corner of 3rd street and 7th Avenue. He is now at the corner of 13th street and 17th Avenue. Randy's sister Ruth is exactly between Randy and his house. Where is she?
A) 10th St. and 10th Ave B) 5th St. 12th Ave C) 8th St. 10th Ave D) 8th St. and 12th Ave

APPLIED 2013 page 2

14. What is the area of a triangle with side lengths of 8, 15 and 17 ?
A) 60 B) 120 C) 136 D) Not enough information given
15. The area of a square is $x^2 + 6x + 9$. What is the perimeter of the square?
A) $2x^2 + 12x + 18$ B) $4x^2 + 24x + 18$ C) $4x + 12$ D) $x + 3$
16. A car dealer bought a car for \$11,789 and marked it up 25%. The special of the week is 20% off every car on the lot. What would this car cost this week?
A) \$ 11,199.55 B) \$ 11,789.00 C) \$ 12,378.45 D) \$ 14,739.25
17. If $f(x) = 2x$ and $g(x) = 3x + 1$, what is $f(g(x))$?
A) $5x + 1$ B) $6x + 2$ C) $6x + 1$ D) $6x + 2x$
18. A rectangle is 8 cm longer and 4 cm narrower than a square with the same area. What is the length of the perimeter of the rectangle?
A) 8 cm B) 32 cm C) 40 cm D) 64 cm
19. What is the measure of an exterior angle of a regular hexagon?
A) 60° B) 80° C) 100° D) 120°
20. The graph of which equation is a line parallel to the graph of $y = -2x + 5$?
A) $-2x + 2y = 5$ B) $x + 2y = 6$ C) $-2x + y = 5$ D) $2x + y = 8$
21. The graph of which equation is a line perpendicular to the graph of $y = x + 5$?
A) $x + y = 1/5$ B) $-x + 2y = 6$ C) $y = x - 5$ D) $2x + y = 8$
22. What is the equation of a line parallel to $y = 3x - 5$ and goes through the point (1, - 4).
A) $y = 3x - 4$ B) $y = 3x - 7$ C) $x + y = -4$ D) $3x + y = -7$
23. Which equation describes a line that is perpendicular to the line $y = 5$
A) $y = 1/5$ B) $x = 3$ C) $y = 3$ D) $y = -5$
24. What is the measure of two congruent supplementary angles?
A) 45° B) 60° C) 90° D) 180°
25. What is the surface area of a cube with a volume of 15,625?
A) 150 B) 625 C) 3750 d) 7500

APPLIED 2013 ANSWER KEY

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