



MONTANA COUNCIL OF TEACHERS OF MATHEMATICS
2012 MATH CONTEST

Pot Luck

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

1. Calculate the area of a shape that has the following vertices: A(2, 3); B(8, 3); C(4, 6); D(10, 6).
A) 9 B) 18 C) 27 D) 36

2. Tina has a 3x5 inch photo that she wants to enlarge so that it fits on a 8.5x11 inch piece of paper. What are the dimensions of the largest possible image that is similar to the 3x5 inch photo, but still fits on the 8.5x11 inch paper?
A) 8.5 x 14.17 inches B) 6 x 10 inches C) 8.5 x 11 inches D) 6.6 x 11 inches

3. Javier is playing a board game. Each turn, the player rolls two 6-sided dice, takes the sum, and moves his or her piece that number of spaces forward. If Javier's piece is in the square marked "START", which square is he most likely to reach on his first turn?

START	1	2	3	4	5	6	7	8	9	10	11
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- A) #5 B) #6 C) #7 D) #8
4. Which square is least likely for Javier to reach on his first turn?
A) #1 B) #2 C) #10 D) #11
5. If a trader buys a stock for \$8, then sells it for \$9, then buys it again for \$10, then sells it again for \$11, how much total profit did he make?
A) Did not make a profit B) \$1 C) \$2 D) \$11
6. Express 145% as a mixed fraction in simplest form.
A) 1.45 B) $\frac{145}{100}$ C) $1\frac{45}{100}$ D) $1\frac{9}{20}$
7. Sadie is considering two different cell phone plans. The first plan is \$45 per month with unlimited calling and unlimited text messaging. The second plan is \$35 per month with unlimited calling, but with a charge of \$0.05 for every text message over the 500th text. How many text messages would Sadie need to send for the costs of the two plans to be equal?
A) 200 messages B) 700 messages C) 900 messages D) 1050 messages
8. Bill is trying to earn a 88% average on tests in his math class. He scored an 80% on his first test, an 84% on his second test, a 96% on his third test, and an 82% on his fourth test. There is one test left in the semester. How well will Bill have to score on the final test in order to have an 88% test average?
A) 88% B) 92% C) 95% D) 98%
9. The formula for the surface area of a sphere is $SA = 4\pi r^2$, where r is the radius of the sphere. Give an approximate answer for the surface area for a sphere with a diameter of 14 cm. (Use 3.14 for π).
A) 175.84 cm² B) 351.68 cm² C) 615.44 cm² D) 2461.76 cm²

10. The formula $P = 2l + 2h$ gives the perimeter of a rectangle based on the length and height of the rectangle. Rewrite this formula to solve for l .

- A) $l = \frac{P-2h}{2}$ B) $l = P - h$ C) $l = \frac{P+2h}{2}$ D) $l = P + h$

11. Serena has two identical bottles of water. One of the bottles is full, and the other bottle is half full. The first bottle weighs 450 grams, and the second bottle weighs 275 grams. What is the weight of an empty bottle?

- A) 75 g B) 100 g C) 175 g D) 200 g

12. If Thomas ate $\frac{2}{3}$ of $\frac{1}{2}$ of $\frac{3}{4}$ of a pie, what fraction of the whole pie did he eat?

- A) $\frac{1}{8}$ B) $\frac{1}{4}$ C) $\frac{1}{3}$ D) $\frac{1}{2}$

13. Two rectangles have a similarity ratio of 5:2. If the smaller rectangle has a length of 4 inches and a width of 12 inches, what is the area of the larger rectangle?

- A) 96 in^2 B) 120 in^2 C) 244 in^2 D) 300 in^2

14. What is the next term in this sequence?

1, 3, 8, 16, 27, ...

- A) 38 B) 41 C) 43 D) 54

15. A painter is trying to finish painting a 30x25 ft room. At noon, he has painted a 20x15 ft section. What percentage of the room is left to paint?

- A) 40% B) 50% C) 60% D) 70%

16. This frequency table shows the number of books read over the summer by students in Mrs. Walsh's class?

	X						
	X					X	
X	X	X	X			X	
X	X	X	X			X	
X	X	X	X	X		X	X
0	1	2	3	4	5	6	

What is the mean of this data?

- A) 2 B) 2.5 C) 3 D) 3.5

17. If $y = -x^2 - 4x + 9$, what is the value of y when $x = -3$?

- A) -12 B) 6 C) 12 D) 30

18. During the summer, Jenny goes door-to-door selling home made cookies. She sold 6 boxes of cookies by the end of the first week, then 10 boxes by the end of the second week, then 14 boxes by the end of the third week. If her sales continue to follow this pattern, how many **total** boxes will she have sold by the end of the 12th week?

- A) 50 boxes B) 124 boxes C) 286 boxes D) 336 boxes

19. Solve for x : $\frac{1}{2}(3x - 4) = 7$

- A) 2.5 B) 3.67 C) 6.0 D) 7.33

20. A circle has a diameter with endpoints at (4, 0) and (0, 10). What are the coordinates of the center of the circle?

- A) (2, 5) B) (3, 4) C) (4, 10) D) (0, 0)

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Answers

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