MCTM

MONTANA COUNCIL OF TEACHERS OF MATHEMATICS

2013 MATH CONTEST

POTLUCK

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 (0,1); B (4,1); C (1, –3); D (5, –3).
   (A) 16 (B) 15 (C) 32 (D) 8

2. Sue wants to join a health club. Club 1, Get Fit, is $45 per month with unlimited tanning. Club 2, Flab Away, is $30 per month with a charge of $1.50 for each tanning session. How many tanning sessions would Sue need to use in a month for the cost of the two club plans to be equal?
   (A) 20 (B) 30 (C) 10 (D) 15

3. What is the ratio of the number of seconds in 15 minutes to the number of seconds in one hour?
   (A) 1:2 (B) 1:4 (C) 3:4 (D) 4:1

4. The formula for the surface area of a sphere is SA = $4 \cdot \pi \cdot r^2$. Give the approximate answer for the surface area for a sphere with a diameter of 23 cm. Use 3.14 for π.
   (A) 6644.24 sq cm (B) 1661.06 sq cm (C) 415.27 sq cm (D) 4152.65 sq cm

5. What number is $\frac{1}{6}$ of the reciprocal of ($\frac{1}{2}+\frac{1}{4}$)?
   (A) $\frac{1}{8}$ (B) $\frac{1}{4}$ (C) $\frac{2}{9}$ (D) $\frac{1}{2}$

6. What is the probability of randomly choosing a vowel from the letters in the alphabet? Y is NOT a vowel.
   (A) $\frac{3}{13}$ (B) $\frac{5}{24}$ (C) $\frac{7}{26}$ (D) $\frac{5}{26}$

7. The equation to find the area of a trapezoid is $A=\frac{1}{2}h(b_1+b_2)$. Which equation is equivalent?
   (A) $A=\frac{1}{2}hb_1+b_2$ (B) $h=\frac{2A}{b_1+b_2}$ (C) $h=\frac{A}{b_1+b_2}$ (D) $b_1=2A-b_2$

8. If Tony ate $\frac{1}{2}$ of $\frac{3}{4}$ of $\frac{2}{3}$ of a pizza, what fraction of the whole pizza did he eat?
   (A) $\frac{1}{4}$ (B) $\frac{3}{4}$ (C) $\frac{1}{2}$ (D) $\frac{1}{3}$

9. The greatest temperature change in 24 hours in Montana occurred in Loma on January 15, 1972. The temperature rose exactly 103 degrees, from -54 degrees Fahrenheit. What was the new temperature?
   (A) 157 degrees F (B) 51 degrees F (C) 49 degrees F (D) 54 degrees F

10. After her retirement, Linda is selling jewelry. The first week she sold 6 necklaces, the second week she sold 10 necklaces, and 14 necklaces by the end of the third week. If her sales continue to follow this pattern, how many **total** necklaces will she have sold by the end of the 12^{th} week?
    (A) 336 necklaces (B) 50 necklaces (C) 284 necklaces (D) 124 necklaces

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11. At 4:14 PM, I will begin to do my math homework. I will complete 32 problems that will each take me three minutes. Between each problem I will take a two minute texting break. What time will I finish my math problems?
(A) 6:56 PM (B) 6:54 PM (C) 6:50 PM (D) 6:52 PM

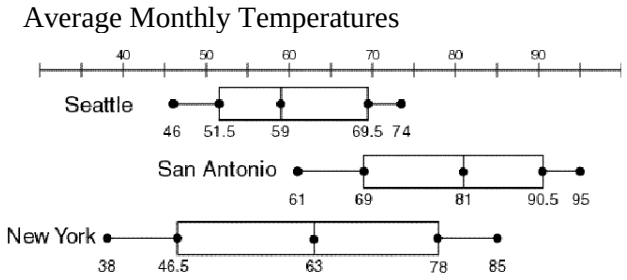
12. Using the table below, find the median monthly precipitation in inches for Billings, Montana.

1971-2000 Average Montana Monthly Precipitation

Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
0.81 in	0.57 in	1.12 in	1.74 in	2.48 in	1.89 in	1.28 in	0.85 in	1.34 in	1.26 in	0.75 in	0.67 in

(A) 1.12 in (B) 1.19 in (C) 1.585 in (D) 1.28 in

13. Using the box plot below, what was the lowest median temperature among the three cities listed?



(A) 46 degrees F (B) 38 degrees F (C) 59 degrees F (D) 46.5 degrees F

14. If $y = -x^2 - 5x + 2$, what is the value of y when x = 3.
(A) -19 (B) -4 (C) -22 (D) 14

15. If $\frac{3}{4}$ of a cup of fish food can feed 8 goldfish, 6 cups of food will feed how many goldfish?
(A) 64 (B) 36 (C) 32 (D) 48

16. $1+1\cdot 1+1\cdot 2\cdot 1+1\cdot 1+1=$
(A) 8 (B) 2 (C) 16 (D) 6

17. $(9+2)^2 = 9^2 + 2^2 + ?$
(A) 0^2 (B) 6^2 (C) 11^2 (D) 7^2

18. If the letters m,a,t and h each represent a different positive odd integer, what is the least possible value of $\sqrt{m+a+t+h}$?
(A) 16 (B) 8 (C) 4 (D) 2

19. You flip a coin and roll a number cube. What is the probability of getting tails and rolling a two?
(A) $\frac{1}{12}$ (B) $\frac{1}{6}$ (C) $\frac{1}{3}$ (D) $\frac{1}{2}$

20. If $a \psi b = a \bullet b + b^2$, what is the value of $4 \psi 6$?
(A) 40 (B) 60 (C) 46 (D) 36

POTLUCK 2013 Answer Key

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