Oklahoma School of Science and Mathematics
Fourteenth Annual Middle School Mathematics Contest
Round One, Spring 2016

Directions: Write the answer to each question in the box to the right of the question. Units are given in plural form even if the singular form is correct. Use scratch paper to do your work. Calculators are allowed, but not necessary.

Common fractions should be in simplest form ($\frac{a}{b}$, not mixed numbers)

1. What number satisfies given the equation? $\dfrac{2+3+4}{8+9+10} = \dfrac{}{(8-1)+(9-1)+(10-1)}$ a. 4 　　　 b. 6 　　　 c. 8 　　　 d. 9	1.	a. b.©d.
2. Which of the following is the median of $\dfrac{1}{2}, \dfrac{1}{3}, \dfrac{1}{4}, \dfrac{1}{5}$, and $\dfrac{1}{6}$? a. $\dfrac{1}{20}$ 　　 b. $\dfrac{1}{4}$ 　　 c. $\dfrac{17}{60}$ 　　 d. $\dfrac{29}{100}$	2.	aⓑ. c. d.
3. Which of these numbers is the greatest? a. $(-2)^3$ 　 b. $\left(\dfrac{1}{2}\right)^{-3}$ 　 c. $(-2)^2$ 　 d. -2^4	3.	aⓑ. c. d.
4. Which of the following points is on the line $-2y = 3x - 1$? a. $\left(0, -\dfrac{1}{2}\right)$ 　 b. $(1,1)$ 　 c. $(-1,1)$ 　 d. $(1,-1)$	4.	a. b. c.ⓓ
5. Which of these expressions is an equivalent expression to $3ab - 3ac + 6ad$? a. $3a(b-c+3d)$ 　 b. $3a(b-c+2d)$ 　 c. $3(ab-ac+3ad)$ 　 d. $3a(b-c+d)$	5.	aⓑ. c. d.
6. What is the least possible sum of a positive number and its reciprocal? a. 0 　　　 b. 1 　　　 c. 2 　　　 d. 2.5	6.	a. b.©d.
7. What is the value of $5\frac{1}{3} + 3\frac{3}{4}$?	7.	$\dfrac{109}{12}$
8. What is the value of the given expression? 　　　 $4 \times 2 - 8 \div 2^2$	8.	6
9. Consider that $2016 = 2^{10} + 2^9 + 2^8 + 2^7 + 2^6 + 2^5$. What is the value of $2^{10} + 2^9 + 2^8 + 2^7 + 2^6 + 2^5 + 2^4 + 2^3 + 2^2 + 2^1 + 2^0$?	9.	2047
10. What is the next number in the following sequence? $2, 4, 7, 11, \underline{\hspace{1cm}}$	10.	16
11. What is the simplified expression of $2x^2$ when $x = 5c$?	11.	$50c^2$
12. What is the least common multiple of 18 and 24?	12.	72
13. 3.2 hours represents how many total minutes?	13.	192 minutes
14. Given that $y = 2x$ and $3x + 2y = -21$, what is the value of x?	14.	-3

15. If x is 3 more than y, and y is 5 less than 2, then what is $2-x$?	15. 2
16. If the triangle graphed here was moved 4 units to the right and 1 unit up, what would be the new coordinates of point C?	16. (6,4)
17. Solve the linear inequality for x. $2(x+1)<x-2$	17. $x<-4$
18. If a line has a slope of 2 and passes through the point (4,3), what is the equation for the line? Answer in the form $y=mx+b$.	18. $y=2x-5$
19. I sell "Thunder" flags in only the following ways: 3 for \$1, 2 for 75¢, and/or 1 for 40¢. What is the least I can charge to sell 35 Thunder flags? a. \$11.66 b. \$11.75 c. \$12.00 d. \$14.00	19. a.ⓑ c. d.
20. Which of the following is the smallest two-digit number that is not the sum of three different one-digit numbers? a. 10 b. 15 c. 23 d. 25	20. a. b. c.ⓓ
21. In a room are 4 rugs. On each rug are 4 four-legged tables. On each table are 4 four-legged creatures. What is the total number of legs?	21. 320 legs
22. If M. E. Mooney has 7 quarters, 2 dimes, and 7 nickels, and he gives M. T. Pockets \$1.15, how much money does M. E. Mooney still have?	22. \$1.15
23. If you roll three fair six-sided dice, what are the odds that you will roll ⚅ on all three dice?	23. $\dfrac{1}{216}$
24. If a hover board originally costs \$500, but is on sale 20% off, and you have a "save an additional 10% off the sale price" coupon, how much will you pay for the hover board?	24. \$360
25. The perimeter of the inside of a shed is 36 feet. If the walls are made of concrete block which is 0.5 feet thick, what is the perimeter of the outside of the shed?	25. 40 feet
26. If the ratio of the area of circle A to the area of circle B is 9:4, and circle A has a radius of 3 inches, then what is the radius of circle B?	26. 2 inches
27. If you started counting at 1 count per second to 1,000,000 in the very first second of January 1, on what date would you finish?	27. January 12
28. What percent of the integers 1 through 20 are perfect squares or perfect cubes, but not both?	28. 20%
29. If the width of a rectangle is twice the height, and the area is 50 cm^2, what are the dimensions of the rectangle?	29. 5 x 10 cm
30. 2015, 2016, and 2017 share no common prime factors. What is the largest prime factor of the three numbers?	30. 2017