



Oklahoma School of Science and Mathematics

Fourteenth Annual Middle School Mathematics Contest

6th Grade Test, Round Two, Spring 2016

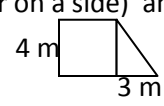


Directions: Write the answer to each question in the box to the right of the question. Units are given in plural form even if the singular form is correct. Use scratch paper to do your work. Calculators are allowed, but not necessary.

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

1. Divide 204x204 by 102. The quotient is a.) 2 b.) 4 c.) 102 d.) 204 e.) 408	1. a. b. c. d. <input checked="" type="radio"/> e.
2. The product of 2 different whole numbers is 11. Their sum is a.) 10 b.) 11 c.) 12 d.) 22	2. a. b. <input checked="" type="radio"/> c. d.
3. The product of 2016 and any prime number is a.) 2016 b.) even c.) odd d.) prime	3. a. <input checked="" type="radio"/> b. c. d.
4. How many 0s are needed to write the numeral for ten million five hundred thirty-five thousand. a.) 2 b.) 3 c.) 4 d.) 5	4. a. b. <input checked="" type="radio"/> c. d.
5. What number is 3 less than twice 34? a.) 28 b.) 62 c.) 65 d.) 71	5. a. b. <input checked="" type="radio"/> c. d.
6. In the English alphabet, what letter has five more letters after it as before it? a.) J b.) K c.) O d.) P	6. a. <input checked="" type="radio"/> b. c. d.
7. Each of the following is divisible by 6 <i>except</i> a.) 33666 b.) 36630 c.) 40434 d.) 60213 e.) 66336	7. a. b. c. <input checked="" type="radio"/> d. e.
8. Which of the following shapes could have three consecutive sides of length 4, 4, and 10? a.) triangle b.) rectangle c.) trapezoid d.) parallelogram e.) All of these	8. a. b. <input checked="" type="radio"/> c. d. e.
9. x is a number between -4 and -3. Which is the smallest? a.) x b.) $x-1$ c.) $x+2$ d.) $\frac{x}{2}$ e.) $3x$	9. a. b. c. d. <input checked="" type="radio"/> e.
10. A particular plant doubles its size every day. On Saturday it is <u>?</u> times as big as it was on the preceding Sunday. a.) 2 b.) 6 c.) 49 d.) 64 e.) 128	10. a. b. c. <input checked="" type="radio"/> d. e.
11. Which of the following is both the sum of two prime numbers and the product of two other prime numbers? a.) 19 b.) 21 c.) 31 d.) 51	11. a. <input checked="" type="radio"/> b. c. d.
12. Seattle gets on average rain 155 days out every 365 day year. On average, what percentage of days does it not rain in Seattle (rounded to the nearest 1%)? a.) 23% b.) 42% c.) 57% d.) 58%	12. a. b. c. <input checked="" type="radio"/> d.

13. Which is smaller? a.) a square with side 0.5 miles b.) a circle with radius 0.3 miles?	13. Ⓐ b.
14. A large equilateral triangle is made of tessellated smaller equilateral triangles that are 3 inches on each side (see figure of the triangle made of 4 smaller triangles). How many of the smaller triangles are necessary to build a triangle that is 12 inches on each side? a.) 10 b.) 12 c.) 16 d.) 20	14. a. b. Ⓒ d.
15. For the given group of numbers, put the mean, median, and mode in order from least to greatest. {1, 2, 2, 4, 5, 9, 12} a.) median<mean<mode b.) mode<mean<median c.) median<mode<mean d.) mode<median<mean	15. a. b. c. Ⓓ
16. An OSSM Calculus class has 6 more students this semester than last semester. If the average number of students in the Calculus class is 21, how many students were in the class last semester? a.) 15 b.) 18 c.) 21 d.) 24 e.) 27	16. a. Ⓓ c. d. e.
17. I have quarters and dimes that value a total of \$2.75. I have 20 coins total. How many quarters do I have? a.) 1 quarters b.) 5 quarters c.) 7 quarters d.) 13 quarter	17. a. Ⓓ c. d.
18. Two standard six sided dice are rolled. What is the probability that the sum of the numbers on the top faces of the dice is a prime number? (Give your answer as a simplified fraction.) a.) 8/21 b.) 5/12 c.) 1/2 d.) 2/3	18. a. Ⓓ c. d.
19. A particular basketball team scores an average of 67 points per game for the first four games, and an average of 64 points per game for the first five games. How many points did the team score in its fifth game? a.) 51 b.) 52 c.) 53 d.) 54 e.) 55	19. a. Ⓓ c. d. e.
20. What is the next number in the sequence? 1,6,4,9,7,_____	20. 12
21. What is the value of the given expression? $\frac{1}{\frac{1}{3}} \div \frac{2}{\frac{2}{6}}$	21. $\frac{1}{2}$ or 0.5
22. Solve the linear inequality for x . $3(x+1) < x+7$	22. $x < 2$
23. What is the value of $\frac{1}{2} \times \frac{3}{4} + \frac{5}{6} \times \frac{7}{8}$? Express answer as a simple fraction.	23. $\frac{53}{48}$
24. If the given table of values represents points on a straight line, what would the y value be when $x = 25$?	24. 37.5 or 75/2
25. How many numbers are there between 25 and 125 that are multiples of 2 or 3 but not both?	25. 67

26. On my first birthday, my brother was five times older than me. How old was he when he was twice as old as me?	26. 8
27. If $4x + 4y = 7y - 2x$ and $y = kx$, what is k ?	27. 2
28. If the sum of the prime factors of 12 is $2+2+3=7$, then what is the sum of the prime factors of 2016?	28. 23
29. Find all three possible values of the digit n such that the 5-digit number $219n5$ is divisible by 15	29. 1,4,7
30. What is the smallest composite number which has a prime factorization that does not include any 1-digit numbers?	30. 121
31. What digit is in the tens place of the smallest natural number which is evenly divisible by 5,6,8, and 9?	31. 6
32. If $x \text{ } \textcircled{\ast} \text{ } y = x^2 - 2y$, then $5 \text{ } \textcircled{\ast} \text{ } (3 \text{ } \textcircled{\ast} \text{ } 4) = ?$	32. 23
33. Express as a fraction: $0.\overline{3} + 0.\overline{17}$	33. $\frac{50}{99}$
34. For what value of x will the solution of the following equation be $y = 3x$? $4x + y = 3(1 + x)$	34. $\frac{3}{4}$ or 0.75
35. Solve for n : $2^3 \times 4^2 \times 8^{-4} = 2^n$	35. -5
36. Assuming x and y are positive, simplify the expression so that it is a simplified fraction with only positive integer exponents. $\left(\frac{4x^2}{9y^2}\right)^{-3/2}$	36. $\frac{27y^3}{8x^3}$
37. Combine the following into a single expression of the form $a\sqrt{b}$ $\sqrt{7} - \sqrt{28} + \sqrt{63}$	37. $2\sqrt{7}$
38. There are 216 stitches on a regulation baseball. If I can stitch four stitches in 30 seconds, how many minutes will it take me to stitch a baseball?	38. 27 minutes
39. Four test grades are averaged in Mr. Al Jabber's class. If you earned 90%, 80% and 96% on the first three tests, what must you earn on the 4 th test to keep an average of 90% for the four tests?	39. 94%
40. What is the area of the triangle that connects the points A(-4,0), B(3,0), and C(1,8)?	40. 28
41. Consider the shape illustrated below made of a square (4 meter on a side) and a right triangle(3 meter base). What is the minimum amount of fence needed to build a pen as illustrated? 	41. 24 meters
42. 2016 has only 2, 3, and 7 as prime factors. What are the next three numbers to have only these same three prime factors	42. 2058, 2268, 2352

