T M S C A E L E M E N T A R Y

M A T H E M A T I C S

S T A T E O N - L I N E M E E T T E S T ©

2 0 2 1

GENERAL DIRECTIONS

1. About this test:
   A. You will be given 40 minutes to take this test.
   B. There are 50 problems on this test.
2. All answers must be written on the answer sheet/Scantron form/Chatsworth card provided. If you are using an answer sheet be sure to use **BLOCK CAPITAL LETTERS**. Clean erasures are necessary for accurate grading on Scantrons and Chatsworth cards.
3. If you are using a Chatsworth or Scantron card, please follow the specific instructions given at your particular meet.
4. You may write anywhere on the test itself. You must write only answers on the answer sheet.
5. You may use additional scratch paper provided by the contest director.
6. All problems have **ONE** and **ONLY ONE** correct [BEST] answer. There is a penalty for all incorrect answers.
7. Calculators **MAY NOT** be used on this test.
8. All problems answered correctly are worth **FIVE** points. **TWO** points will be deducted for all problems answered incorrectly. No points will be added or subtracted for problems not answered.
9. In case of ties, percent accuracy will be used as a tie breaker.

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1. 93 + 27 = _____
A. 110 B. 130 C. 120 D. 140 E. 66

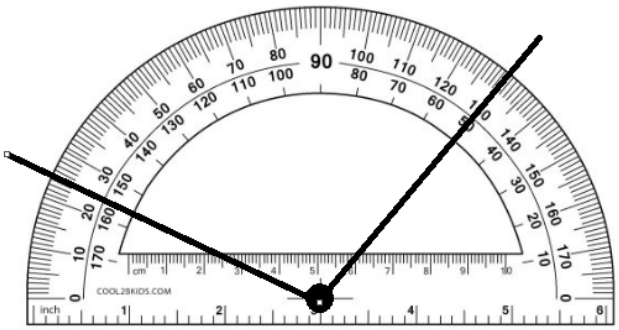
2. 78 – 36 = _____
A. 32 B. 24 C. 114 D. 42 E. 44

3. 16 × 9 = _____
A. 144 B. 94 C. 98 D. 124 E. 114

4. 128 ÷ 8 = _____
A. 14 B. 120 C. 16 D. 24 E. 26

5. 7 quarters + 9 dimes + 11 nickels + 30 pennies = _____
A. $3.70 B. $3.20 C. $3.40 D. $3.60 E. $3.50

6. Which of the following is the closest to the angle measure illustrated below?



A. 130° B. 135° C. 125° D. 115° E. 105°

7. Let *A* equal the total degrees of a triangle and *B* equal the total degrees of a quadrilateral. What is the value of *A* + *B*?
A. 480° B. 600° C. 720° D. 540° E. 900°

8. What is the sum of the number of sides of a hexagon, decagon and octagon?
A. 14 B. 18 C. 20 D. 24 E. 28

9. 8¼% = _____ (decimal)
A. 0.0825 B. 0.825 C. 8.25 D. 82.5 E. 825.0

10. Simplify: $[(8 + 16) \div 2] - 2^3 + 7$
A. 19 B. 11 C. 15 D. 17 E. 13

11. 36,000,000 milligrams = _____ kilograms
A. 3,600 B. 360 C. 36,000 D. 36 E. 3.6

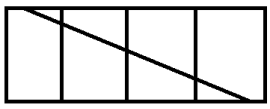
12. If *A* = 1, *B* = 2, *C* = 3, …, *Y* = 25, and *Z* = 26, what is the sum of the letters of the word *ADDITION*?
A. 68 B. 66 C. 78 D. 72 E. 76

13. What algebraic equation represents "eight less than twice a number is equal to eleven"?
A. 2(*n* – 8) = 11 B. 8 – 2*n* = 11 C. 2*n* – 8 = 11 D. 8(*n* – 2) = 11 E. *n* – 2(8) = 11

14. 28 × 77 =_____ (nearest hundred)
A. 2,100 B. 2,200 C. 2,000 D. 2,160 E. 2,150

15. Shayna drew a rectangle that measured 12 inches by 7 inches. Shayna colored half of her rectangle red. What is the area of the rectangle that Shayna colored red?
A. 42 in^2 B. 38 in^2 C. 84 in^2 D. 76 in^2 E. 48 in^2

16. How many rectangles can be found in the picture below?



A. 6 B. 8 C. 12 D. 7 E. 10

17. What is the sum of the next three terms in the sequence 39, 45, 51, …?
A. 173 B. 189 C. 207 D. 195 E. 210

18. $2^3 \times 5 \times 13$ is the prime factorization of which number?
A. 240 B. 160 C. 390 D. 520 E. 585

19. Cleavus bought a sandwich for \$6.95, some chips for \$1.29, a drink for \$0.89, and an ice-cream cone for 75¢. If Cleavus paid with a \$10.00 bill, how much change did he get, assuming there is no tax?
A. \$0.18 B. \$0.16 C. \$0.14 D. \$0.12 E. \$0.08

20. Which digit is in the thousandths place value of the number 120,345.6789
A. 2 B. 0 C. 3 D. 9 E. 8

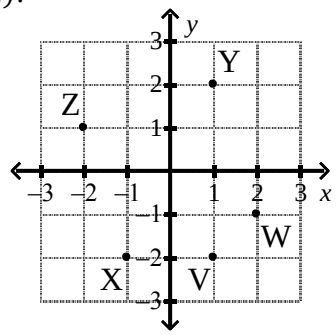
21. What is the name of the point that has coordinates of (0, 0)?
A. origin B. starting point C. vertex D. apex E. *x*-intercept

22. Evaluate $(ab)^2 - cd$, for $a = 8$, $b = 2$, $c = 5$, and $d = 6$.
A. 98 B. 70 C. 226 D. 113 E. 257

23. What is the difference if you subtract the mode from the median of the set of numbers 18, 38, 45, 18, 77, 23, 42, 11, 6?
A. 59 B. 48 C. 5 D. 7 E. 18

24. What value is 40% of 450?
A. 140 B. 180 C. 240 D. 220 E. 200

25. Which plotted point has coordinates $(1, -2)$?



A. V B. W C. X D. Y E. Z

26. What is the sum of the greatest common factor of the numbers 28 and 42 and the least common multiple of the numbers 50 and 80?
A. 400 B. 414 C. 200 D. 4,400 E. 5,600

27. $7(a + b)$ is equivalent to which of the following?
A. $7 + a + b$ B. $7ab$ C. $7a + b$ D. $7 + ab$ E. $7a + 7b$

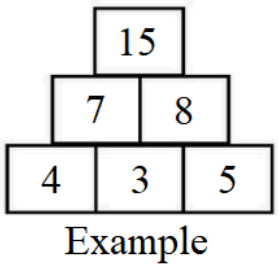
28. How many positive integral factors does the number 42 have?
A. 21 B. 6 C. 8 D. 12 E. 14

29. What is the mean of the set of number 34, 12, 8, 43, 23, and 6?
A. 24 B. 23 C. 21 D. 22 E. 22.5

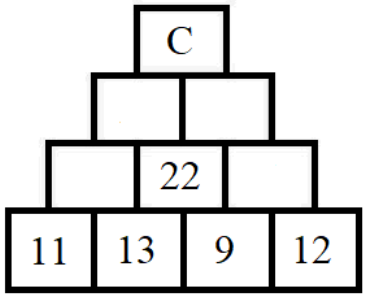
30. 0.0000056 = _____ (scientific notation)
A. 56×10^5 B. 5.6×10^6 C. 5.6×10^{-6} D. 56×10^{-5} E. 0.56×10^5

31. The sum of three consecutive even integers is 84. What is the average of the three integers?
A. 28 B. 26 C. 30 D. 32 E. 24

32. Use the example in the picture below to find the value of C.



Example

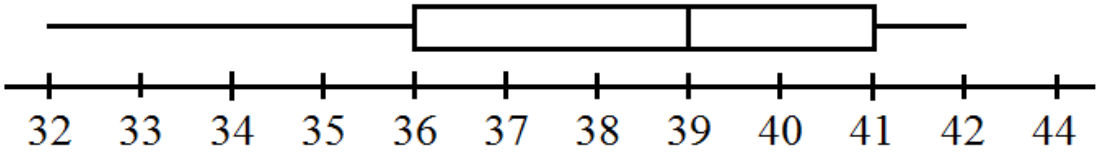


A. 91 B. 93 C. 87 D. 89 E. 95

33. Louis is buying a shirt that costs $24.50. If the shirt is on sale for 30% off, how much will Louis save?
A. $7.95 B. $7.35 C. $7.85 D. $7.65 E. $7.55

34. If a regular hexagon has a total of 720°, what is the measure of one of its interior angles?
A. 60° B. 30° C. 150° D. 45° E. 120°

35. In the box-and-whisker plot below, what is the value of the upper-quartile?



A. 32 B. 36 C. 39 D. 41 E. 42

36. Point A has coordinates $(4, -6)$. What are the new coordinates of point A after it is reflected across the x-axis?
A. $(-4, 6)$ B. $(4, 6)$ C. $(-4, -6)$ D. $(6, 4)$ E. $(-6, 4)$

37. In a class of 24 sixth graders at Milbanks Middle School, 6 have two siblings. If the entire 6^{th} grade consists of 144 students, how many 6^{th} graders do not have two siblings?
A. 36 B. 96 C. 108 D. 112 E. 92

38. How many squares, each having a perimeter of 12 cm, can be cut from a square that has a perimeter of 48 cm?
A. 2 B. 16 C. 12 D. 8 E. 10

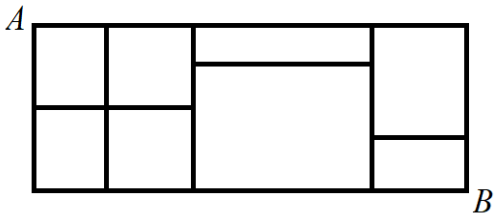
39. $8\frac{2}{5} \div 1\frac{2}{5}$ = _____

A. 6 B. $5\frac{3}{5}$ C. $5\frac{1}{5}$ D. $5\frac{4}{5}$ E. $6\frac{4}{5}$

40. How many total diagonals can be drawn inside a regular octagon?

A. 20 B. 8 C. 16 D. 24 E. 32

41. Moving only to the right or down, how many paths are there from *A* to *B*?



A. 9 B. 14 C. 13 D. 11 E. 15

42. 318 + 299 = _____ (Roman numeral)

A. DCXII B. DCVII C. CDXVII D. CDVII E. DCXVII

43. Solve the inequality: $2n + 2 < 16$

A. $n > 7$ B. $n > 9$ C. $n < 9$ D. $n < 7$ E. $n = 7$

44. What is the probability of rolling a pair of dice and getting a sum of 6?

A. $\frac{1}{6}$ B. $\frac{1}{3}$ C. $\frac{5}{36}$ D. $\frac{2}{3}$ E. $\frac{2}{9}$

45. If $a \heartsuit b = 5a - 2b$, then what is the value of $(6 \heartsuit 2) \heartsuit 8$?

A. 114 B. 26 C. 34 D. 132 E. 124

46. What is the volume of a cylinder with a diameter of 10 cm and a height of 13 cm? Let $\pi = 3$.

A. 195 cm^3 B. 390 cm^3 C. 975 cm^3 D. 3,900 cm^3 E. 1,950 cm^3

47. $\sqrt{100} + \sqrt{144} - \sqrt{36}$ = _____

A. 208 B. 16 C. 104 D. 32 E. 8

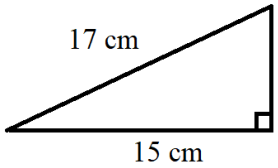
48. $\frac{2}{3}$ = _____ %

A. 0.67 B. $0.\overline{6}$ C. $66\frac{1}{3}$ D. $6\frac{2}{3}$ E. $66\frac{2}{3}$

49. What is the value of *n*, if $3(n - 4) = 36$?

A. 112 B. 108 C. 12 D. 24 E. 16

50. What is the perimeter of the triangle?



A. 32 cm B. 47 cm C. 49 cm D. 40 cm E. 60 cm

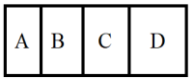
2020 – 2021 TMSCA Elementary School State Mathematics On-Line Test Answer Key

1. C
2. D
3. A
4. C
5. E
6. E
7. D
8. D
9. A
10. B
11. D
12. E
13. C
14. B
15. A
16. E
17. B
18. D
19. D
20. E
21. A
22. C
23. C
24. B
25. A
26. B
27. E
28. C
29. C
30. C
31. A
32. D
33. B
34. E
35. D
36. B
37. C
38. B
39. A
40. A
41. D
42. E
43. D
44. C
45. A
46. C
47. B
48. E
49. E
50. D

2020 – 2021 TMSCA Elementary School State Mathematics On-Line Test Selected Answers

10. Using the correct order of operations, $[(8 + 16) \div 2] - 2^3 + 7 = [24 \div 2] - 2^3 + 7 = 12 - 2^3 + 7 = 12 - 8 + 7 = 4 + 7 = 11$.

16. Ignore the diagonal line inside the shape and label the remaining as shown.



We can make rectangles using 1 section, which are A, B, C, and D. Rectangles using 2 sections are AB, BC, and CD. Rectangles with 3 sections are ABC and BCD. There is 1 rectangle using all 4 sections, ABCD. Therefore, there are a total of A, B, C, D, AB, BC,

21. The name of the point that has coordinates (0, 0) is the origin.

27. $7(a + b) = 7 \times a + 7 \times b = 7a + 7b$.

31. If three consecutive even integers sum to 84, let $x - 2$ be the smallest of the even integers, making x be the middle integer and $x + 2$ be the greatest integer. We then have $x - 2 + x + x + 2 = 84$, and this simplifies to $3x = 84$. Since there are 3 integers, divide both sides of the equation by 3 and we get $\frac{3x}{2} = \frac{84}{3}$ and this gives us the solution of $x = 28$. Therefore, the average of three consecutive integers that sum to 84 is 28.

34. To find the interior angle measure of a regular polygon, take the total degrees and divide it by the number of sides of the polygon. Since a hexagon has 6 sides, the interior angle measure is $\frac{720}{6} = 120^\circ$.

38. If a square has a perimeter of 48 cm, then each side measures $48 \div 4 = 12$ cm, which means the square has an area of $12^2 = 144$ cm^2. A square that has a perimeter of 12 cm has a side length of $12 \div 4 = 3$ cm, which means it has an area of $3^2 = 9$ cm^2. To find how many smaller squares can be cut from the larger square, divide 144 by 9 and get 16. There are 16 smaller square that can be cut from the larger square.

39. $8\frac{2}{5} \div 1\frac{2}{5} = \frac{42}{5} \div \frac{7}{5} = \frac{42}{5} \cdot \frac{5}{7} = \frac{42 \cdot \cancel{5}}{7 \cdot \cancel{5}} = \frac{42}{7} = 6$.

44. There are 36 outcomes when rolling a pair of dice. To get a sum of 6, you need (1, 5), (5, 1), (2, 4), (4, 2), and (3, 3). Since there are five possible outcomes to get a sum of 6, the probability is $\frac{5}{36}$.

45. If $a \heartsuit b = 5a - 2b$, then to find the value of (6 ♥ 2) ♥ 8, first do 6 ♥ 2. 6 ♥ 2 = 5(6) – 2(2) = 30 – 4 = 26. Now we have to do 26 ♥ 8, so 5(26) – 2(8) = 130 – 16 = 114.

48. $\frac{2}{3} = 0.66666 \ldots = 0.\overline{6} = 66.\overline{6}\% = 66\frac{2}{3}\%$.

50. This is a right triangle, so to find a missing side length, use the Pythagorean Theorem, $a^2 + b^2 = c^2$, where a and b are the legs and c represents the hypotenuse of the right triangle. We are given a leg to be 15 cm and the hypotenuse to be 17 cm. Plugging into our formula, $15^2 + b^2 = 17^2$, which becomes $225 + b^2 = 289$. Now, subtract 225 from both sides of the equation and $b^2 = 64$. The opposite of squaring a number is square rooting the number, so $\sqrt{b^2} = \sqrt{64}$, and so = 8. The missing side length is 8 cm.