



**TMSCA ELEMENTARY
MATHEMATICS
BANA INVITATIONAL ©
2017**

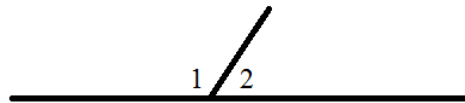
GENERAL DIRECTIONS

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.

2017 – 2018 TMSCA Elementary School Invitational Mathematics Test

1. $17 + 39 =$ _____
 A. 57 B. 55 C. 54 D. 56 E. 46
2. $306 - 78 =$ _____
 A. 218 B. 228 C. 238 D. 248 E. 384
3. $27 \times 42 =$ _____
 A. 1,134 B. 1,034 C. 1,728 D. 1,278 E. 1,284
4. $7,356 \div 4 =$ _____
 A. 1,659 B. 1,739 C. 1,919 D. 1,749 E. 1,839

5. Angle 1 and angle 2 form a straight angle. If the measure of angle 1 is 119° , find the measure of angle 2.



- A. 29° B. 39° C. 61° D. 51° E. 71°
6. Evaluate $10A \div 4$, if $A = 24$.
 A. 8.5 B. 16.5 C. 60 D. 64 E. 256

7. Change $8 \frac{2}{3}$ into an improper fraction.

- A. $\frac{26}{3}$ B. $\frac{19}{3}$ C. $\frac{13}{3}$ D. $\frac{14}{3}$ E. $\frac{64}{3}$

8. What is the 8th term of the sequence?

7, 13, 19, 25, ...

- A. 31 B. 37 C. 43 D. 49 E. 55

9. Which digit is in the ten-thousand's place of the number 987,654,321?

- A. 8 B. 2 C. 4 D. 5 E. 6

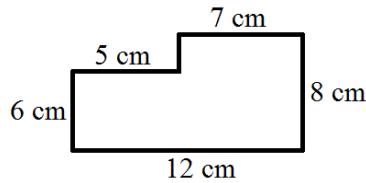
10. What is the perimeter of a square with a side length of 9 inches?

- A. 36 inches B. 18 inches C. 27 inches D. 81 inches E. 40 inches

11. Mark is watching a movie that lasts 1 hour 23 minutes. If he starts his movie at 6:10 pm, what time will the movie end?

- A. 7:33 am B. 6:43 pm C. 7:23 pm D. 7:33 pm E. 6:43 am

12. What is the perimeter of the shape below?



- A. 40 cm B. 74 cm C. 38 cm D. 72 cm E. 28 cm

13. Which figure below has 6 faces, 12 edges and 8 vertices?

- A. cylinder B. cone C. rectangular pyramid D. rectangular prism E. sphere

14. What is the prime factorization of the number 24?

- A. $2^2 \cdot 6$ B. $4 \cdot 6$ C. $2^3 \cdot 3$ D. $2^2 \cdot 3^2$ E. $2 \cdot 3^3$

15. Change 0.24 into a fraction.

- A. $\frac{6}{35}$ B. $\frac{4}{15}$ C. $\frac{6}{25}$ D. $\frac{8}{33}$ E. $\frac{1}{5}$

16. At a carnival, Noah purchased 8 ride tickets for \$19.20. How much was each ride ticket?

- A. \$2.25 B. \$2.40 C. \$2.52 D. \$2.50 E. \$2.65

17. Which expression represents “five less than a number”?

- A. $n + 5$ B. $5 - n$ C. $5 + n$ D. $n - 5$ E. $n \div 5$

18. If $x = 6$, which inequality is true?

- A. $x + 8 \geq 30$ B. $19 + x > 29$ C. $x - 2 > 8$ D. $13 - x < 1$ E. $x - 5 < 2$

19. What is the name of the shape below?



- A. trapezoid B. pentagon C. rectangle D. hexagon E. nonagon

20. The radius of a circle is _____ the length of the circle’s diameter.

- A. one-fourth B. one-fifth C. one-half D. two-thirds E. double

21. Which digit is in the hundredth’s place in the number 345.789?

- A. 3 B. 9 C. 5 D. 7 E. 8

22. Change $\frac{54}{7}$ into a mixed number.

- A. $7\frac{3}{7}$ B. $7\frac{6}{7}$ C. $7\frac{2}{7}$ D. $7\frac{1}{7}$ E. $7\frac{5}{7}$

23. In which quadrant would the point (6, -7) be plotted in?

- A. I B. II C. III D. IV E. V

24. Round the sum of $45,763 + 23,100 + 786$ to the nearest hundred.

- A. 70,000 B. 69,000 C. 69,600 D. 69,650 E. 69,700

25. Travis use 2 pounds of lettuce for dinner for 7 people. How many pounds of lettuce will Travis need for a dinner for 42 people?

- A. 18 pounds B. 16 pounds C. 14 pounds D. 12 pounds E. 8 pounds

26. $11 - 43 =$ _____

- A. -32 B. -54 C. 32 D. 54 E. -28

27. What is the remainder when the number 34,112 is divided by 7?

- A. 2 B. 3 C. 1 D. 5 E. 4

28. $5\frac{4}{5} + 10\frac{3}{5} =$ _____

- A. $15\frac{2}{5}$ B. $16\frac{3}{5}$ C. $16\frac{1}{5}$ D. $15\frac{1}{5}$ E. $16\frac{2}{5}$

29. Tracy’s lunch bill is \$24.57. If Tracy pays with a \$100 bill, how much change will she receive back?

- A. \$76.43 B. \$76.53 C. \$75.43 D. \$75.53 E. \$74.83

30. What is the value of x , if x is equal to five less than twice eleven?

- A. -17 B. 5 C. 12 D. 22 E. 17

31. What is the median for the following set of numbers? 12, 17, 24, 22, 31, 8, 15

- A. 22 B. 17 C. 18.42 D. 18.4 E. 23

32. There are 30 students in a classroom. 10 of the students are wearing a blue shirt and 12 of the students are wearing sandals. If 5 students are wearing both a blue shirt and sandals, how many are wearing neither a blue shirt nor sandals?

- A. 13 B. 8 C. 10 D. 11 E. 15

33. In the picture below, there is one cup in row 1, two cups in row 2 and three cups in row 3.



If more rows of cups were added, what is the total number of cups used to create six rows of cups?

- A. 18 B. 16 C. 6 D. 24 E. 21

34. $-12^2 =$ _____

- A. 144 B. 24 C. -24 D. -48 E. -144

35. What is the probability of rolling a die and getting an even number?

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

36. Which of the following numbers is not divisible by 9?

- A. 207 B. 11,115 C. 1,108 D. 108 E. 135

37. What is the value of the Greatest Common Factor of the numbers 24 and 32?

- A. 2 B. 4 C. 6 D. 96 E. 8

38. The measure of angle A is 76° . What is the measure of the complement of angle A ?

- A. 24° B. 14° C. 104° D. 94° E. 4°

39. What is the sum of the next two terms of the sequence 23, 27, 31, ...?

- A. 39 B. 78 C. 66 D. 74 E. 70

40. If $\pi = 3$, what is the circumference of a circle with a radius of 15 inches?
 A. 675 inches B. 96 inches C. 45 inches D. 54 inches E. 90 inches

41. How many different ways can 4 books be arranged on a shelf?
 A. 12 B. 24 C. 16 D. 18 E. 4

42. What value is 40% of 240?
 A. 84 B. 96 C. 120 D. 112 E. 92

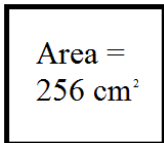
43. How many total degrees are there in a hexagon?
 A. 720° B. 540° C. 900° D. 360° E. 180°

44. $40\frac{5}{8} - 19 =$ _____
 A. $21\frac{3}{8}$ B. $21\frac{5}{8}$ C. $20\frac{3}{8}$ D. $20\frac{5}{8}$ E. $20\frac{7}{8}$

45. What is the average of the numbers 24, 48, 56 and 16?
 A. 42 B. 38 C. 36 D. 40 E. 34.5

46. Let $A = 34 - 8$ and $B = 9 + 5$. What is the Least Common Multiple of A and B ?
 A. 182 B. 2 C. 364 D. 14 E. 26

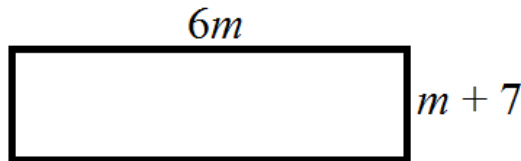
47. The area of a square is 256 cm^2 . What is the perimeter of the square?



A. 32 cm B. 64 cm C. 128 cm D. 1,024 cm E. 96 cm

48. Simplify: $4(1 + 7)^2 \div 2 \cdot 3$
 A. 298 B. 288 C. 384 D. 398 E. 424

49. If $m = 4$ inches, what is the area of the rectangle below?



A. 168 in^2 B. 120 in^2 C. 130 in^2 D. 324 in^2 E. 264 in^2

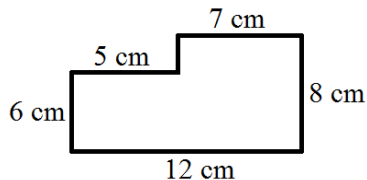
50. $2 + 4 + 6 + \dots + 18 + 20 + 22 =$ _____
 A. 120 B. 132 C. 146 D. 130 E. 96

2017 – 2018 Elementary School Invitational Mathematics Test ANSWER KEY

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

6. If $A = 24$, then $10A \div 4 = 10(24) \div 4 = 240 \div 4 = 60$.

12. To find the perimeter of the shape below,



We must add all the sides together. All side lengths are given except for the small side that has a length of 2, because $8 - 6 = 2$. Therefore, the perimeter of the shape is $5 + 6 + 12 + 8 + 7 + 2 = 40$ cm.

22. $\frac{54}{7} = 54 \div 7 = 7$ with a remainder of 5. Therefore, $\frac{54}{7} = 7\frac{5}{7}$.

30. If x is equal to five less than twice eleven, then we have the equation $x = 2(11) - 5$. Therefore, $x = 22 - 5$ and so $x = 17$.

31. To find the median of the set of numbers 12, 17, 24, 22, 31, 8, 15, first order them from least to greatest. Listed from least to greatest, we get 8, 12, 15, 17, 22, 24 and 31. The median of the set of numbers is the number found directly in the middle of the set, which is 17.

34. $-12^2 = -1 \cdot 12^2 = -1 \cdot 144 = -144$.

39. The rule to find the next term in the sequence 23, 27, 31, ... is to add 4 more to the previous term. Therefore, the next two terms are 35 and 39. Thus, their sum is $35 + 39 = 74$.

40. To find the circumference of a circle, when given its radius, we use the formula $C = 2\pi r$. We are given the radius of 15 inches, so the circumference can be found $C = 2 \cdot 3 \cdot 15 = 90$ inches.

43. To find the total degrees in a polygon, use the formula $(n - 2)180$, where n is equal to the number of sides of the polygon. A hexagon has 6 sides, so $n = 6$. Substitute into the formula and get $(6 - 2)180 = 4 \cdot 180 = 720^\circ$.

45. To find the average of a set of numbers, divide the sum of the number by how many numbers there are. So find the average of 24, 48, 56 and 16, we do $\frac{24+48+56+16}{4} = \frac{144}{4} = 36$.

47. It is given the area of a square is 256 cm^2 . The formula for area of a square is $A = s^2$. Therefore, $s^2 = 256$. The square root of 256 is 16. The perimeter of a square can be found by multiplying the side length by 4. Thus, the area of a square with a side length of 16 is $4 \cdot 16 = 64$ cm.

48. $4(1 + 7)^2 \div 2 \cdot 3 = 4(8)^2 \div 2 \cdot 3 = 4 \cdot 64 \div 2 \cdot 3 = 256 \div 2 \cdot 3 = 128 \cdot 3 = 384$.