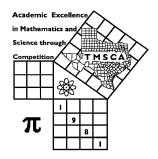
1st Score:	2nd Score:	3rd Score:				
Grader:	Grader:	Grader:	1	Final S	core	
PLACE LABEL BELOW						
Name:		School:				
SS/ID Number:City:						
Grade: 4 5 6	7 8 Cla	ssification: 1A 2A	3A	4A	5A	6A



## TMSCA MIDDLE SCHOOL NUMBER SENSE REGIONAL TEST© MARCH 2, 2019

## **GENERAL DIRECTIONS**

- 1. Write only the requested information on this coversheet. Do not make any additional marks on this cover sheet.
- 2. You will be given 10 minutes to take this test.
- 3. There are 80 problems on the test.
- 4. Write in ink only! It would be advantageous to use <u>non-black</u> ink.
- 5. Solve as many problems as you can in the order that they appear.
- 6. Problems that are skipped are considered wrong.
- 7. Problems that appear after the last attempted problem do not count either for or against you.
- 8. ALL PROBLEMS ARE TO BE SOLVED MENTALLY! [No scratch work!]
- 9. Only the answer may be written in the answer blank.
- 10. Starred [\*] problems require approximate INTEGRAL answers that are within 5% of the exact answers. All other problems require exact answers.
- 11. All problems answered correctly are worth <u>FIVE</u> points. <u>FOUR</u> points will be deducted for all problems answered incorrectly or skipped before the last problem attempted.

TMSCA TMSCA

## 2018-2019 TMSCA Middle School Number Sense Regional Qualifier

(1) 648 ÷ 8 =\_\_\_\_

(2)  $2019 \times 9 =$ 

(3) 937 – 364 = \_\_\_\_\_

(4)  $\frac{9}{250} =$  (decimal)

 $(5) \frac{2}{3} \times 87 =$ 

(6) 357124 ÷ 9 has a remainder of\_\_\_\_\_

(7)  $\frac{6}{11} + \frac{3}{7} =$  (fraction)

(8)  $(14 + 22 + 30 + 38 + 46) \div 6 =$ 

(9) 23 × 12 =\_\_\_\_

\*(10) 324 × 18 =\_\_\_\_\_

(11) 75 × 52 =\_\_\_\_\_

 $(12) \ 1600 = 32 \times 44 + 32 \times \underline{\hspace{1cm}}$ 

 $(13) 66 \times 104 + 41 \times 104 =$ 

(14) 92 × 94 = \_\_\_\_\_

 $(15) 55^2 = \underline{\hspace{1cm}}$ 

(16)  $14 \times 8\frac{1}{2} =$ 

 $(17) \ \frac{65 \times 52}{5 \times 4} = \underline{\hspace{1cm}}$ 

 $(18) 1 + 2 + 3 + 4 + \dots + 22 = \underline{\hspace{1cm}}$ 

 $(19) 84 \times 16^{\frac{2}{3}} = \underline{\hspace{1cm}}$ 

\*(20) 2019 + 20199 - 12345 = \_\_\_\_\_

(21)  $8\frac{1}{3}\% =$  (fraction)

(22) 37 × 96 =\_\_\_\_

(23)  $7\frac{2}{3} - 1\frac{1}{2} =$  \_\_\_\_\_\_(mixed number)

 $(24) 647 \times 101 =$ 

(25) The multiplicative inverse of 2.25 is\_\_\_\_\_

(26) 17 quarts + 5 pints = \_\_\_\_\_pints

(27) The LCM of 24 and 54 is

(28) The sum of the distinct prime divisors of 105 is

(29)  $6396 \div 82 =$ 

\*(30) 279 × 879 =\_\_\_\_

 $(31) \frac{15!}{13!} =$ 

 $(32) 14 \times 14 + 28 \times 28 =$ 

(33) If 5x + 7 = 67, then 5x - 3 =

 $(34) \ \ 34 \div 4 \frac{1}{4} = \underline{\hspace{2cm}}$ 

(35) What is the median of the smallest nine prime numbers? \_\_\_\_\_

(36) If a rectangle with integer sides has area 48 and perimeter 32, then the longer side is

(37) 2 + 4 + 6 + ... + k = 930, then k =

(38) 124 has \_\_\_\_\_\_ positive integral divisors

(39)  $\frac{5}{3} + 3\frac{3}{5} =$  (mixed number)

\*(40)  $\sqrt{478312} =$ 

(41)  $8\frac{1}{3} \times 4\frac{1}{3} =$  (mixed number)

 $(42) \sqrt{6241} =$ 

(43) 2x + 3 = 28, then  $4x^2 - 9 =$ 

(44) 94 × 102 =\_\_\_\_

 $(45) 77^2 + 73^2 = \underline{\hspace{1cm}}$ 

- (46) If  $184^3 \div 8^3 = k^3$ , then k =
- (47)  $14 \times \frac{5}{8} =$ \_\_\_\_\_\_ (mixed number)
- $(48) 65^2 33^2 = 49 \times \underline{\hspace{1cm}}$
- (49) If the sum of the measures of the interior angles of an n-sided polygon is  $3600^{\circ}$ , then n =
- \*(50) 419324 ÷ 501 =\_\_\_\_\_
- (51) A 7-element set has subsets
- (52)  $29 \times \frac{27}{23} =$  \_\_\_\_\_\_(mixed number)
- (53) The slope of a line passing through (2, 3) and (-4, -9) is\_\_\_\_\_\_
- (54) The harmonic mean of 5 and 12 is\_\_\_\_\_
- (55) The area of a square with diagonal  $7\sqrt{6}$  is
- $(56) 63_9 + 78_9 =$
- (57)  $8585 = x^2 + 64^2, x > 0, x =$
- (58) The positive difference of the roots of |x 9| + 3 = 14 is\_\_\_\_\_
- (59) If  $2^{5x+1} = 4^{x-3}$ , then x =
- \*(60) The diagonal of a square
  with side 1400 has a length of\_\_\_\_\_
- (61) If  $121_b = 196_{10}$ , then  $b = _____$
- (62)  $12^{17} \div 17$  has a remainder of\_\_\_\_\_\_
- (63) If f(x) = 4x + b has an x-intercept of -7, then b =
- (64) If the midpoint of (-1, 5) and (8, 3) is (a,b), then a + b =\_\_\_\_\_

- (65) If Ax + By = C is perpendicular to  $y = \frac{2}{5}x + 3$ , then  $\frac{A}{B} =$
- (66) If 11 × 16 is equal to the nth pentagonal number, then n = \_\_\_\_\_
- (67) The number of integral solutions of  $|x-3|+11 \le 27$  is
- (68) How many distinct triangles can be drawn from a given vertex of an undecagon?\_\_\_\_\_
- (69)  $2^3 + 4^3 + 6^3 = 2^3$  (k). k =
- \*(70) 95<sup>3</sup> =\_\_\_\_\_
- (71) The  $x^3$  coefficient of  $(2x^2 + 3x 5)(6x^2 4x 2)$  is\_\_\_\_\_\_
- (72) The axis of symmetry of f(x) = (3x-4)(2x-1) is x =\_\_\_\_\_
- (73) The area of an equilateral triangle with side  $6\sqrt{3}$  is  $k\sqrt{3}$ , k =
- (74) How many integers between
  4 and 11 are relatively prime to 11? \_\_\_\_\_
- (75)  $f(x) = -3(x-1)^2 5$  has \_\_\_\_\_ real roots
- (76) How many distinct 6-letter arrangements can be made using all the letters from the word "PASSES" ?\_\_\_\_\_\_
- (77) The y-intercept of  $f(x) = 3x^3 5x^2 + 11x + d$  is (0, 9). The product of the roots is \_\_\_\_\_
- (78) The area of a 45-45-90 right triangle with hypotenuse 18 is\_\_\_\_\_
- $(79) \ \frac{4}{60} \left(\frac{1}{42} + \frac{1}{56} + \frac{1}{72}\right) = \underline{\hspace{1cm}}$
- \*(80)  $\sqrt[3]{1800000} =$

## 2018-2019 TMSCA Middle School Number Sense Regional Qualifier Key

(1) 81

(24) 65347

(46) 23

(2) 18171

 $(25) \frac{4}{9}$ 

 $(47) 8\frac{3}{4}$ 

 $(65) \frac{5}{2}, 2\frac{1}{2}, \text{ or } 2.5$ 

(3) 573

(26) 39

(48) 64

(66) 11

(4) .036

(27) 216

(49) 22

(67) 33

(5) 58

(28) 15

\*(50)796 - 878

**(6) 4** 

(29) 78

(68) 45

 $(7) \frac{75}{77}$ 

\*(30) 232979 – 257503

(51) 128

(69) 36

(8) 25

(31) 210

 $(52) 34 \frac{1}{23}$ 

\*(70) 814507 - 900243

(9) 276

(32) 980

(53) 2

\*(10) 5541 - 6123

(33) 57

(71) 10

(11) 3900

(34) 8

(54)  $\frac{120}{17}$  or  $7\frac{1}{17}$ 

 $(72) \frac{11}{12}$ 

**(12)** 6

(35) 11

(55) 147

(13) 11128

(56) 152

(73) 27

(14) 8648

(36) 12

(57) 67

**(74)** 6

(15) 3025

(37) 60 (38) 6

(58) 22

(75) 0

(16) 119

 $(39) 5\frac{4}{15}$ 

(59)  $-\frac{7}{3}$  or  $-2\frac{1}{3}$ 

(17) 169

(18) 253

\*(40) 658 - 726

\*(60) 1881 - 2078

**(76) 120** 

**(19) 1400** 

(41)  $36\frac{1}{9}$ 

(61) 13

(77) - 3

\*(20) 9380 - 10366

(42) 79

(62) 12

(78) 81

 $(21) \frac{1}{12}$ 

(43) 616 (44) 9588

(63) 28

 $(79) \frac{1}{90}$ 

 $(23) 6\frac{1}{6}$ 

(22) 3552

(45) 11258

 $(64) \frac{15}{2}$ ,  $7\frac{1}{2}$ , or 7.5

\*(80) 116 - 127