

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



**TMSCA MIDDLE SCHOOL
NUMBER SENSE
TUNE-UP TEST ©
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 non-black 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 FIVE points. FOUR points will be deducted for all problems answered incorrectly or skipped before the last problem attempted.

[illegible]

2018-2019 TMSCA Middle School Number Sense Tune-Up

(1) $147 + 471 =$ _____

(2) $34 \times 9 =$ _____

(3) $8496 \div 6 =$ _____

(4) $184 \times 25 =$ _____

(5) $29 \times 11 =$ _____

(6) $43277 \div 9$ has a remainder of _____

(7) $68 \times 12 =$ _____

(8) $24^2 =$ _____

(9) $\frac{1}{8} =$ _____ %(mixed number)

*(10) $463 - 1217 + 2019 =$ _____

(11) $9016 = 92 \times$ _____

(12) $43^2 =$ _____

(13) $1.64 =$ _____ (improper fraction)

(14) $72 \times 33\frac{1}{3} =$ _____

(15) The mean of 14, 20, and _____ is 25.

(16) $7\frac{1}{2} \times 48 =$ _____

(17) $\frac{18 \times 25 \times 36}{3 \times 5 \times 9} =$ _____

(18) $65^2 =$ _____

(19) $3600 = 54 \times 66 +$ _____

*(20) $490 \times 125 =$ _____

(21) 55 feet = _____ inches

(22) $84 \times 24 =$ _____

(23) 423 cm = _____ meters

(24) $873 \times 111 =$ _____

(25) $30 \div 3\frac{3}{4} =$ _____

(26) What is the smallest positive 3-digit number that has a remainder of 4 when divided by 7 and 11? _____

(27) $11 \times 19\frac{6}{11} =$ _____

(28) The multiplicative inverse of 6.25 is _____

(29) $4\frac{3}{8}\% =$ _____ (fraction)

*(30) $\frac{32!}{28!} =$ _____

(31) The square root of 729 is _____

(32) If $4x + 13 = 57$, then $x =$ _____

(33) 98 has how many positive integral divisors? _____

(34) 19 gallons = _____ pints

(35) $37^2 + 67^2 =$ _____

(36) $1 + 3 + 5 + \dots + 169 =$ _____

(37) $8\frac{2}{9} \times 8\frac{7}{9} =$ _____ (mixed number)

(38) $15^2 + 45^2 =$ _____

(39) $45 \times 2 \times 16\frac{2}{3} =$ _____ (mixed number)

*(40) $\sqrt[3]{314827} =$ _____

(41) $18 \times 4\frac{1}{9} =$ _____

(42) The sum of the positive integral divisors of $2^3 \times 5 \times 7$ is _____

(43) $84^3 \div 12^3 =$ _____

(44) $98 \times 108 =$ _____

(45) $83^2 + 87^2 =$ _____

(46) If $3x + 1 = 15$, then $3x(3x + 2) =$ _____

(47) If the exterior angle of an n-sided polygon is 30° , then the sum of the interior angles of this polygon is _____ $^\circ$

(48) $88^2 - 72^2 =$ _____

(49) $83_{16} =$ _____₁₀

*(50) $9^3 \times 77 =$ _____

(51) The area of an equilateral triangle with side 22 is $k\sqrt{3}$. $k =$ _____

(52) $11 \times \frac{13}{15} =$ _____ (mixed number)

(53) Let $f(x) = 12x + 15$. $f(23) - f(q) = 144$, $q =$ _____

(54) If $f(x) = 9x + 32$, then $f(159) - f(49) =$ _____

(55) The two solutions of $|x - c| = d$ are -5 and 47 . The value of c is _____

(56) If $f(3x + 1) = 5x + 4$ and $f(q) = 54$, then $q =$ _____

(57) If $8, x, 18, y, \dots$ forms a geometric sequence, then $\frac{y}{x} =$ _____

(58) $\frac{9}{16} + \frac{16}{9} =$ _____ (mixed number)

(59) $324_6 \times 11_6 =$ _____₆

*(60) $103 \times 108 \times 111 =$ _____

(61) The smaller root of $x^2 - 9x - 90 = 0$ is _____

(62) The 12th pentagonal number is _____

(63) $95 \times 55 =$ _____

(64) The axis of symmetry of $y = 2x^2 + bx + 102$ is $x = -7$, then $b =$ _____

(65) The x^2 coefficient of $(3x^2 - 4x + 2)(5x + 9)$ is _____

(66) Find the value of m if the line $y - 6 = m(x - 2)$ passes through the point $(9, 20)$. _____

(67) The sum of the solutions of $|3x - 11| = 14$ is _____

(68) $1 + 2 + 4 + 8 + 16 + \dots + 256 =$ _____

(69) How many positive integers less than or equal to 52 are relatively prime to 52? _____

*(70) A 64-sided regular polygon has k distinct diagonals, $k =$ _____

(71) If $x + \frac{1}{2}x + \frac{1}{4}x + \dots = 35$, then $x =$ _____

(72) $\frac{(x+5)!}{x!}$ has a constant term of _____

(73) $f(x) = x^3 - 7x^2 + 4x + 5$. $f(7) =$ _____

(74) $x^2 - 13x + k = 0$ has one distinct real solution, $k =$ _____

(75) The perimeter of a rhombus with diagonals 10 and 24 is _____

(76) If $x^2 + 2xy + y^2 = 76$, $xy = 10$, and $x - y > 0$, then $x - y =$ _____

(77) If $f(x) = x^2 + 5x - 13$ has roots P and Q , then $\frac{2PQ}{P+Q} =$ _____

(78) $\log 12 + \log 75 - \log 9 =$ _____

(79) If $3^{x+4} = 2250$, then $3^{x+2} =$ _____

*(80) The diagonal of a square with side 150 is _____

2018-2019 TMSCA Middle School Number Sense Tune-Up Key

(1) 618	(24) 96903	(45) 14458	(64) 28
(2) 306	(25) 8	(46) 224	(65) 7
(3) 1416			
(4) 4600	(26) 158	(47) 1800	(66) 2
(5) 319	(27) 215	(48) 2560	(67) $\frac{22}{3}$ or $7\frac{1}{3}$
(6) 5	(28) $\frac{4}{25}$ or .16	(49) 131	(68) 511
(7) 816	(29) $\frac{7}{160}$	*(50) 53327 – 58939	(69) 24
(8) 576	*(30) 819888 – 906192	(51) 121	*(70) 1855 – 2049
(9) $12\frac{1}{2}$	(31) 27	(52) $9\frac{8}{15}$	(71) $\frac{35}{2}$, $17\frac{1}{2}$, or 17.5
*(10) 1202 – 1328	(32) 11	(53) 11	(72) 120
(11) 98	(33) 6	(54) 990	(73) 33
(12) 1849	(34) 152		
(13) $\frac{41}{25}$	(35) 5858	(55) 21	(74) $\frac{169}{4}$, $42\frac{1}{4}$, or 42.25
(14) 2400	(36) 7225	(56) 31	
(15) 41	(37) $72\frac{14}{81}$	(57) $\frac{9}{4}$, $2\frac{1}{4}$, or 2.25	(75) 52
(16) 360	(38) 2250	(58) $2\frac{49}{144}$	(76) 6
(17) 120	(39) 1500	(59) 4004	(77) $\frac{26}{5}$, $5\frac{1}{5}$, or 5.2
(18) 4225	*(40) 65 – 71	*(60) 1173026 – 1296502	(78) 2
(19) 36	(41) 74	(61) – 6	(79) 250
*(20) 58188 – 64312	(42) 720	(62) 210	
(21) 660	(43) 343	(63) 5225	*(80) 202 – 222
(22) 2016	(44) 10584		
(23) 4.23			