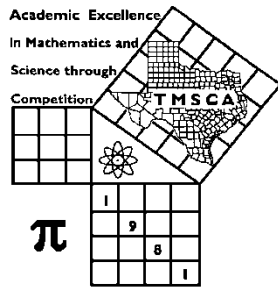


1st Score: _____	2nd Score: _____	3rd Score: _____	Final Score
Grader: _____	Grader: _____	Grader: _____	
Name: _____ School: _____			
SS/ID Number: _____ City: _____			
Grade: 9 10 11 12		Classification: 1A 2A 3A 4A 5A 6A	



TMSCA HIGH SCHOOL
NUMBER SENSE
TEST #1 ©
OCTOBER 19, 2019

GENERAL DIRECTIONS

1. Write only the requested information on this cover sheet. 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]

2019-2020 TMSCA High School Number Sense Test 1

- (1) $656 + 757 + 858 =$ _____
- (2) $1023 - 817 - 6 =$ _____
- (3) $2683 \times 11 =$ _____
- (4) $28^2 =$ _____
- (5) $\frac{5}{6} =$ _____ % (mixed number)
- (6) $25 + 29 + 33 + 37 + 41 =$ _____
- (7) $3\frac{2}{5} - 2\frac{2}{3} =$ _____ (fraction)
- (8) $816 \div 9 =$ _____ (mixed number)
- (9) $21 \div 7 - 9 \times 11 + 6 =$ _____
- *(10) $5498 + 2245 + 878 + 322 =$ _____
- (11) $\sqrt[3]{1728} =$ _____
- (12) $35982745 \div 11$ has a remainder of _____
- (13) The LCM of 51 and 34 is _____
- (14) $44^2 - 66^2 = 22 \times$ _____
- (15) $6\frac{1}{4} \times 10\frac{1}{4} =$ _____ (mixed number)
- (16) $35 \times 18 + 42 \times 35 =$ _____
- (17) $\frac{9}{80} =$ _____ % (decimal)
- (18) The geometric mean of 12 and 75 is _____
- (19) 8% tax on \$15.50 is \$ _____
- *(20) $439 \times 461 =$ _____
- (21) 14% of 57 is 42% of _____
- (22) $143 \times 28 - 4 =$ _____
- (23) $0.4353535\ldots =$ _____ (fraction)
- (24) 230 base 10 is _____ base 6
- (25) $f(x) = x^2 + 12x + 36$. $f(13) =$ _____
- (26) $\frac{11}{13} - \frac{13}{11} =$ _____
- (27) $777_8 =$ _____₁₀
- (28) $(47 + 18 \times 15) \div 8$ has a remainder of _____
- (29) $84^2 + 32^2 =$ _____
- *(30) $\sqrt{293648} =$ _____
- (31) The sum of the positive integral divisors of 42 is _____
- (32) The smallest root of $x^2 + x - 6 = 0$ is _____
- (33) A hexagon has _____ diagonals
- (34) $5^{-2} + 5^{-3} =$ _____ (fraction)
- (35) The sixth pentagonal number is _____
- (36) $\{0, 1, 2, 4, 7, 12, 20, k, 54, \dots\}$ $k =$ _____
- (37) 56 plus 40% of 35 = _____
- (38) 5 is _____ % less than 8?
- (39) $97 \times 93 =$ _____
- *(40) $86420 \div 446 =$ _____
- (41) $444 \times \frac{11}{37} =$ _____
- (42) $436_7 + 634_7 + 222_7 =$ _____₇

(43) $2x + y = 11$ and $3x - y = 9$. $y =$ _____

(44) The smallest integer x such that $3x + 4 > 17$ is _____

(45) How many positive integers less than 45 are relatively prime to 45? _____

(46) $1 + \frac{1}{3} + \frac{1}{6} + \frac{1}{10} + \dots + \frac{1}{78} =$ _____

(47) The length of the short leg of a right triangle with long leg = 24 is _____

(48) $1^2 - 2^2 + 3^2 - 4^2 + 5^2 - 6^2 + 7^2 =$ _____

(49) $109 \times 108 =$ _____

*(50) $\sqrt{2222} \times \sqrt{3333} =$ _____

(51) $\log(888) - \log(.888) =$ _____

(52) $7 \times \frac{9}{11} =$ _____ (mixed number)

(53) The odds of rolling a sum of 6 or 9 with two dice is _____

(54) $\frac{23\pi}{12}$ radians = _____ degrees

(55) $24 + 8 + \frac{8}{3} + \frac{8}{9} + \dots =$ _____

(56) $(435_8) \div (5_8) =$ _____₈

(57) 1 bushel + 1 peck + 1 gallon = _____ quarts

(58) $35 \times 75 =$ _____

(59) The roots of $x^3 + 4x^2 + x - 6 = 0$ are d , e , and f . $(d + e)(e + f)(f + d) =$ _____

*(60) $\pi^6 \times e^3 =$ _____

(61) $12345 \times 9 + 6 =$ _____

(62) $86^\circ\text{F} =$ _____ $^\circ\text{C}$

(63) $\begin{vmatrix} 4 & 6 \\ 7 & 9 \end{vmatrix} = 2k$. $k =$ _____

(64) $345 \times 111 =$ _____

(65) The shortest distance from $(-2, -2)$ to $3x + 4y = 6$ is _____

(66) $\text{Arcsin}\left(\cos\left(\frac{\pi}{3}\right)\right) = k\pi$. $k =$ _____

(67) 6 men can do 2 jobs in 3 days. How many men does it take to do 4 jobs in 4 days? _____

(68) Change $\frac{9}{25}$ to a base 5 decimal. _____

(69) $(x^3 + 2x^2 + 3x + 4) \div (x - 2)$ has a remainder of _____

*(70) $35^2 \times 11^2 =$ _____

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

(72) $123_b = 66$. $111_b =$ _____

(73) $\lim_{x \rightarrow 4} \frac{x^2 - 16}{x - 4} =$ _____

(74) $0.040404\dots$ base 7 = _____ base 7 (fraction)

(75) $\frac{1}{6} + \frac{1}{12} + \frac{1}{20} =$ _____

(76) $\int_1^4 (x + 3) dx =$ _____

(77) $7! \div 14 =$ _____

(78) $332 \times 12 =$ _____

(79) $39 \times 259 =$ _____

*(80) $781 \div 442 \times 1022 =$ _____

2019-2020 TMSCA HSNS Test 1 Key

(1) 2271	(22) 4000	(43) 3	(62) 30
(2) 200	(23) $\frac{431}{990}$	(44) 5	(63) -3
(3) 29513	(24) 1022	(45) 24	(64) 38295
(4) 784	(25) 361	(46) $1\frac{11}{13}$ or $\frac{24}{13}$	(65) 4
(5) $83\frac{1}{3}$	(26) $-\frac{48}{143}$	(47) 7	(66) $\frac{1}{6}$
(6) 165	(27) 511	(48) 28	(67) 9
(7) $\frac{11}{15}$	(28) 5	(49) 11772	(68) .14
(8) $90\frac{2}{3}$	(29) 8080	*(50) 2586 – 2857	(69) 26
(9) -90	*(30) 515 – 568	(51) 3	*(70) 140814 – 155636
*(10) 8496 – 9390	(31) 96	(52) $5\frac{8}{11}$	(71) 10
(11) 12	(32) -3	(53) $\frac{1}{3}$	(72) 57
(12) 7	(33) 9	(54) 345	(73) 8
(13) 102	(34) $\frac{6}{125}$	(55) 36	(74) $\frac{1}{15}$
(14) -110	(35) 51	(56) 71	(75) $\frac{3}{10}$ or .3
(15) $64\frac{1}{16}$	(36) 33	(57) 44	(76) $\frac{33}{2}, 16\frac{1}{2}, 16.5$
(16) 2100	(37) 70	(58) 2625	(77) 360
(17) 11.25	(38) 37.5 or $37\frac{1}{2}$	(59) -10	(78) 3984
(18) 30	(39) 9021	*(60) 18345 – 20275	(79) 10101
(19) 1.24	*(40) 185 – 203	(61) 111111	*(80) 1716 – 1896
*(20) 192261 – 212497	(41) 132		
(21) 19	(42) 1625		