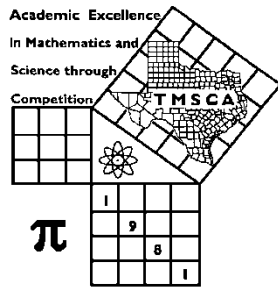


1st Score: _____	2nd Score: _____	3rd Score: _____	Final Score
Grader: _____	Grader: _____	Grader: _____	
Name: _____ School: _____			
SS/ID Number: _____ City: _____			
Grade: 9 10 11 12		Classification: 1A 2A 3A 4A 5A 6A	



**TMSCA HIGH SCHOOL
NUMBER SENSE
TEST #2 ©
OCTOBER 26, 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 2

(1) $832 + 257 - 978 =$ _____

(2) $35 \times 25 + 25 =$ _____

(3) $\frac{4}{5} \times \frac{8}{9} \times \frac{15}{16} =$ _____ (fraction)

(4) $24680 \div 9$ has a remainder of _____

(5) $1234 \times 9 + 5 =$ _____

(6) $64 \times 9 + 26 \times 9 =$ _____

(7) $17.7 - 12.55 =$ _____ (decimal)

(8) $65 + 55 + 45 + 35 =$ _____

(9) 12 is _____ % of 96? (decimal)

*(10) $418 + 622 + 1245 + 1532 =$ _____

(11) $31^2 =$ _____

(12) $223 \times 14 =$ _____

(13) $33\frac{1}{3}\%$ of 2 gallons is _____ cubic inches

(14) $3\frac{6}{7} \times 3\frac{1}{7} =$ _____ (mixed number)

(15) $0.825 =$ _____ (fraction)

(16) Which is larger $-\frac{12}{17}$ or $-\frac{2}{3}$? _____

(17) $\frac{1}{3} - \frac{1}{9} + \frac{1}{27} =$ _____ (fraction)

(18) $\sqrt[3]{2197} =$ _____

(19) $78 \div 2\frac{3}{5} =$ _____

*(20) $157 \times 156 =$ _____

(21) $73 \times 77 + 4 =$ _____

(22) 174 base 8 is _____ in base 10

(23) $\frac{1}{4}$ is what percent more than $\frac{1}{6}$? _____ %

(24) How many positive integers divide 24? _____

(25) $0.6828282\ldots =$ _____ (fraction)

(26) $1393 \times 3 + 21 =$ _____

(27) $(37 \times 40 + 10) \div 7$ has a remainder of _____

(28) $f(x) = x^2 - 6x + 9$. $f(16) =$ _____

(29) $51^2 + 17^2 =$ _____

*(30) $\sqrt[3]{753135} =$ _____

(31) $\sqrt{54 \times 24} =$ _____

(32) $A = \{2, 4, 6, 10, 16, 26, 42, k, \dots\}$ $k =$ _____

(33) $(4x - 5)^2 = ax^2 + bx + c$. $a + b + c =$ _____

(34) $103 \times 109 =$ _____

(35) $96 - 30\%$ of 80 = _____

(36) The largest root of $(6x - 5)^2 = 49$ is _____

(37) $4x + 3y = 10$ and $5x - 3y = -1$. $y =$ _____

(38) $468 \times 111 =$ _____

(39) $992 \times 993 =$ _____

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

(41) $6^x = 25$. $6^{x+2} =$ _____

(42) $105 \text{ mph} = \underline{\hspace{2cm}} \text{ ft/s}$

(43) $(343)^{\frac{2}{3}} = \underline{\hspace{2cm}}$

(44) The smallest root of $(6x - 1)^2 = \frac{9}{25}$ is $\underline{\hspace{2cm}}$

(45) $131,313 = (21)(37)(k)$. $k = \underline{\hspace{2cm}}$

(46) $x^2 + 16 = 33$. $3x^2 - 11 = \underline{\hspace{2cm}}$

(47) $\frac{9}{16} - \frac{26}{49} = \underline{\hspace{2cm}}$

(48) Find the 22nd term of the sequence 15, 11, 7, 3, -1, ... $\underline{\hspace{2cm}}$

(49) The area of a square is 40.5. The length of the diagonal is $\underline{\hspace{2cm}}$

*(50) $36 \times 27 \times 18 \times 9 = \underline{\hspace{2cm}}$

(51) The number of terms in the binomial expansion of $(3x - 4w)^7$ is $\underline{\hspace{2cm}}$

(52) The area of the ellipse $9x^2 + 16y^2 = 144$ is $\underline{\hspace{2cm}} \pi$

(53) $11100_2 = \underline{\hspace{2cm}}_8$

(54) The sixth hexagonal number is $\underline{\hspace{2cm}}$

(55) $\sqrt{-48} \times \sqrt{-75} = \underline{\hspace{2cm}}$

(56) $25^2 + 26^2 = \underline{\hspace{2cm}}$

(57) $4x + 7 \geq 24$. The smallest integer x is $\underline{\hspace{2cm}}$

(58) $\log_8 32 + \log_8 16 - \log_8 8 = \underline{\hspace{2cm}}$

(59) $x^2 + y^2 = 185$, $x > y > 4$.
If x and y are integers, then $x + y = \underline{\hspace{2cm}}$

*(60) $\sqrt{536623} = \underline{\hspace{2cm}}$

(61) $(7 - 5i)(7 + 2i) = a + bi$. $a = \underline{\hspace{2cm}}$

(62) $\sin A = \frac{\sqrt{3}}{2}$. $\sec^2 A = \underline{\hspace{2cm}}$

(63) $0.4333_6 = \underline{\hspace{2cm}}$ (fraction) base 6

(64) $\frac{1}{20} + \frac{1}{30} + \frac{1}{42} = \underline{\hspace{2cm}}$

(65) $f(x) = 2x^2 - 3$. $f(f(3)) = \underline{\hspace{2cm}}$

(66) ${}_8C_5 + {}_8C_3 = \underline{\hspace{2cm}}$

(67) The harmonic mean of 1, 2 and 4 is $\underline{\hspace{2cm}}$

(68) The sum of the integer solutions to $|x - 5| \leq 7$ is $\underline{\hspace{2cm}}$

(69) The sum of the product of the roots taken 3 at a time of $x^4 - x^3 - 16x^2 + 4x + 48 = 0$ is $\underline{\hspace{2cm}}$

*(70) $25 \times 28 \times 31 \times 34 = \underline{\hspace{2cm}}$

(71) $\lim_{x \rightarrow -6} \frac{x^2 - 36}{x + 6} = \underline{\hspace{2cm}}$

(72) $f(x) = (2x + 3)^3$. $f'(1) = \underline{\hspace{2cm}}$

(73) $13 \times \frac{15}{17} - 11 = \underline{\hspace{2cm}}$

(74) $\cos^{-1}(.5) = \underline{\hspace{2cm}}^\circ$

(75) $x + 5 \equiv 20 \pmod{7}$, $0 \leq x \leq 6$. $x = \underline{\hspace{2cm}}$

(76) $76_c = 69$. $111_c = \underline{\hspace{2cm}}$

(77) $405^2 = \underline{\hspace{2cm}}$

(78) $85 \times 95 = \underline{\hspace{2cm}}$

(79) $888 \times \frac{24}{37} = \underline{\hspace{2cm}}$

*(80) $705 \times 198 \div 21 = \underline{\hspace{2cm}}$

2019-2020 TMSCA HSSN Test 2 Key

(1) 111	(21) 5625	(42) 154	(61) 59
(2) 900	(22) 124	(43) 49	(62) 4
(3) $\frac{2}{3}$	(23) 50	(44) $\frac{1}{15}$	(63) $\frac{35}{50}$
(4) 2	(24) 8		
(5) 11111	(25) $\frac{338}{495}$	(45) 169	(64) $\frac{3}{28}$
(6) 810	(26) 4200	(46) 40	(65) 447
(7) 5.15	(27) 6	(47) $\frac{25}{784}$	(66) 112
(8) 200	(28) 169	(48) -69	(67) $\frac{12}{7}$ or $1\frac{5}{7}$
(9) 12.5	(29) 2890	(49) 9	(68) 75
*(10) 3627-4007	*(30) 87-95	*(50) 149591-165337	(69) -4
(11) 961	(31) 36	(51) 8	*(70) 700910-774690
(12) 3122	(32) 68	(52) 12	(71) -12
(13) 154	(33) 1	(53) 34	(72) 150
(14) $12\frac{6}{49}$	(34) 11227	(54) 66	(73) $\frac{8}{17}$
(15) $\frac{33}{40}$	(35) 72	(55) -60	(74) 60
(16) $-\frac{2}{3}$	(36) 2	(56) 1301	(75) 1
(17) $\frac{7}{27}$	(37) 2	(57) 5	(76) 91
(18) 13	(38) 51948	(58) 2	(77) 164025
(19) 30	(39) 985056	(59) 19	(78) 8075
*(20) 23268-25716	*(40) 11884-13134	*(60) 696-769	(79) 576
	(41) 900		*(80) 6315-6979