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 #4 ©
NOVEMBER 9, 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.

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2019-2020 TMSCA High School Number Sense Test 4

(1) $144 + 866 - 182 =$ _____

(2) $60 \times 125 =$ _____

(3) $27^2 =$ _____

(4) $6 \times 30 \div 5 + 14 =$ _____

(5) $8\frac{1}{3}\% =$ _____ (fraction)

(6) $\frac{4}{7} - \frac{4}{5} =$ _____

(7) $\frac{5}{6} \div \frac{6}{7} =$ _____

(8) $9(7) + 9(19) - 9(6) =$ _____

(9) $21 + 28 + 35 + 42 + 49 =$ _____

*(10) $367 + 2143 + 3658 + 933 =$ _____

(11) $(5 + 6)(45 + 23) =$ _____

(12) $4\frac{2}{3} - 2\frac{5}{6} =$ _____ (mixed number)

(13) The LCM of 30 and 48 is _____

(14) $3\frac{1}{5} \times 10\frac{1}{3} =$ _____

(15) 115.5 feet = _____ rods

(16) The sum of the prime divisors of 91 is ____

(17) 55 plus 30% of 80 = _____

(18) $678 \times 11 =$ _____

(19) $48^2 - 42^2 = 12 \times$ _____

*(20) $15644 \div 309 =$ _____

(21) $82 \times 88 =$ _____

(22) $\sqrt{6889} =$ _____

(23) $0.369369369... =$ _____ (fraction)

(24) The sum of 3 consecutive integers is 102. The smallest of these integers is _____

(25) $7^{-1} + 7^{-2} + 7^{-3} =$ _____

(26) A 3-gallon jug holds _____ in^3 of water

(27) The 6^{th} hexagonal number is _____

(28) $A = \{5, 7, 12, 19, 31, 50, 81, m, n\}$ $n =$ _____

(29) $\frac{3}{4}$ is what percent more than $\frac{3}{5}$? _____%

*(30) $44 \times 76 + 42 \times 24 =$ _____

(31) $165_8 =$ _____ 2

(32) $(3x+5)^2 = ax^2 + bx + c$. $a - b + c =$ _____

(33) $92 \times 93 =$ _____

(34) $|x - 10| = 4x$. $x =$ _____

(35) The simple interest on $1200.00 at 7% interest for 9 months is $_____

(36) 154 ft/s = _____ mph

(37) The measure of the interior angle of a regular octagon is _____°

(38) $(35)(28) - (14)(42) =$ _____

(39) $f(x) = 16x^2 - 48x + 36$. $f(4) =$ _____

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

(41) $(244)_6 \div (5)_6 =$ _____ 6

(42) $\frac{8}{13} - \frac{23}{40} =$ _____

(43)The sum of the roots plus the product of the roots of $3x^3+14x^2+13x-6=0$ is _____

(44) 509^2 = _____

(45) The smallest root of $(x+4)^2=\frac{1}{9}$ is _____

(46) $11^x=67$. 11^{x+1} = _____

(47) 0.125 of a mile = _____ yards

(48) $8^8 \div 5$ has a remainder of _____

(49) 58^2 = _____

***(50) $\sqrt[3]{670112}$ = _____**

(51) $10+9+8.1+7.29+6.561+...$ = _____

(52) The 17^{th} triangular number is _____

(53) $(4-3i)(5+2i)=a+bi$. $a+b$ = _____

(54) ${}_6P_3$ = _____

(55) $x^2+y^2=130$, $x>y>3$. $x+y$ = _____

(56) $(543_8-321_8)\times(5_8)$ = _____$_8$

(57) $\log_x(27)=1.5$ x^3 = _____

(58) The roots of $x^3+3x^2-4x-12=0$ are d, e, and f. $(d+e)(e+f)(f+d)$ = _____

(59) 95×75 = _____

***(60) $23\times25\times27\times29$ = _____**

(61) The simplified coefficient of the x^2y^2 term in the expansion of $(3x-2y)^4$ is _____

(62) 232×111 = _____

(63) $\csc A=4.5$ $\sin A$ = _____

(64) 0.3555... base 8 = _____ base 8 (fraction)

(65) Find the sum of all positive integers such that $4x-16<10$. _____

(66) $(2x^3-3x^2+4x-5)\div(x+1)$ has a remainder of _____

(67) $\cot^2\left(\frac{4\pi}{3}\right)$ = _____

(68) $\frac{4-i}{i}=a+bi$. $a+b$ = _____

(69) $15^8\div9=(5^x)(3^y)$. $x+y$ = _____

***(70) $\pi^2\times e^6$ = _____**

(71) The first 4 digits of the decimal for $\frac{345}{777}$ base 8 is 0._____ base 8

(72) $\lim_{x\to0}\left(\frac{2x+7x^3-9}{3x^4-6x^2+2}\right)$ = _____

(73) $44 \pmod{13} \equiv x$, $0\le x\le12$. x = _____

(74) $\int_0^4(4x^3+x)dx$ = _____

(75) $f'(x)=3x^2$, $f(1)=4$. $f(3)$ = _____

(76) $f(x)=\frac{2x+4}{3}$. $f^{-1}(8)$ = _____

(77) The length of the tangent from (13, 0) to the circle $x^2+y^2=144$ is _____

(78) $333_b=171$. 55_b = _____

(79) 109×111 = _____

***(80) $12^2\times19^2$ = _____**

2019-2020 TMSCA HSNS Test 4 Key

(1) 828

(2) 7500

(3) 729

(4) 50

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

(6) $-\frac{8}{35}$

(7) $\frac{35}{36}$

(8) 180

(9) 175

*(10) $6746-7456$

(11) 748

(12) $1\frac{5}{6}$

(13) 240

(14) $33\frac{1}{15}$ or $\frac{496}{15}$

(15) 7

(16) 20

(17) 79

(18) 7458

(19) 45

*(20) $49-53$

(21) 7216

(22) 83

(23) $\frac{41}{111}$

(24) 33

(25) $\frac{57}{343}$

(26) 693

(27) 66

(28) 212

(29) 25

*(30) $4135-4569$

(31) 1110101

(32) 4

(33) 8556

(34) 2

(35) 63.00

(36) 105

(37) 135

(38) 392

(39) 100

*(40) $13798-15249$

(41) 32

(42) $\frac{21}{520}$

(43) $-\frac{8}{3}$ or $-2\frac{2}{3}$

(44) 259081

(45) $-\frac{13}{3}$ or $-4\frac{1}{3}$

(46) 737

(47) 220

(48) 1

(49) 3364

*(50) $84-91$

(51) 100

(52) 153

(53) 19

(54) 120

(55) 16

(56) 1332

(57) 729

(58) 0

(59) 7125

*(60) $427714-472736$

(61) 216

(62) 25752

(63) $\frac{2}{9}$

(64) $\frac{15}{34}$

(65) 21

(66) -14

(67) $\frac{1}{3}$

(68) -5

(69) 14

*(70) $3783-4180$

(71) 3453

(72) $-\frac{9}{2}, -4\frac{1}{2}, -4.5$

(73) 5

(74) 264

(75) 30

(76) 10

(77) 5

(78) 40

(79) 12099

*(80) $49385-54583$