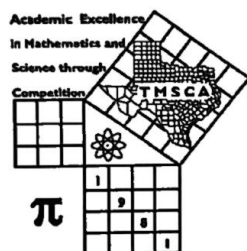


1st Score: _____	2nd Score: _____	3rd Score: _____	Final Score
Grader: _____	Grader: _____	Grader: _____	
Name: _____ School: _____			
SS/ID Number: _____ City: _____			
Grade: 9 10 11 12		Classification: 1A 2A 3A 4A 5A 6A	



TMSCA HIGH SCHOOL NUMBER SENSE

TEST #5 ©

DECEMBER 2, 2023

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.

2023 – 2024 TMSCA High School Number Sense Test 5

- (1) $3210 - 1032 =$ _____
- (2) $428 \times 11 =$ _____
- (3) $3.375 - 2\frac{5}{8} =$ _____ (decimal)
- (4) $\frac{5}{14} \times \frac{7}{15} =$ _____
- (5) $625 \div 0.25 =$ _____
- (6) $8\frac{1}{5}\% =$ _____ (decimal)
- (7) $27^2 =$ _____
- (8) $52\% =$ _____ (proper fraction)
- (9) $75 \times 57 =$ _____
- *(10) $79 + 79 \times 249 =$ _____
- (11) $4\frac{1}{6} - 1\frac{11}{12} =$ _____ (mixed number)
- (12) The GCD of 42 and 98 is _____
- (13) $10 - 12 + 14 \times 22 \div 4 =$ _____
- (14) $196 \times 14 =$ _____
- (15) $143 \times 42 =$ _____
- (16) $32.4 \div 18 =$ _____ (decimal)
- (17) The sum of the distinct positive prime factors of 350 is _____
- (18) $XLI + CXV =$ _____ (Arabic Numeral)
- (19) $7 \times 7\frac{7}{8} =$ _____ (mixed number)
- *(20) $445 \times 459 =$ _____
- (21) $45 \times 75 =$ _____
- (22) $7263171 \div 9$ has a remainder of _____
- (23) The simple interest on \$1750 at 6% for 8 months is \$ _____
- (24) $24 \times 36 =$ _____
- (25) $0.296296296\dots =$ _____ (fraction)
- (26) $10^2 + 24^2 = k^2$ and $k =$ _____
- (27) $8.8 \times 8.2 =$ _____ (decimal)
- (28) 4 gallons = _____ cubic inches
- (29) $\frac{5}{7} + \frac{5}{14} + \frac{5}{21} =$ _____ (mixed number)
- *(30) $72133 \div 23.3 =$ _____
- (31) $707 \times 15 =$ _____
- (32) 72, base 10 = _____ (base 6)
- (33) If $9x + 7 = 43$, then $7x + 9 =$ _____
- (34) $62^2 - 58^2 = 8 \times$ _____
- (35) $7\frac{1}{4} \times 5\frac{1}{4} =$ _____ (mixed number)
- (36) Given: 2, 3, 5, p, 11, r, 17, 19, ... $p \times r =$ _____
- (37) If the perimeter of a right triangle increases from 12 to 48, then its area is multiplied by _____
- (38) $\sqrt[3]{531441} =$ _____
- (39) The slope of the line $9x - 36y = 45$ is _____ (decimal)
- *(40) $\sqrt{168 \times 684} =$ _____
- (41) $25^2 + 48^2 =$ _____
- (42) $[15 + 16 \times 17^2 - 18] \div 4$ has a remainder of _____

(43) If $3x + 2y = 8$ and $5x - 2y = 8$, then $y =$ _____

(44) $44^2 + 88^2 =$ _____

(45) The product of the roots of $3x^3 - 5x^2 - 12x = 15$ is _____

(46) $0.1333... + 0.333... =$ _____ (fraction)

(47) $743_8 =$ _____ (base 2)

(48) $\frac{6!}{4!2!} =$ _____

(49) $30 \times \frac{29}{31} =$ _____ (mixed number)

*(50) $1428.57 \times 7.77 =$ _____

(51) $\frac{4}{5} + \frac{4}{25} + \frac{4}{125} + \dots =$ _____

(52) 625 has _____ positive integral divisors

(53) If $(2 + i)(2 + i) = a + bi$, then $a + b =$ _____

(54) $2^{51} \div 11$ has a remainder of _____

(55) $(3 + 7 + 10 + 17 + 27 + 44 + 71) + (115 + 186 + 301) =$ _____

(56) If $5^x = 56$, then $5^{x+2} =$ _____

(57) If the n th triangular number is 120, then $n =$ _____

(58) $89 \times 98 =$ _____

(59) $22^2 - 21^2 + 20^2 =$ _____

*(60) An angle of 63 radians = _____ degrees

(61) $24 \times 4! + 24 \times 3! =$ _____

(62) The harmonic mean of $\frac{1}{3}$, 1, and 3 is _____

(63) The set $\{n, u, m, b, e, r, s\}$ has _____

3-element subsets

(64) $64 \times 87.5 =$ _____

(65) If $f(x) = 5x$ and $g(x) = 3x - 4$, then $f(g(1)) =$ _____

(66) If $\sqrt{32} + \sqrt{50} = \sqrt{x}$ then $x =$ _____

(67) $\frac{11}{16}$ in base 4 = _____ (base 4 decimal)

(68) $3303_4 \div 3_4$ has a remainder of _____ (base 4)

(69) If $xy = 20$ and $x + y = 8$, then $x^3 + y^3 =$ _____

*(70) $\sqrt[3]{2727272} =$ _____

(71) $\csc(\arcsin 0.1) =$ _____

(72) $\int_1^{10} 3x^2 dx =$ _____

(73) $301^3 =$ _____

(74) The maximum value of $3x^2 + y = 9$ is _____

(75) Four coins are tossed, what is the probability of getting 2 heads and 2 tails? _____

(76) $\lim_{x \rightarrow 5} \frac{x^2 - 25}{x - 5} =$ _____

(77) $555 \div 27 =$ _____ (mixed number)

(78) The slope of the line tangent to $y = 3x^2 + 4x$ at the point $(-4, 32)$ is _____

(79) The fourth nonagonal number is _____

*(80) $8.888... \times 81 \times 99 =$ _____

23-24 TMSCA HSNS Test 5 Answer Key

(1) 2178	(23) 70.00	(43) 1	(64) 5600
(2) 4708	(24) 864	(44) 9680	(65) -5
(3) .75	(25) $\frac{8}{27}$	(45) 5	(66) 162
(4) $\frac{1}{6}$	(26) 26	(46) $\frac{7}{15}$	(67) .23
(5) 2500	(27) 72.16	(47) 111100011	(68) 0
(6) .082	(28) 924	(48) 15	(69) 32
(7) 729	(29) $1\frac{13}{42}$	(49) $28\frac{2}{31}$	*(70) 133 - 146
(8) $\frac{13}{25}$	*(30) 2942 - 3250	*(50) 10545 - 11654	(71) 10
(9) 4275	(31) 10605	(51) 1	(72) 999
*(10) 18763 - 20737	(32) 200	(52) 5	(73) 27270901
(11) $2\frac{1}{4}$	(33) 37	(53) 7	(74) 9
(12) 14	(34) 60	(54) 2	(75) $\frac{3}{8}$
(13) 75	(35) $38\frac{1}{16}$	(55) 781	(76) 10
(14) 2744	(36) 91	(56) 1400	(77) $20\frac{5}{9}$
(15) 6006	(37) 16	(57) 15	(78) -20
(16) 1.8	(38) 81	(58) 8722	(79) 46
(17) 14	(39) .25	(59) 443	*(80) 67716 - 74844
(18) 156	*(40) 323 - 355	*(60) 3430 - 3790	
(19) $55\frac{1}{8}$	(41) 2929	(61) 720	
*(20) 194043 - 214467	(42) 1	(62) $\frac{9}{13}$	
(21) 3375		(63) 35	
(22) 0			