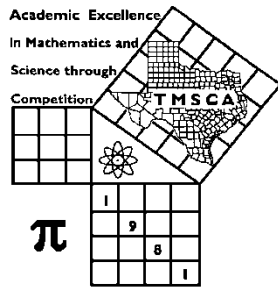


1st Score: _____	2nd Score: _____	3rd Score: _____	<b>Final Score</b>
Grader: _____	Grader: _____	Grader: _____	
Name: _____ School: _____			
SS/ID Number: _____ City: _____			
Grade: 9 10 11 12		Classification: 1A 2A 3A 4A 5A 6A	



**TMSCA HIGH SCHOOL  
NUMBER SENSE  
TEST #5 ©  
NOVEMBER 16, 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 5**

(1)  $1489 - 332 - 547 =$  \_\_\_\_\_

(2)  $3.16 + 166.2 =$  \_\_\_\_\_

(3)  $243648 \div 4 =$  \_\_\_\_\_

(4)  $28^2 =$  \_\_\_\_\_

(5)  $1.333... \times 39 =$  \_\_\_\_\_

(6) 36 is what percent of 90? \_\_\_\_\_ %

(7)  $\frac{7}{12} - \frac{7}{18} =$  \_\_\_\_\_

(8)  $37 \times 48 + 48 \times 23 =$  \_\_\_\_\_

(9)  $\frac{7}{8} =$  \_\_\_\_\_ % (decimal)

\*(10)  $4286 + 944 - 1385 - 286 =$  \_\_\_\_\_

(11)  $3594 \times 6 + 36 =$  \_\_\_\_\_

(12) The LCM of 36 and 40 is \_\_\_\_\_

(13)  $7\frac{2}{5} - 3\frac{9}{10} =$  \_\_\_\_\_ (mixed number)

(14) 9 bots cost \$10.80. 15 bots cost \$ \_\_\_\_\_

(15)  $25 + 31 + 37 + 43 + 49 + 55 =$  \_\_\_\_\_

(16) 3 pecks = \_\_\_\_\_ pints

(17)  $\frac{15}{11} + \frac{11}{15} =$  \_\_\_\_\_ (mixed number)

(18) 72 is 45% of \_\_\_\_\_

(19)  $68^2 - 62^2 =$  \_\_\_\_\_

\*(20)  $378282 \div 905 =$  \_\_\_\_\_

(21)  $\sqrt[3]{3375} =$  \_\_\_\_\_

(22) 345 base 6 is \_\_\_\_\_ in base 10

(23) The sum of the solutions of  $|2x + 3| = 13$  is \_\_\_\_\_

(24) 31.25% of 96 = \_\_\_\_\_

(25)  $A = \{3, 6, 8, 13, 20, 32, k, 82, \dots\}$ .  $k =$  \_\_\_\_\_

(26) How many positive integers less than or equal to 39 are relatively prime to 39? \_\_\_\_\_

(27)  $0.47888... =$  \_\_\_\_\_ (fraction)

(28) The simple interest on \$1800.00 at 5% interest for 8 months is \$ \_\_\_\_\_

(29)  $6789123 \div 11$  has a remainder of \_\_\_\_\_

\*(30)  $\sqrt{644} \times \sqrt{987} =$  \_\_\_\_\_

(31)  $8^{-1} + 8^{-2} + 8^{-3} =$  \_\_\_\_\_

(32) The largest root of  $4x^2 - x - 3 = 0$  is \_\_\_\_\_

(33) The area of a circle is  $36\pi$ . The circumference of the circle is  $k\pi$ .  $k =$  \_\_\_\_\_

(34) The number of positive integral divisors of 30 is \_\_\_\_\_

(35)  $212212_3 =$  \_\_\_\_\_<sub>9</sub>

(36) The sum of the positive prime divisors of 30 is \_\_\_\_\_

(37) 90 mph = \_\_\_\_\_ ft/s

(38) 45% of 80 plus 35% of 60 is \_\_\_\_\_

(39)  $92 \times 89 =$  \_\_\_\_\_

\*(40)  $\sqrt{907050} =$  \_\_\_\_\_

(41)  $(4i)^2(2i) = a\sqrt{b}$ .  $a + b =$  \_\_\_\_\_

(42)  $354_6 \times 11_6 = \underline{\hspace{2cm}}_6$

(43) The sum of the integral divisors of  $|x - 6| - 2 \leq 4$  is  $\underline{\hspace{2cm}}$

(44) The roots of  $x^3 + 6x^2 - 7x - 60 = 0$  are  $-4, 3$  and  $k$ .  $k = \underline{\hspace{2cm}}$

(45) The sum of the positive integral divisors of 30 is  $\underline{\hspace{2cm}}$

(46) Round  $\sqrt{7}$  to the nearest tenth.  $\underline{\hspace{2cm}}$

(47)  $8! \div 6! + 5! \div 3! = \underline{\hspace{2cm}}$

(48) The 14<sup>th</sup> triangular number is  $\underline{\hspace{2cm}}$

(49)  $\frac{4}{5} + \frac{9}{10} + \frac{14}{15} = \underline{\hspace{2cm}}$

\*(50)  $13 \times 26 \times 39 \times 52 = \underline{\hspace{2cm}}$

(51)  $888 \times \frac{8}{37} = \underline{\hspace{2cm}}$

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

(53)  $8\frac{2}{3} \times 6\frac{3}{4} = \underline{\hspace{2cm}}$  (mixed number)

(54) The coefficient of the  $x^3y$  term of the expansion of  $(3x - 2y)^4$  is  $\underline{\hspace{2cm}}$

(55)  $35^2 + 36^2 = \underline{\hspace{2cm}}$

(56)  $\log_4(64) + \log_2(64) = \underline{\hspace{2cm}}$

(57)  ${}_7C_2 = \underline{\hspace{2cm}}$

(58)  $9 \times \frac{11}{13} = \underline{\hspace{2cm}}$

(59)  $240^\circ = k\pi$  radians.  $k = \underline{\hspace{2cm}}$

\*(60)  $\sqrt[3]{1936532} = \underline{\hspace{2cm}}$

(61) How many ways can 5 people be seated in a row of 6 chairs?  $\underline{\hspace{2cm}}$

(62)  $50^\circ \text{ C} = \underline{\hspace{2cm}}^\circ \text{ F}$

(63)  $34^2 - 31^2 + 28^2 - 25^2 = \underline{\hspace{2cm}}$

(64)  $f(x) = \sqrt{x}$ .  $f(f(1296)) = \underline{\hspace{2cm}}$

(65)  $0.373737\dots$  base 9 =  $\underline{\hspace{2cm}}$  base 9 (fraction)

(66)  $1 - 2\sin^2\left(\frac{\pi}{6}\right) = \underline{\hspace{2cm}}$

(67)  $2^{(x+1)} = 32$ .  $8^{(x-1)} = \underline{\hspace{2cm}}$

(68)  $\sec^2\left(\frac{7\pi}{4}\right) =$  is  $\underline{\hspace{2cm}}$

(69) The sum of the product of the roots taken 2 at a time of  $x^4 + 5x^3 - 7x^2 - 29x + 30 = 0$  is  $\underline{\hspace{2cm}}$

\*(70)  $\sqrt{125} \times \pi^4 \times e^3 = \underline{\hspace{2cm}}$

(71)  $55 \pmod{17} \equiv x, 0 \leq x \leq 9$ .  $x = \underline{\hspace{2cm}}$

(72)  $f'(x) = 3x^2$ .  $f(1) = 5$ .  $f(2) = \underline{\hspace{2cm}}$

(73)  $f(x) = 4x^3 + 2x^2 - 5x + 7$ .  $f''(-1) = \underline{\hspace{2cm}}$

(74) The first 4 digits of the decimal for  $\frac{11}{45}$  is 0.  $\underline{\hspace{2cm}}$

(75)  $123 \times 432 = \underline{\hspace{2cm}}$

(76)  $95 \times 35 = \underline{\hspace{2cm}}$

(77)  $72^2 = \underline{\hspace{2cm}}$

(78)  $\lim_{x \rightarrow 16} \left( \frac{\sqrt{x} - 4}{x - 16} \right) = \underline{\hspace{2cm}}$

(79)  $1008 \times 1009 = \underline{\hspace{2cm}}$

\*(80)  $9876 \times 0.4321 = \underline{\hspace{2cm}}$

**2019-2020 TMSCA HSSN Test 5 Key**

(1) 610	(22) 137	(42) 4334	(61) 720
(2) 169.36	(23) -3	(43) 78	(62) 122
(3) 60912	(24) 30	(44) -5	(63) 354
(4) 784	(25) 51	(45) 72	(64) 6
(5) 52	(26) 24	(46) 2.6	(65) $\frac{37}{88}$
(6) 40	(27) $\frac{431}{900}$	(47) 76	(66) $\frac{1}{2}$ or .5
(7) $\frac{7}{36}$	(28) 60.00	(48) 105	(67) 512
(8) 2880	(29) 0	(49) $\frac{79}{30}$ or $2\frac{19}{30}$	(68) 2
(9) 87.5	*(30) 758-837	*(50) 651191-719737	(69) -7
*(10) 3382-3736	(31) $\frac{73}{512}$	(51) 192	*(70) 20781-22968
(11) 21600	(32) 1	(52) 8	(71) 4
(12) 360	(33) 12	(53) $58\frac{1}{2}$	(72) 12
(13) $3\frac{1}{2}$	(34) 8	(54) -216	(73) -20
(14) 18.00	(35) 785	(55) 2521	(74) 2444
(15) 240	(36) 10	(56) 9	(75) 53136
(16) 48	(37) 132	(57) 21	(76) 3325
(17) $2\frac{16}{165}$	(38) 57	(58) $\frac{99}{13}$ or $7\frac{8}{13}$	(77) 5184
(18) 160	(39) 8188	(59) $\frac{4}{3}$ or $1\frac{1}{3}$	(78) $\frac{1}{8}$
(19) 780	*(40) 905-1000	(60) 119-130	(79) 1017072
*(20) 398-438	(41) -33	*(80) 4055-4481	