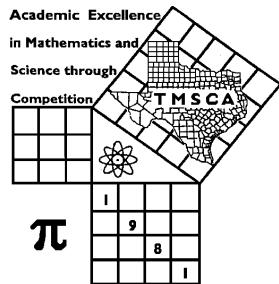


1st Score: _____ Grader: _____	2nd Score: _____ Grader: _____	3rd Score: _____ Grader: _____	Final Score
PLACE LABEL BELOW			
Name: _____ School: _____			
SS/ID Number: _____ City: _____			
Grade: 5 6 7 8 Classification: 1A 2A 3A 4A 5A 6A			



TMSCA MIDDLE SCHOOL
NUMBER SENSE
TEST #12 ©
FEBRUARY 18, 2017

GENERAL DIRECTIONS

1. Write only the requested information on this coversheet. 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.

2016-2017 TMSCA Middle School Number Sense Test 12

- (1) $2015 + 2017 + 2019 =$ _____
- (2) $44 \times 50 =$ _____
- (3) $735 \div 5 =$ _____
- (4) $64 \times 25 =$ _____
- (5) $0.6 =$ _____ (fraction)
- (6) $293124 \div 4$ has a remainder of _____
- (7) $\frac{7}{8} - \frac{3}{5} =$ _____ (fraction)
- (8) $12 \times 2 + 11 - 8 \div 2 =$ _____
- (9) $\frac{9}{13} \times 39 =$ _____
- *(10) $325 + 3254 + 32541 =$ _____
- (11) Which of the following is greater $\frac{5}{7}$ or $\frac{7}{10}$? _____
- (12) $33\frac{1}{3} \times 63 =$ _____
- (13) $66 \times 64 =$ _____
- (14) The mean of 14, 17 and 23 is _____
- (15) $88 \times 28 =$ _____
- (16) $\frac{1+3+5+7+9+11+13}{7} =$ _____
- (17) $14 \times 45 + 16 \times 45 =$ _____
- (18) $1 + 2 + 3 + 4 + 5 + \dots + 24 =$ _____
- (19) $97 \times 94 =$ _____
- *(20) $888 \times 721 =$ _____
- (21) $22^2 =$ _____
- (22) $108 \times 109 =$ _____
- (23) $7^3 =$ _____
- (24) $413 \times 11 =$ _____
- (25) $736 \times 111 =$ _____
- (26) The GCF of 32 and 40 is _____
- (27) $73258 \div 11$ has a remainder of _____
- (28) The area of a rectangle with width 16 and height 24 is _____
- (29) The sum of the composite numbers in the set {13,14,15,16,17,18,19} is _____
- *(30) $19^2 + 20^2 + 21^2 =$ _____
- (31) Find the area of a right triangle with base 24 and height 50. _____
- (32) If 5 burgers cost \$5.99, then 20 burgers cost \$ _____
- (33) $15^2 + 45^2 =$ _____
- (34) $8\frac{2}{5} \times 8\frac{3}{5} =$ _____ (mixed number)
- (35) 62 has how many positive integral divisors? _____
- (36) The sum of the positive integral divisors of 62 is _____
- (37) $\frac{4}{9} + \frac{9}{4} =$ _____ (mixed number)
- (38) If the perimeter of a regular hexagon is 78, then the length of each side is _____
- (39) If $144^2 = 20736$, then $139 \times 149 =$ _____
- *(40) $2017^2 =$ _____
- (41) $\sqrt{4624} =$ _____
- (42) A set with 5 elements has _____ proper subsets
- (43) The area of a square with diagonal $2\sqrt{10}$ is _____

- (44) $f(x) = 3x^2 - 5x + 4$. $f(3) =$ _____
- (45) An interior angle of a regular decagon has a measure of _____ °
- (46) A nonagon has _____ distinct diagonals
- (47) $324_6 =$ _____₁₀
- (48) $1 + 3 + 5 + \dots + 89 =$ _____
- (49) The sum of the solutions of $|x + 8| = 11$ is _____
- *(50) $\sqrt{462 \times 529} =$ _____
- (51) A set with 8 elements has how many 3-element subsets? _____
- (52) $11 \times \frac{13}{16} =$ _____ (mixed number)
- (53) $78^2 - 22^2 =$ _____
- (54) The area of an equilateral triangle with side 16 is $k\sqrt{3}$, $k =$ _____
- (55) How many terms does the sequence 4, 11, 18, 25, ..., 88 have? _____
- (56) If $f(x) = 8x + 4$, then $f(7) - f(3) =$ _____
- (57) $83_9 - 35_9 =$ _____₉
- (58) $(9^4 + 7^4) \div 8$ has a remainder of _____
- (59) $4 + 11 + 18 + \dots + 53 =$ _____
- *(60) $98 \times 96 \times 94 =$ _____
- (61) If $x < 0$ and $x^4 = 625$, then $x^3 =$ _____
- (62) $38^2 + 77^2 =$ _____
- (63) The sum of the infinite geometric series, $45 + 15 + 5 + \dots =$ _____
- (64) $8463 = 93 \times$ _____
- (65) If $12^2 + 18^2 + 36^2 = (6^2)k$, then $k =$ _____
- (66) $0.34444\dots =$ _____ (fraction)
- (67) If $19 \leq 3x + 1 \leq 46$, then x has how many integer solutions? _____
- (68) What is the 13th triangular number? _____
- (69) $1_8 + 2_8 + 3_8 + 4_8 + 5_8 + 6_8 + 7_8 + 10_8 =$ _____₈
- *(70) 143 gallon = _____ cubic inches
- (71) The number of positive integral divisors less than 28 that are relatively prime to 28 is _____
- (72) If the sum of the coefficients in the expansion of $(bx - 3)^4$ is 256 and $b < 0$, then $b =$ _____
- (73) The sum of the integral solutions of $|x + 8| \leq 12$ is _____
- (74) $\log_3 7 + \log_3 12 - \log_3 28 =$ _____
- (75) $f(x)$ is a parabola with a vertex of $(2, -4)$ and $g(x) = 5f(x - 4) + 11$. $g(x)$ has a vertex of (h, k) . $h =$ _____
- (76) Find the probability of choosing a perfect square from the smallest 25 positive integers. _____
- (77) $\frac{(n+5)!}{(n+1)!}$ is a polynomial of degree _____
- (78) If $f(x) = (x^2 - 3x - 6)(x^2 - 6x + 9)$, then $f(x)$ has how many distinct real roots? _____
- (79) P and Q are roots of $4x^2 - 23x + 25 = 0$. The positive geometric mean of P and Q is _____.
- *(80) A cylinder with a height of 25 and radius of 6 has a volume of _____

2016-2017 TMSCA Middle School Number Sense Key #12

- | | | | |
|-----------------------|-------------------------|--|--|
| (1) 6051 | (23) 343 | (44) 16 | (64) 91 |
| (2) 2200 | (24) 4543 | | (65) 49 |
| (3) 147 | (25) 81696 | (45) 144 | (66) $\frac{31}{90}$ |
| (4) 1600 | (26) 8 | (46) 27 | |
| (5) $\frac{3}{5}$ | (27) 9 | (47) 124 | (67) 10 |
| (6) 0 | (28) 384 | (48) 2025 | (68) 91 |
| (7) $\frac{11}{40}$ | | (49) - 16 | (69) 44 |
| (8) 31 | (29) 63 | *(50) 470 - 519 | *(70) 31382 - 34684 |
| (9) 27 | *(30) 1142 - 1262 | (51) 56 | (71) 12 |
| *(10) 34314 - 37926 | (31) 600 | (52) $8\frac{15}{16}$ | (72) - 1 |
| (11) $\frac{5}{7}$ | (32) 23.96 | (53) 5600 | (73) - 200 |
| (12) 2100 | (33) 2250 | (54) 64 | (74) 1 |
| (13) 4224 | (34) $72\frac{6}{25}$ | (55) 13 | |
| (14) 18 | (35) 4 | (56) 32 | (75) 6 |
| (15) 2464 | | (57) 47 | |
| (16) 7 | (36) 96 | (58) 2 | (76) $\frac{1}{5}$ or .2 |
| (17) 1350 | (37) $2\frac{25}{36}$ | (59) 228 | (77) 4 |
| (18) 300 | | *(60) 840135 - 928569 | |
| (19) 9118 | (38) 13 | (61) - 125 | (78) 3 |
| *(20) 608236 - 672260 | (39) 20711 | (62) 7373 | |
| (21) 484 | *(40) 3864875 - 4271703 | | (79) $\frac{5}{2}$, $2\frac{1}{2}$ or 2.5 |
| (22) 11772 | (41) 68 | (63) $\frac{135}{2}$, $67\frac{1}{2}$ or 67.5 | |
| | (42) 31 | | *(80) 2687 - 2968 |
| | (43) 20 | | |