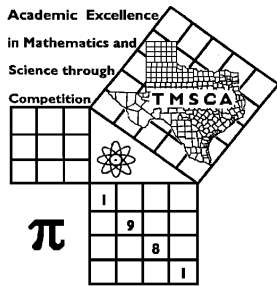


1st Score: _____	2nd Score: _____	3rd Score: _____	Final Score
Grader: _____	Grader: _____	Grader: _____	
PLACE LABEL BELOW			
Name: _____		School: _____	
SS/ID Number: _____		City: _____	
Grade: 5	6	7	8
Classification: 1A		2A	3A 4A 5A 6A



**TMSCA MIDDLE SCHOOL
NUMBER SENSE
STATE MEET ©
APRIL 16, 2016**

GENERAL DIRECTIONS

- Write only the requested information on this coversheet. Do not make any additional marks on this cover sheet.
- You will be given 10 minutes to take this test.
- There are 80 problems on the test.
- Write in ink only! It would be advantageous to use non-black ink.
- Solve as many problems as you can in the order that they appear.
- Problems that are skipped are considered wrong.
- Problems that appear after the last attempted problem do not count either for or against you.
- ALL PROBLEMS ARE TO BE SOLVED MENTALLY!** [No scratch work!]
- Only the answer may be written in the answer blank.
- Starred [*] problems require approximate INTEGRAL answers that are within 5% of the exact answers. All other problems require exact answers.
- 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.

2015-2016 TMSCA Middle School State Meet Number Sense Test

- (1) $723 - 396 =$ _____
- (2) $25 \times 39 =$ _____
- (3) $4236 \div 3 =$ _____
- (4) $2016 \div 25 =$ _____ (decimal)
- (5) $0.24 =$ _____ (fraction)
- (6) $32574 \div 4$ has a remainder of _____
- (7) $\frac{7}{11} - \frac{3}{5} =$ _____ (fraction)
- (8) $(12^2 - 1) \div (12 + 1) =$ _____
- (9) $\frac{9}{11} \times 121 =$ _____
- *(10) $2016 + 2015 + 2014 - 3111 =$ _____
- (11) $13 \times 73 =$ _____
- (12) $27^2 =$ _____
- (13) $31 \times 39 =$ _____
- (14) Which is larger, $\frac{4}{11}$ or $\frac{11}{30}$? _____
- (15) $88 \times 12 \frac{1}{2} =$ _____
- (16) $\frac{10 + 11 + 12 + 13 + 14}{5} =$ _____
- (17) $97 \times 103 + 10 \times 103 =$ _____
- (18) $15 \times 18 + 15 \times 12 + 15 \times 6 =$ _____
- (19) $25 \div 11 - 14 \div 11 + 3 =$ _____
- *(20) $888 \times 342 =$ _____
- (21) $9.3 \times 9.5 =$ _____ (decimal)
- (22) $55 \times 65 =$ _____
- (23) $30 \times 4.5 =$ _____
- (24) $19 \times 2 \frac{3}{19} =$ _____
- (25) $1 + 3 + 5 + \dots + 33 =$ _____
- (26) What is the smallest two digit number that has a remainder of 2 when divided by 3, 5, and 6? _____
- (27) The reciprocal of 0.9 is _____ (mixed number)
- (28) The largest prime divisor of 185 is _____
- (29) $5! \div 9$ has a remainder of _____
- *(30) 438 yards = _____ inches
- (31) The perimeter of a right triangle with legs of 5 and 12 is _____
- (32) 36 has how many positive integral divisors? _____
- (33) $19 \frac{3}{7} \times 19 \frac{4}{7} =$ _____ (mixed number)
- (34) $21 \times 21 + 63 \times 63 =$ _____
- (35) $34^2 - 16^2 =$ _____
- (36) If a rectangle of area 40 has width 5, then the perimeter of the rectangle is _____
- (37) The median of 6, 1, 3, 4, 8, and 5 is _____
- (38) If the range of 2, 5, 11, 12 and x is 13, then the sum of the possible values of x is _____
- (39) If $2x + 9 = 13$, then $20x + 90 =$ _____
- *(40) $\sqrt{3421000} =$ _____
- (41) How many subsets does the set $\{t, m, s, c, a, 2, 0, 1, 6\}$ have? _____
- (42) If $2 + 4 + 6 + \dots + 40 = 7k$, then $k =$ _____

- (43) The area of a square with diagonal 11 is _____
- (44) $9^3 =$ _____
- (45) $226 \times 111 =$ _____
- (46) The sum of all interior and exterior angles of a regular dodecagon is _____ $^\circ$
- (47) If $f(x) = x^2 - 2x + 1$, then $f(26) =$ _____
- (48) The 9th triangular number is _____
- (49) How many distinct diagonals can be drawn inside a 15-sided polygon? _____
- *(50) The volume of a $13 \times 15 \times 17$ rectangular prism is _____
- (51) $9\frac{1}{5} \times 6\frac{1}{5} =$ _____ (mixed number)
- (52) $13 \times \frac{13}{16} =$ _____ (mixed number)
- (53) A set with 10 elements has how many 7-element subsets? _____
- (54) The area of an equilateral triangle with side 14 is $k\sqrt{3}$, $k =$ _____
- (55) $(11)^9 \div 12$ has a remainder of _____
- (56) The slope of a line with x-intercept of (5, 0) and a y-intercept of (0, -2) is _____
- (57) $85(\text{base } 9) + 34(\text{base } 9) =$ _____ (base 9)
- (58) If $2^3 \times 4^4 = 2^k$, then $k =$ _____
- (59) If the midpoint of (2, 11) and (5, 3) is (a, b), then $a + b =$ _____
- *(60) $210 \times 428571 =$ _____
- (61) $.3666\dots =$ _____ (fraction)
- (62) $19 \times \frac{22}{25} =$ _____ (mixed number)
- (63) How many digits are in the product $2^6 \times 5^4 \times 7$? _____
- (64) $f(x) = 2x^2 - 3x + 5$ has how many real roots? _____
- (65) $(14_8)^2 =$ _____₈
- (66) If (8, 3) is on the line $3x - 5y = C$, where C is a constant and the x-intercept is _____
- (67) If $\frac{a}{b} + \frac{b}{a} = 2\frac{36}{55}$, where a and b are relatively prime, then the sum of a and b equals _____
- (68) If P and Q are roots of $f(x) = 2x^2 - 7x - 4$, then $P + Q =$ _____
- (69) If $\sqrt{4 \times 8 \times 12} = r\sqrt{s}$, then $s =$ _____
- *(70) $0.375 \times 241 \times 459 =$ _____
- (71) When the height of a triangle with base 11 is increased from 14 to 32, the corresponding increase in area is _____
- (72) The sum of the coefficients of $(6x + 1)^3$ is _____
- (73) $306^2 =$ _____
- (74) The probability of a drawing a diamond or a king from a standard 52-card deck is _____
- (75) $\frac{1}{20} + \frac{1}{30} + \frac{1}{42} =$ _____ (fraction)
- (76) The product of the roots of $(2x - 3)(3x - 8) = 0$ is _____
- (77) If $2^x = P$ and $3^x = Q$, then $96^x = P^r Q^s$ and $r + s =$ _____
- (78) $(25)^{\frac{3}{2}} =$ _____
- (79) $\log_2 8 + \log_4 8 + \log_8 8 =$ _____
- *(80) $1 + 2 + 3 + \dots + 499 =$ _____

2015-2016 TMSCA Middle School State Number Sense Key

- | | | |
|-----------------------|--|--|
| (1) 327 | (23) 135 | (43) $\frac{121}{2}$, $60\frac{1}{2}$, or 60.5 |
| (2) 975 | (24) 41 | (63) 6 |
| (3) 1412 | (25) 289 | (44) 729 |
| (4) 80.64 | | (64) 0 |
| | | (45) 25086 |
| | | (65) 220 |
| (5) $\frac{6}{25}$ | (26) 32 | |
| | | (46) 2160 |
| (6) 2 | (27) $1\frac{1}{9}$ | (47) 625 |
| | | (66) 3 |
| (7) $\frac{2}{55}$ | (28) 37 | (48) 45 |
| | | (67) 16 |
| | (29) 3 | |
| (8) 11 | *(30) 14980 – 16556 | (49) 90 |
| | | *(50) 3150 – 3480 |
| (9) 99 | | (68) $\frac{7}{2}$, $3\frac{1}{2}$, or 3.5 |
| *(10) 2788 – 3080 | (31) 30 | (69) 6 |
| | (32) 9 | |
| (11) 949 | | *(70) 39409 – 43556 |
| (12) 729 | (33) $380\frac{12}{49}$ | |
| | | (51) $57\frac{1}{25}$ |
| (13) 1209 | (34) 4410 | (52) $10\frac{9}{16}$ |
| | (35) 900 | (53) 120 |
| (14) $\frac{11}{30}$ | | (54) 49 |
| | | (71) 99 |
| (15) 1100 | (36) 26 | (72) 343 |
| | | (73) 93636 |
| (16) 12 | (37) $\frac{9}{2}$, $4\frac{1}{2}$, or 4.5 | (55) 11 |
| | | (56) $\frac{2}{5}$ or .4 |
| (17) 11021 | (38) 14 | (74) $\frac{4}{13}$ |
| (18) 540 | (39) 130 | (57) 130 |
| | | (58) 11 |
| (19) 4 | *(40) 1758 – 1942 | (59) $10\frac{1}{2}$, $\frac{21}{2}$, or 10.5 |
| *(20) 288512 – 318880 | | (75) $\frac{3}{28}$ |
| | | (76) 4 |
| (21) 88.35 | (41) 512 | (77) 6 |
| | (42) 60 | *(60) 85499915–94499905 |
| (22) 3575 | | (78) 125 |
| | | (61) $\frac{11}{30}$ |
| | | (79) $\frac{11}{2}$, $5\frac{1}{2}$, or 5.5 |
| | | *(80) 118513 – 130987 |
| | | (62) $16\frac{18}{25}$ |