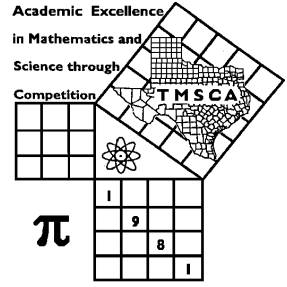


1st Score: _____	2nd Score: _____	3rd Score: _____	<b>Final Score</b>
Grader: _____	Grader: _____	Grader: _____	

**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  
TEST # 6 ©  
DECEMBER 3, 2016**

**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 #6

- (1)  $837 - 441 =$  \_\_\_\_\_
- (2)  $68 \times 3 =$  \_\_\_\_\_
- (3)  $\frac{4}{25} =$  \_\_\_\_\_ (decimal)
- (4)  $2017 \times 25 =$  \_\_\_\_\_
- (5)  $74 \times 13 =$  \_\_\_\_\_
- (6)  $0.375 =$  \_\_\_\_\_ (fraction)
- (7)  $\frac{5}{11} + \frac{1}{4} =$  \_\_\_\_\_ (fraction)
- (8)  $\frac{4}{13} \times 78 =$  \_\_\_\_\_
- (9)  $\frac{2}{3} =$  \_\_\_\_\_ % (mixed number)
- \*(10)  $963 - 1826 + 4279 =$  \_\_\_\_\_
- (11)  $5\frac{5}{7}\% =$  \_\_\_\_\_ (fraction)
- (12)  $12\frac{1}{2} \times 88 =$  \_\_\_\_\_
- (13)  $28 \times 22 =$  \_\_\_\_\_
- (14)  $87 \times 27 =$  \_\_\_\_\_
- (15)  $\frac{6+7+8+9+10}{8} =$  \_\_\_\_\_
- (16)  $\frac{4}{3} - \frac{2}{7} =$  \_\_\_\_\_ (fraction)
- (17)  $94 \times 98 =$  \_\_\_\_\_
- (18)  $16 \times 75 + 24 \times 75 =$  \_\_\_\_\_
- (19) What is the LCM of 14 and 70? \_\_\_\_\_
- \*(20)  $63 \times 672 =$  \_\_\_\_\_
- (21)  $78 \times 2.5 =$  \_\_\_\_\_
- (22)  $15 \times 82 =$  \_\_\_\_\_
- (23) The smallest 2-digit number which has a remainder of 1 when divided by 2, 5, and 7 is \_\_\_\_\_
- (24) The GCF of 16 and 24 is \_\_\_\_\_
- (25) The cube root of 729 is \_\_\_\_\_
- (26)  $11 \div 13 + 15 \div 13 + 169 \div 13 =$  \_\_\_\_\_
- (27)  $\frac{12!}{10!} =$  \_\_\_\_\_
- (28)  $(20 - 3)(20 + 3) =$  \_\_\_\_\_
- (29)  $11! \div 9$  has a remainder of \_\_\_\_\_
- \*(30)  $8^3 + 10^3 + 12^3 =$  \_\_\_\_\_
- (31) The area of a right triangle with a base of 14 and height 28 is \_\_\_\_\_
- (32) 81 has how many positive integral divisors? \_\_\_\_\_
- (33) If the mean of 3, 11, and x is 11, then x = \_\_\_\_\_
- (34)  $9\frac{1}{3} \times 9\frac{2}{3} =$  \_\_\_\_\_ (mixed number)
- (35) If a \$140 pair of shoes is on sale for 20% off, then the shoes will cost \$ \_\_\_\_\_
- (36)  $\frac{17}{13} + \frac{13}{17} =$  \_\_\_\_\_ (mixed number)
- (37) The sum of the first 13 odd integers exceeds the sum of the first 12 even integers by \_\_\_\_\_
- (38) The sum of the positive integral divisors of 18 is \_\_\_\_\_
- (39) If  $9x + 15 = 17$ , then  $23(9x + 15) =$  \_\_\_\_\_
- \*(40)  $32^3 =$  \_\_\_\_\_
- (41)  $1 = \frac{5}{13} \times$  \_\_\_\_\_ (mixed number)

- (42)  $96 \times 106 =$  \_\_\_\_\_
- (43)  $\frac{9}{14} + \frac{14}{9} =$  \_\_\_\_\_ (mixed number)
- (44)  $7^3 =$  \_\_\_\_\_
- (45)  $1 + 3 + 5 + \dots + 61 =$  \_\_\_\_\_
- (46) If  $f(x) = \frac{18}{x^3}$ , then  $f(3) =$  \_\_\_\_\_ (fraction)
- (47) A 9-element set has \_\_\_\_\_ 2-element subsets.
- (48) A regular polygon with 15 sides has an exterior angle of measure \_\_\_\_\_ °
- (49)  $427_{12} =$  \_\_\_\_\_<sub>10</sub>
- \*(50) The sum of the interior angles of a 74-sided polygon is \_\_\_\_\_
- (51)  $19 \times \frac{18}{17} =$  \_\_\_\_\_ (mixed number)
- (52)  $-23^2 =$  \_\_\_\_\_
- (53) If  $w, x, 4, y, z$  form a geometric sequence,  $wxyz =$  \_\_\_\_\_
- (54) The slope of a line with x-intercept 9 and y-intercept of  $-4$  is \_\_\_\_\_
- (55)  $2 = \frac{7}{9} \times$  \_\_\_\_\_ (mixed number)
- (56) If  $1 + 2 + 3 + 4 + \dots + 25 = 13x$ , then  $x =$  \_\_\_\_\_
- (57)  $\sqrt[3]{5832} =$  \_\_\_\_\_
- (58) 14 dimes + 7 quarters = \_\_\_\_\_ nickels
- (59) If  $3^{11} \times 9^5 = 3^k$ , then  $k =$  \_\_\_\_\_
- \*(60)  $3\frac{5}{7} \times 497 =$  \_\_\_\_\_
- (61) If  $x = 25$  and  $y = 4$ , then  $(x - y)(x + y) =$  \_\_\_\_\_
- (62) The surface area of a sphere is  $36\pi$ . The radius is \_\_\_\_\_
- (63) What is the 8<sup>th</sup> pentagonal number? \_\_\_\_\_
- (64)  $2^5 \times 3^3 \times 5^4 =$  \_\_\_\_\_
- (65) The measure of an interior angle of a regular 30-sided polygon is \_\_\_\_\_ °
- (66)  $0.0909\dots + 0.4545\dots =$  \_\_\_\_\_ (fraction)
- (67) The y-intercept of  $f(x) = 3x^2 - 4x + 11$  is \_\_\_\_\_
- (68) How many numbers less than 20 are relatively prime to 20? \_\_\_\_\_
- (69)  $\frac{8 \times 13!}{4 \times 12!} =$  \_\_\_\_\_
- \*(70) Find the surface area of a tetrahedron if each face has an area of 729. \_\_\_\_\_
- (71)  $\log_6 4 + \log_6 9 =$  \_\_\_\_\_
- (72) If  $(a,0)$  and  $(0,b)$  are the two intercepts of  $4x - 5y = 20$ , then  $a + b =$  \_\_\_\_\_
- (73)  $f(x) = 2x^3 - 7x^2 + 5x - 1$ ,  $f(4) =$  \_\_\_\_\_
- (74) If  $3^x = P$ ,  $5^x = Q$  and  $75^x = P^r Q^s$ , then  $r + s =$  \_\_\_\_\_
- (75)  $52 \times 101 + 57 \times 101 =$  \_\_\_\_\_
- (76)  $506^2 =$  \_\_\_\_\_
- (77) If  $2a's = 11b's$  and  $3b's = 18c's$ , then  $a =$  \_\_\_\_\_  $c's$
- (78) If  $\log_9 x = \frac{3}{2}$ , then  $x =$  \_\_\_\_\_
- (79)  $27 \times 37 =$  \_\_\_\_\_
- \*(80) Find the volume of a rectangular solid with length 23, width 25, and height 27. \_\_\_\_\_

## 2016-2017 TMSCA Middle School Number Sense Key #6

- |                            |                            |                            |                            |
|----------------------------|----------------------------|----------------------------|----------------------------|
| (1) 396                    | (22) 1230                  | (42) 10176                 | (62) 3                     |
| (2) 204                    | (23) 71                    | (43) $2\frac{25}{126}$     | (63) 92                    |
| (3) .16                    | (24) 8                     | (44) 343                   | (64) 540000                |
| (4) 50425                  | (25) 9                     | (45) 961                   | (65) 168                   |
| (5) 962                    | (26) 15                    | (46) $\frac{2}{3}$         | (66) $\frac{6}{11}$        |
| (6) $\frac{3}{8}$          | (27) 132                   | (47) 36                    | (67) 11                    |
| (7) $\frac{31}{44}$        | (28) 391                   | (48) 24                    | (68) 8                     |
| (8) 24                     | (29) 0                     | (49) 607                   | (69) 26                    |
| (9) $66\frac{2}{3}$        | <b>*(30) 3078 – 3402</b>   | <b>*(50) 12312 – 13608</b> | <b>*(70) 2771 – 3061</b>   |
| <b>*(10) 3246 – 3586</b>   | (31) 196                   | (51) $20\frac{2}{17}$      | (71) 2                     |
| (11) $\frac{2}{35}$        | (32) 5                     | (52) -529                  | (72) 1                     |
| (12) 1100                  | (33) 19                    | (53) 256                   | (73) 35                    |
| (13) 616                   | (34) $90\frac{2}{9}$       | (54) $\frac{4}{9}$         | (74) 3                     |
| (14) 2349                  | (35) 112.00                | (55) $2\frac{4}{7}$        | (75) 11009                 |
| (15) 5                     | (36) $2\frac{16}{221}$     | (56) 25                    | (76) 256036                |
| (16) $\frac{22}{21}$       | (37) 13                    | (57) 18                    | (77) 33                    |
| (17) 9212                  | (38) 39                    | (58) 63                    | (78) 27                    |
| (18) 3000                  | (39) 391                   | (59) 21                    | (79) 999                   |
| (19) 70                    | <b>*(40) 31130 – 34406</b> | <b>*(60) 1754 – 1938</b>   | <b>*(80) 14749 – 16301</b> |
| <b>*(20) 40220 – 44452</b> | (41) $2\frac{3}{5}$        | (61) 609                   |                            |