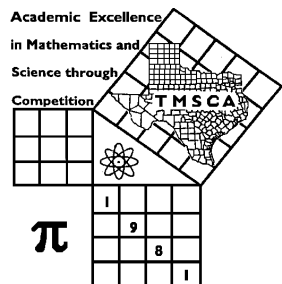


1st Score: _____	2nd Score: _____	3rd Score: _____	<b>Final Score</b>
Grader: _____	Grader: _____	Grader: _____	
<b>PLACE LABEL BELOW</b>			
Name: _____ School: _____			
SS/ID Number: _____ City: _____			
Grade:    5    6    7    8    Classification:    1A    2A    3A    4A    5A    6A			



**TMSCA MIDDLE SCHOOL  
NUMBER SENSE  
TEST # 12 ©  
FEBRUARY 17, 2018**

**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.



## 2017-2018 TMSCA Middle School Number Sense Test 12

- (1)  $144 + 325 =$  \_\_\_\_\_
- (2)  $49 \times 6 =$  \_\_\_\_\_
- (3)  $2244 \div 11 =$  \_\_\_\_\_
- (4)  $2018 \times 3 =$  \_\_\_\_\_
- (5)  $12 \times 27 =$  \_\_\_\_\_
- (6)  $32144 \div 4$  has a remainder of \_\_\_\_\_
- (7)  $0.6 =$  \_\_\_\_\_ (fraction)
- (8)  $\frac{13}{25} =$  \_\_\_\_\_ %
- (9)  $25 \times 96 =$  \_\_\_\_\_
- \*(10)  $327 + 3124 - 1413 =$  \_\_\_\_\_
- (11)  $62\frac{1}{2}\% =$  \_\_\_\_\_ (fraction)
- (12)  $144 \div 5 =$  \_\_\_\_\_ (decimal)
- (13)  $48 \times 42 =$  \_\_\_\_\_
- (14) Which of the following is greater, 0.4 or  $\frac{6}{13}$ ? \_\_\_\_\_
- (15) 22 gallon = \_\_\_\_\_ quarts
- (16) Find the median of 13, 23, 7, 11, 9. \_\_\_\_\_
- (17)  $89 \times 29 =$  \_\_\_\_\_
- (18)  $88 \times 12\frac{1}{2} =$  \_\_\_\_\_
- (19)  $74 \times 11 =$  \_\_\_\_\_
- \*(20)  $834 \times 599 =$  \_\_\_\_\_
- (21)  $85^2 =$  \_\_\_\_\_
- (22)  $94 \times 98 =$  \_\_\_\_\_
- (23) CXLIX = \_\_\_\_\_ (Arabic Numeral)
- (24) The additive inverse of  $-3.2$  is \_\_\_\_\_
- (25)  $872 \times 111 =$  \_\_\_\_\_
- (26) The sum of the distinct prime divisors of 36 is \_\_\_\_\_
- (27)  $325 \times 101 =$  \_\_\_\_\_
- (28)  $81 \times 1\frac{1}{9} =$  \_\_\_\_\_
- (29) If a square has area 81, then its perimeter is \_\_\_\_\_
- \*(30)  $562000 \div 749 =$  \_\_\_\_\_
- (31)  $19^2 \div 9$  has a remainder of \_\_\_\_\_
- (32)  $14^2 + 28^2 =$  \_\_\_\_\_
- (33) Find the hypotenuse of a right triangle with legs of 12 and 16. \_\_\_\_\_
- (34) If 4 pens cost \$7.33, then a dozen pens cost \$ \_\_\_\_\_
- (35)  $33^2 =$  \_\_\_\_\_
- (36) 48 has how many positive integral divisors? \_\_\_\_\_
- (37)  $1 + 2 + 3 + \dots + 14 =$  \_\_\_\_\_
- (38)  $7.4 \times 7.6 =$  \_\_\_\_\_ (mixed number)
- (39)  $23^2 - 7^2 =$  \_\_\_\_\_
- \*(40)  $29 \times 30 \times 31 =$  \_\_\_\_\_
- (41) If  $3x - 2 = 5$ , then  $3x + 8 =$  \_\_\_\_\_
- (42)  $\sqrt{1521} =$  \_\_\_\_\_
- (43)  $63_9 =$  \_\_\_\_\_<sub>10</sub>
- (44) A set with 7 elements has \_\_\_\_\_ proper subsets

- (45) The area of a right triangle with base 14 and height 50 is \_\_\_\_\_
- (46) The area of a square with diagonal  $4\sqrt{2}$  is \_\_\_\_\_
- (47) How many distinct diagonals can be drawn in a 20-sided polygon? \_\_\_\_\_
- (48) The sum of the 5<sup>th</sup> and 6<sup>th</sup> triangular numbers is \_\_\_\_\_
- (49)  $45_8 =$  \_\_\_\_\_<sub>2</sub>
- \*(50)  $\sqrt{200341} =$  \_\_\_\_\_
- (51)  $23 \times \frac{22}{19} =$  \_\_\_\_\_ (mixed number)
- (52) The probability of choosing a prime number from the one digit positive integers is \_\_\_\_\_
- (53)  $0.1 + 0.3 + 0.5 + \dots + 4.7 =$  \_\_\_\_\_
- (54) Find the slope of the line  $2x + Ay = 15$  if the y-intercept is 3. \_\_\_\_\_
- (55)  $6 + 10 + 14 + \dots + 42 =$  \_\_\_\_\_
- (56) Find the perimeter of a regular polygon with exterior angle  $20^\circ$  and a side of 30. \_\_\_\_\_
- (57)  $234_9 \times 4_9 =$  \_\_\_\_\_<sub>9</sub>
- (58)  $\frac{5}{11} + \frac{6}{5} =$  \_\_\_\_\_ (mixed number)
- (59) If  $2 + 4 + 6 + \dots + k = 95 \times 96$ , then  $k =$  \_\_\_\_\_
- \*(60)  ${}_{101}C_3 =$  \_\_\_\_\_
- (61) What is the tens digits of  $104^3$ ? \_\_\_\_\_
- (62) The y-intercept of  $f(x) = 3(x - 2)(x + 4)$  is \_\_\_\_\_
- (63)  $12\frac{1}{3} \times 9\frac{1}{3} =$  \_\_\_\_\_ (mixed number)
- (64)  $0.8333\dots =$  \_\_\_\_\_ (fraction)
- (65) If the angles of a pentagon are in arithmetic progression and the largest angle is  $160^\circ$ , then the 3<sup>rd</sup> largest angle is \_\_\_\_\_ $^\circ$
- (66) What is the  $x^3$  coefficient of  $(4x^2 + 5x + 5)(2x^2 + 3x + 5)$ ? \_\_\_\_\_
- (67) The sum of the infinite geometric series,  $2.4 + 1.2 + 0.6 + \dots =$  \_\_\_\_\_
- (68) The first 4 decimal places of  $\frac{437}{999}$  is 0. \_\_\_\_\_
- (69) How many triangles can be drawn using any 3 vertices of a decagon? \_\_\_\_\_
- \*(70) Find the area of an equilateral triangle with side length 60. \_\_\_\_\_
- (71) The sum of the coefficients of  $(5x - 3)(2x + 8)$  is \_\_\_\_\_
- (72) The axis of symmetry of  $f(x) = (3x - 7)(3x - 19)$  is  $x =$  \_\_\_\_\_
- (73) An 18-sided polygon has how many more distinct diagonals than a 15-sided polygon? \_\_\_\_\_
- (74)  $1^3 + 2^3 + 3^3 + \dots + 9^3 =$  \_\_\_\_\_
- (75) The intersection of the lines  $4x + 3y = 11$  and  $x + 2y = -1$  is  $(p, q)$ .  $q =$  \_\_\_\_\_
- (76) If  $x$  is an element of  $\{10, 11, 12, 13, \dots, 20\}$ , what is the probability  $100 \leq x^2 \leq 200$ ? \_\_\_\_\_
- (77)  $f(x) = -2(x - 4)^2 + 3$  has how many real roots? \_\_\_\_\_
- (78) If  $P$  and  $Q$  are the roots of  $3x^2 - 5x = 14$ , then  $PQ + P + Q =$  \_\_\_\_\_
- (79) The sum of the integral solutions of  $|x - 3| \leq 5.9$  is \_\_\_\_\_
- \*(80)  $968 \times 499 \times \frac{3}{8} =$  \_\_\_\_\_

## 2017-2018 TMSCA Middle School Number Sense Key #12

- |                       |  |                                      |  |
|-----------------------|--|--------------------------------------|--|
| (1) 469               | (23) 149                               | (45) 350                             | (64) $\frac{5}{6}$                                 |
| (2) 294               | (24) $3.2, 3\frac{1}{5}, \frac{16}{5}$ | (46) 16                              |  |
| (3) 204               | (25) 96792                             | (47) 170                             | (65) 108   |
| (4) 6054              | (26) 5                                 |                                      | (66) 22  |
| (5) 324               | (27) 32825                             | (48) 36                              |  |
| (6) 0                 | (28) 90                                | (49) 100101                          | (67) $4.8, 4\frac{4}{5}, \text{ or } \frac{24}{5}$ |
| (7) $\frac{3}{5}$     | (29) 36                                | *(50) 426 – 469                      | (68) 4374  |
| (8) 52                | *(30) 713 – 787                        | (51) $26\frac{12}{19}$               | (69) 120   |
| (9) 2400              | (31) 1                                 | (52) $\frac{4}{9}$                   | *(70) 1481 – 1636                                  |
| *(10) 1937 – 2139     | (32) 980                               | (53) 57.6                            | (71) 20  |
| (11) $\frac{5}{8}$    | (33) 20                                |                                      |  |
| (12) 28.8             | (34) 21.99                             | (54) $-0.4 \text{ or } -\frac{2}{5}$ | (72) $\frac{13}{3} \text{ or } 4\frac{1}{3}$       |
| (13) 2016             | (35) 1089                              | (55) 240                             | (73) 45  |
| (14) $\frac{6}{13}$   | (36) 10                                |                                      | (74) 2025  |
| (15) 88               | (37) 105                               | (56) 540                             |  |
| (16) 11               | (38) $56\frac{6}{25}$                  | (57) 1047                            | (75) – 3   |
| (17) 2581             | (39) 480                               | (58) $1\frac{36}{55}$                | (76) $\frac{5}{11}$                                |
| (18) 1100             | *(40) 25622 – 28318                    | (59) 190                             | (77) 2   |
| (19) 814              | (41) 15                                | *(60) 158318 – 174982                |  |
| *(20) 474588 – 524544 | (42) 39                                | (61) 6                               | (78) – 3   |
| (21) 7225             | (43) 57                                | (62) – 24                            |  |
| (22) 9212             | (44) 127                               | (63) $115\frac{1}{9}$                | (79) 33  |
|                       |  |                                      | *(80) 172081 – 190193                              |