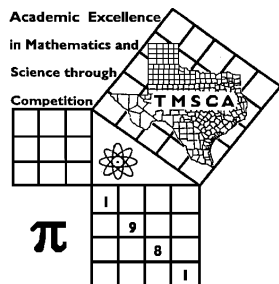


1st Score: _____	2nd Score: _____	3rd Score: _____	<b>Final Score</b>
Grader: _____	Grader: _____	Grader: _____	
<b>PLACE LABEL BELOW</b>			
Name: _____		School: _____	
SS/ID Number: _____		City: _____	
Grade: 4 5 6 7 8	Classification: 1A 2A 3A 4A 5A 6A		



## TMSCA MIDDLE SCHOOL NUMBER SENSE

TEST #3 ©

NOVEMBER 2, 2019

### 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.



## 2019-2020 TMSCA Middle School Number Sense Test #3

- (1)  $2020 \times 101 =$  \_\_\_\_\_
- (2)  $14 \times 35 =$  \_\_\_\_\_
- (3)  $438 \div 3 =$  \_\_\_\_\_
- (4)  $89 \times 11 =$  \_\_\_\_\_
- (5)  $\frac{4}{11} + \frac{3}{5} =$  \_\_\_\_\_ (fraction)
- (6)  $6868 \div 17 =$  \_\_\_\_\_
- (7)  $0.45 =$  \_\_\_\_\_ (fraction)
- (8)  $74 \times (6^2 - 1) \div 5 =$  \_\_\_\_\_
- (9)  $8 \div 40 =$  \_\_\_\_\_ (decimal)
- \*(10)  $2314 - 1593 + 2764 =$  \_\_\_\_\_
- (11)  $7 \times 56 =$  \_\_\_\_\_
- (12)  $234 \div 4 =$  \_\_\_\_\_ (decimal)
- (13)  $625 = 23 \times 27 +$  \_\_\_\_\_
- (14) What is the largest two digit number that has a remainder of 1 when divided by 3 and 7? \_\_\_\_\_
- (15)  $27^2 =$  \_\_\_\_\_
- (16)  $\frac{5}{18} + \frac{1}{2} =$  \_\_\_\_\_ (fraction)
- (17)  $312 \times 8 =$  \_\_\_\_\_
- (18)  $63 \times 77\frac{7}{9} =$  \_\_\_\_\_
- (19) 3 yards + 1 foot = \_\_\_\_\_ feet
- \*(20)  $216 \times 899 =$  \_\_\_\_\_
- (21) 4 gallons = \_\_\_\_\_ cubic inches
- (22)  $3\frac{1}{5} \times 35 =$  \_\_\_\_\_
- (23)  $95 \times 97 =$  \_\_\_\_\_
- (24) The multiplicative inverse of 5.2 is \_\_\_\_\_
- (25)  $75^2 =$  \_\_\_\_\_
- (26) The LCM of 60 and 84 is \_\_\_\_\_
- (27)  $638 \times 101 =$  \_\_\_\_\_
- (28)  $1 + 2 + 3 + \dots + 23 =$  \_\_\_\_\_
- (29)  $3.7 \times 2.5 =$  \_\_\_\_\_ (decimal)
- \*(30)  $26^2 + 28^2 + 32^2 + 34^2 =$  \_\_\_\_\_
- (31) How many odd integers are between 15 and 73? \_\_\_\_\_
- (32)  $63^2 \div 7^2 =$  \_\_\_\_\_
- (33) If 8 pens cost \$4.50, then 4 dozen pens cost \$ \_\_\_\_\_
- (34) 72 has \_\_\_\_\_ positive integral divisors
- (35)  $106 \times 115 =$  \_\_\_\_\_
- (36)  $14^2 + 42^2 =$  \_\_\_\_\_
- (37) The sum of the positive integral divisors of 18 is \_\_\_\_\_
- (38) If  $f(x) = 9x^2 + 6x + 1$  and  $f(7) =$  \_\_\_\_\_
- (39)  $8\frac{5}{8} \times 8\frac{3}{8} =$  \_\_\_\_\_ (mixed number)
- \*(40)  $\sqrt{6341289} =$  \_\_\_\_\_
- (41) 28% of 78 is 13% of \_\_\_\_\_
- (42)  $\frac{5}{13} + \frac{13}{5} =$  \_\_\_\_\_ (mixed number)
- (43) The area of a rectangle with length 123 and width 117 is \_\_\_\_\_

(44)  $\sqrt{6084} =$  \_\_\_\_\_

(45)  $1 + 3 + 5 + \dots + 49 =$  \_\_\_\_\_

(46)  $0.4888\dots =$  \_\_\_\_\_ (fraction)

(47) If  $234^2 = 54756$ , then  $222 \times 246 =$  \_\_\_\_\_

(48) A polygon with 275 distinct diagonals has \_\_\_\_\_ sides

(49) The measure of an exterior angle of a regular 30-sided polygon is \_\_\_\_\_ $^\circ$

\*(50)  $3^5 + 4^5 + 5^5 =$  \_\_\_\_\_

(51)  $37 \times \frac{35}{31} =$  \_\_\_\_\_ (mixed number)

(52)  $4 \times 5 \times 6 \times 7 + 1 =$  \_\_\_\_\_

(53)  $10\frac{1}{4} \times 10\frac{1}{4} =$  \_\_\_\_\_ (mixed number)

(54) A triangle with a smallest angle of  $53^\circ$  has angles in arithmetic progression. The difference in the measure of the two largest angles is \_\_\_\_\_ $^\circ$

(55)  $0.25 + 0.5 + 0.75 + \dots + 2.50 =$  \_\_\_\_\_

(56) If  $8^{x+1} = 125$ , then  $2^x =$  \_\_\_\_\_

(57) If  $x(x + 5) < 150$ , then the largest integer solution is  $x =$  \_\_\_\_\_

(58)  $314_6 - 42_6 =$  \_\_\_\_\_ $_6$

(59) The sum of the  $15^{\text{th}}$  and  $16^{\text{th}}$  triangular numbers is \_\_\_\_\_

\*(60) If two consecutive integers have a product of 15006, then the sum of the integers is \_\_\_\_\_

(61)  $12^2 \div 0.083333 =$  \_\_\_\_\_

(62)  $234 \times 1111 =$  \_\_\_\_\_

(63) If  $73^2 - 27^2 = 23k$ , then  $k =$  \_\_\_\_\_

(64) What is the smallest prime number which is also a triangular number? \_\_\_\_\_

(65)  $0.151515\dots + 0.212121\dots =$  \_\_\_\_\_

(66) The first 4 decimal places of  $\frac{73}{90}$  are 0. \_\_\_\_\_

(67) How many ways can a committee of 3 people be chosen from 12 people? \_\_\_\_\_

(68) Find the slope of a line containing (4, 3) with an x-intercept of 10. \_\_\_\_\_

(69) How many 3 digit numbers exist in base 5? \_\_\_\_\_

\*(70)  $\sqrt{150} \times \sqrt{190} \times \sqrt[3]{1300} =$  \_\_\_\_\_

(71) P and Q are the roots of  $3x^2 + 7x - 5 = 0$ .  $(P + 1)(Q + 1) =$  \_\_\_\_\_

(72)  $1^3 + 2^3 + 3^3 + \dots + 12^3 = k^2$  and  $k > 0$ , where  $k =$  \_\_\_\_\_

(73)  $312^2 =$  \_\_\_\_\_

(74) The sum of the infinite geometric series  $18 + 8 + \frac{32}{9} + \dots =$  \_\_\_\_\_

(75) The sum of the roots of  $f(x) = (2x - 5)(4x - 11)$  is \_\_\_\_\_ (mixed number)

(76) How many positive integers less than 90 are relatively prime to 90? \_\_\_\_\_

(77) If the two roots of  $f(x) = x^2 + 9x + c$  are  $-3$  and  $k$ , then  $c =$  \_\_\_\_\_

(78) The first 4 decimal places of  $\frac{431}{900}$  is 0. \_\_\_\_\_

(79) How many nonnegative integers ordered pairs are solutions of  $3x + 5y = 90$ ? \_\_\_\_\_

\*(80)  $983 \times 2040 =$  \_\_\_\_\_

## 2019-2020 TMSCA Middle School Number Sense Test 3 Key

- (1) 204020                      (23) 9215                      (44) 78                      (63) 200
- (2) 490                      (24)  $\frac{5}{26}$                       (45) 625                      (64) 3
- (3) 146                      (25) 5625                      (46)  $\frac{22}{45}$                       (65)  $\frac{4}{11}$
- (4) 979                      (26) 420                      (47) 54612                      (66) 8111
- (5)  $\frac{53}{55}$                       (27) 64438                      (48) 25                      (67) 220
- (6) 404                      (28) 276                      (49) 12                      (68)  $-\frac{1}{2}$  or  $-.5$
- (7)  $\frac{9}{20}$                       (29) 9.25                      (50) 4173 – 4611                      (69) 100
- (8) 518                      (30) 3458 – 3822                      (51)  $41\frac{24}{31}$                       \*(70) 1751 – 1934
- (9) .2                      (31) 29                      (52) 841                      (71) –3
- \*(10) 3311 – 3659                      (32) 81                      (53)  $105\frac{1}{16}$                       (72) 78
- (11) 392                      (33) 27.00                      (54) 7                      (73) 97344
- (12) 58.5                      (34) 12                      (55) 13.75,  $13\frac{3}{4}$  or  $\frac{55}{4}$                       (74)  $\frac{162}{5}$ ,  $32\frac{2}{5}$ , or 32.4
- (13) 4                      (35) 12190                      (56) 2.5,  $2\frac{1}{2}$  or  $\frac{5}{2}$                       (75)  $5\frac{1}{4}$
- (14) 85                      (36) 1960                      (57) 9                      (76) 24
- (15) 729                      (37) 39                      (58) 232                      (77) 18
- (16)  $\frac{7}{9}$                       (38) 484                      (59) 256                      (78) 4788
- (17) 2496                      (39)  $72\frac{15}{64}$                       \*(60) 233 – 257                      (79) 7
- (18) 4900                      (40) 2393 – 2644                      (61) 1728                      \*(80) 1905054 – 2105586
- (19) 10                      (41) 168                      (62) 259974
- \*(20) 184475 – 203893                      (42)  $2\frac{64}{65}$
- (21) 924                      (43) 14391
- (22) 112