T M S C A   M I D D L E   S C H O O L

N U M B E R   S E N S E

T E S T   # 2 ©

O C T O B E R   2 7 ,   2 0 1 8

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.

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2018 – 2019 TMSCA Middle School Number Sense Test #2

(1) $2019 \div 3$ = _____

(2) 8×69 = _____

(3) $856 \div 8$ = _____

(4) 23×14 = _____

(5) $3 + 6 + 9 + 12 + 15 + 18 + 21$ = _____

(6) 0.0025 = _____ (fraction)

(7) $27348 \div 5$ has a remainder of _____

(8) 2.8^2 = _____

(9) $11 \times 12 + 11 \times 13$ = _____

*(10) $387 - 2019 + 8324$ = _____

(11) 75×24 = _____

(12) 94×106 = _____

(13) 47×67 = _____

(14) $\dfrac{1+3+5+7+9+11+13+15+17}{3}$ = _____

(15) 47×43 = _____

(16) The mean of 4, 16, and 64 is _____

(17) $78 \times 33\frac{1}{3}$ = _____

(18) $14 \times 3\frac{4}{7}$ = _____

(19) $5625 = 71 \times 79 +$ _____

*(20) $729 \times 444.444\ldots$ = _____

(21) 36×4.4 = _____ (decimal)

(22) 37×123 = _____

(23) 96 inches = _____ feet

(24) The LCM of 103 and 104 is _____

(25) The multiplicative inverse of $\frac{5}{9}$ is _____ (decimal)

(26) The cube root of $\frac{64}{27}$ is _____ (mixed number)

(27) $\frac{7}{4} + \frac{4}{7}$ = _____ (mixed number)

(28) The area of a square with side 8.5 is _____

(29) $38582 \div 101$ = _____

*(30) 77.777% of 3591 = _____

(31) How many fractions between 0.5 and 1.5 have a denominator of 8 with an integer numerator? _____

(32) $43^2 + 26^2$ = _____

(33) $21^2 + 63^2$ = _____

(34) $8\frac{2}{3} \times 9\frac{1}{3}$ = _____ (mixed number)

(35) 75 has how many positive integral divisors? _____

(36) If $1 + 3 + 5 + \ldots + k = 25^2$, then k = _____

(37) The sum of the smallest 11 odd integers is _____

(38) 2019 has how many positive integral divisors? _____

(39) If $f(x) = 16x^2 - 8x + 1$, and $f(22) = k^2$, with $k > 0$, then k = _____

*(40) $2019 \times \sqrt{2019}$ = _____

(41) If $\frac{2x-13}{5} = 9$ then x = _____

(42) $600 = 18 \times 33 + 18 \times$ _____

(43) 13^3 = _____

(44) $\sqrt{17424}$ =_____

(45) $19 \times \dfrac{2}{3}$ = _____ (mixed number)

(46) The set {s,l,o,t,b,a,c,k} has
how many 7-element subsets? _____

(47) Find the slope of a line which
passes through (4, 7) and (10, 19). _____

(48) The exterior angle of a
regular 20-sided polygon is _____ °

(49) The perimeter of a regular hexagon with
side 16 is the same as the perimeter
of a regular octagon with side length_____

*(50) $6! \times 7!$ =_____

(51) The area of an equilateral triangle
with side 14 is $k\sqrt{3}$, then k =_____

(52) $21 \times \dfrac{17}{22}$ =_____(mixed number)

(53) Let f(x) = 12x + 23, then f(58) – f(40) = _____

(54) $\dfrac{1}{12} + \dfrac{1}{20} + \dfrac{1}{30} + \dfrac{1}{42}$ = _____

(55) $53^2 - 37^2$ =_____

(56) $1_8 + 2_8 + 3_8 + 4_8 + ... + 10_8$ =_____$_8$

(57) A cube with a volume of
27 has a surface area of_____

(58) Find the sum of the positive
multiples of 11 that are less than 100._____

(59) 95×107 =_____

*(60) The length of the inner diagonal
of a cube with edge 400 is _____

(61) $(2 + 4 + 6 + … + 38) + (2 + 4 + 6 + … + 40)$ = _____

(62) Find the smaller solution of $\left|2x - 3\right| = 7$. _____

(63) If a polygon of n sides has
170 distinct diagonals, then n = _____

(64) 0.366666… =_____(fraction)

(65) If the line 4x – 5y = C passes
through the point (12,8), then C =_____

(66) The number of triangles which can be
drawn in a heptagon using any 3 vertices is_____

(67) The sum of the solutions of $\left|x - 18\right| = 10$ is_____

(68) $1 + 3 + 3^2 + 3^3$ = _____

(69) How many positive integers less than
or equal to 22 are relatively prime to 22?_____

*(70) $\sqrt{5382147}$ = _____

(71) If P and Q are roots of $x^2 + bx + c = 0$,
P+Q = – 4 and PQ = 12, then b +c =_____

(72) $f(x) = 2x^2 + 3x + 9$ has
an axis of symmetry of x = _____

(73) Find the probability of rolling a
sum of 3 when rolling two 6-sided die. _____

(74) How many distinct six letter arrangements
can be made from {e,l,e,c,t,s}? _____

(75) $14^2 + 98^2$ =_____

(76) 608^2 =_____

(77) 245^2 =_____

(78) If $x^2 + 2xy + y^2 = 49$, xy = 10,
and x + y > 0, then x + y = _____

(79) The first 4 digits of the expansion of $\dfrac{19}{90}$ is 0. ____

*(80) 550 square miles = _____ acres

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2018-2019 TMSCA Middle School Number Sense Key #2

(1) 673

(2) 552

(3) 107

(4) 322

(5) 84

(6) $\frac{1}{400}$

(7) 3

(8) 7.84

(9) 275

*(10) 6358 – 7026

(11) 1800

(12) 9964

(13) 3149

(14) 27

(15) 2021

(16) 28

(17) 2600

(18) 50

(19) 16

*(20) 307800 – 340200

(21) 158.4

(22) 4551

(23) 8

(24) 10712

(25) 1.8

(26) $1\frac{1}{3}$

(27) $2\frac{9}{28}$

(28) 72.25

(29) 382

*(30) 2654 – 2932

(31) 7

(32) 2525

(33) 4410

(34) $80\frac{8}{9}$

(35) 6

(36) 49

(37) 121

(38) 4

(39) 87

*(40) 86185 – 95256

(41) 29

(42) $\frac{1}{3}$

(43) 2197

(44) 132

(45) $12\frac{2}{3}$

(46) 8

(47) 2

(48) 18

(49) 12

*(50) 3447360 – 3810240

(51) 49

(52) $16\frac{5}{22}$

(53) 216

(54) $\frac{4}{21}$

(55) 1440

(56) 44

(57) 54

(58) 495

(59) 10165

*(60) 659 – 727

(61) 800

(62) – 2

(63) 20

(64) $\frac{11}{30}$

(65) 8

(66) 35

(67) 36

(68) 40

(69) 10

*(70) 2204 – 2435

(71) 16

(72) $-.75$, $-\frac{3}{4}$

(73) $\frac{1}{18}$

(74) 360

(75) 9800

(76) 369664

(77) 60025

(78) 7

(79) 2111

*(80) 334400 – 369600