**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   # 1 3 ©**

**F E B R U A R Y   2 4 ,   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.

© *TMSCA* **2017**

TMSCA TMSCA TMSCA TMSCA TMSCA TMSCA TMSCA TMSCA TMSCA TMSCA

TMSCA TMSCA TMSCA TMSCA TMSCA TMSCA TMSCA TMSCA TMSCA TMSCA

TMSCA TMSCA TMSCA TMSCA TMSCA TMSCA TMSCA TMSCA TMSCA TMSCA

TMSCA TMSCA TMSCA TMSCA TMSCA TMSCA TMSCA TMSCA TMSCA TMSCA

TMSCA TMSCA TMSCA TMSCA TMSCA TMSCA TMSCA TMSCA TMSCA TMSCA

TMSCA TMSCA TMSCA TMSCA TMSCA TMSCA TMSCA TMSCA TMSCA TMSCA

TMSCA TMSCA TMSCA TMSCA TMSCA TMSCA TMSCA TMSCA TMSCA TMSCA

TMSCA TMSCA TMSCA TMSCA TMSCA TMSCA TMSCA TMSCA TMSCA TMSCA

TMSCA TMSCA TMSCA TMSCA TMSCA TMSCA TMSCA TMSCA TMSCA TMSCA

TMSCA TMSCA TMSCA TMSCA TMSCA TMSCA TMSCA TMSCA TMSCA TMSCA

TMSCA TMSCA TMSCA TMSCA TMSCA TMSCA TMSCA TMSCA TMSCA TMSCA

TMSCA TMSCA TMSCA TMSCA TMSCA TMSCA TMSCA TMSCA TMSCA TMSCA

TMSCA TMSCA TMSCA TMSCA TMSCA TMSCA TMSCA TMSCA TMSCA TMSCA

TMSCA TMSCA TMSCA TMSCA TMSCA TMSCA TMSCA TMSCA TMSCA TMSCA

TMSCA TMSCA TMSCA TMSCA TMSCA TMSCA TMSCA TMSCA TMSCA TMSCA

TMSCA TMSCA TMSCA TMSCA TMSCA TMSCA TMSCA TMSCA TMSCA TMSCA

TMSCA TMSCA TMSCA TMSCA TMSCA TMSCA TMSCA TMSCA TMSCA TMSCA

TMSCA TMSCA TMSCA TMSCA TMSCA TMSCA TMSCA TMSCA TMSCA TMSCA

TMSCA TMSCA TMSCA TMSCA TMSCA TMSCA TMSCA TMSCA TMSCA TMSCA

TMSCA TMSCA TMSCA TMSCA TMSCA TMSCA TMSCA TMSCA TMSCA TMSCA

TMSCA TMSCA TMSCA TMSCA TMSCA TMSCA TMSCA TMSCA TMSCA TMSCA

TMSCA TMSCA TMSCA TMSCA TMSCA TMSCA TMSCA TMSCA TMSCA TMSCA

TMSCA TMSCA TMSCA TMSCA TMSCA TMSCA TMSCA TMSCA TMSCA TMSCA

TMSCA TMSCA TMSCA TMSCA TMSCA TMSCA TMSCA TMSCA TMSCA TMSCA

# 2017-2018 TMSCA Middle School Number Sense Test 13

(1) $2018 \times 6 =$ _____

(2) $57 \times 7 =$ _____

(3) $9362 \div 31 =$ _____

(4) $25$ feet $=$ _____ inches

(5) $15\frac{1}{4}\% =$ _____ (fraction)

(6) $0.345 =$ _____ (fraction)

(7) $93741 \div 11$ has a remainder of _____

(8) $12 \times 24 =$ _____

(9) $24^2 =$ _____

*(10) $2018 + 1802 + 8102 =$ _____

(11) $128 \times 25 =$ _____

(12) $5.7 \times 6.3 =$ _____(decimal)

(13) $74 \times 34 =$ _____

(14) The median of 14, 8, 19, 13, and 11 is _____

(15) $95^2 =$ _____

(16) $48 \times 42 =$ _____

(17) How many digits are in the expansion of $43^2$? ____

(18) $24 \times 37\frac{1}{2} =$ _____

(19) The smallest positive number
that is divisible by 14 and 40 is _____

*(20) $375 \times 887 =$ _____

(21) 4 gallons + 3 quarts $=$ _____pints

(22) $95 \times 38 =$ _____

(23) $8633 = 97 \times$ _____

(24) $2018 \div 5 =$ _____(mixed number)

(25) The multiplicative inverse

of $\frac{3}{11}$ is _____ (mixed number)

(26) The sum of the distinct prime divisors of 20 is___

(27) $195 \times 0.333... =$ _____

(28) How many numbers
between 14 and 23 are prime? _____

(29) $25^2 + 75^2 =$ _____

*(30) $775^2 \div 5^2 =$ _____

(31) The two equal angles of an isosceles triangle
each measure $77°$. The other angle is_____°

(32) $108 \times 109 =$ _____

(33) $7\frac{3}{5} \times 7\frac{2}{5} =$ _____ (mixed number)

(34) $2 + 5 + 8 + 11 + ... + 29 =$ _____

(35) The area of a trapezoid
with bases 14 and 24 and height 5 is _____

(36) $48618 \div 111 =$ _____

(37) How many positive
perfect cubes are less than 2000?_____

(38) The sum of the first 22 positive odd
integers is how much greater than the
sum of the first 8 positive odd integers? _____

(39) $10\frac{5}{8} \times 9\frac{3}{8} = 100 -$ _____ (fraction)

*(40) $123 \times 181 + 246 \times 179 =$ _____

(41) $\sqrt{7396} =$ _____

(42) If $3x - 5 = x + 17$, then $x =$ _____

(43) If $x^2 = 99$, then $(x - 7)(x + 7) =$ _____

(44) $43_{13} =$ _____ $_{10}$

(45) If $f(x) = \dfrac{x^2 - 15}{7}$, then $f(15) =$ _____

(46) $\dfrac{13}{17} + \dfrac{17}{13} =$ _____ (mixed number)

(47) The set {t,m,s,c,a,r,e,g}
has how many proper subsets? _____

(48) The 11$^{th}$ pentagonal number is_____

(49) $13_5 + 24_5 =$ _____ $_5$

*(50) $\sqrt{725 \times 575} =$ _____

(51) $\dfrac{6! + 9 \times 5!}{5!} =$ _____

(52) The sum of the
5$^{th}$ and 6$^{th}$ triangular numbers is_____

(53) The sum of the solutions of $|2x - 3| = 18$ is_____

(54) If a regular polygon has
27 distinct diagonals, then it has _____ sides

(55) $509^2 =$ _____

(56) $74_9 =$ _____ $_3$

(57) A cube with a face diagonal
of $4\sqrt{3}$ has a total surface area of_____

(58) If $f(x) = ax^2$, and $f(3) = 24$, then $a =$ _____

(59) $x(x - 1) < 50$ how how
many positive integer solutions?_____

*(60) The hypotenuse of an isosceles right
triangle with legs of 140 and 140 is _____

(61) $1_7 + 2_7 + 3_7 + \ldots + 21_7 =$ _____ $_{10}$

(62) $937 \times 101 =$ _____

(63) $17 \times \dfrac{15}{13} =$ _____ (mixed number)

(64) The first 4 digits of $\dfrac{41}{90}$ is 0._____

(65) The sum of the roots of $4x^2 - kx = 13$ is 5.5. $k =$ ___

(66) If $f(x)$ has a slope of 3 and $f(2) = 7$, then $f(5) =$ ___

(67) The sum of the
integral solutions of $|x - 4| \le 9$ is_____

(68) $9x^2 + 42x + 24 = (px - q)(rx - s)$. $pqrs =$ _____

(69) If $f(x) = 9x^2 + 3$, then $f(14) - f(6) =$ _____

*(70) The sum of the coefficients
in the expansion of $(8x + 9y)^4$ is_____

(71) The line $4x + 3y = C$
has y-intercept 20, its x-intercept is_____

(72) If $f(x) = 2(x - 5)^2 - 11$,
then its vertex is (h, k) and $h + k =$ _____

(73) $1^3 + 2^3 + 3^3 + \ldots + 19^3 =$ _____

(74) Find the sum of the
distinct prime divisors of $\left(3 \times 2^7 + 2^9\right)$. _____

(75) The probability of rolling a
sum of 4 with two 4-sided die is _____

(76) If $\sqrt{8! \times 9!} = (k) \times 8!$, then $k =$ _____

(77) 88% of 15 is 11% of _____

(78) If $9^{x+2} = 48$ and $9^{x+1} = \dfrac{p}{q}$,

where $\dfrac{p}{q}$ is an irreducible fraction, $p + q =$ _____

(79) If the system of equations $3x + y = 11$ and
$9x + By = C$ has infinite solutions, then $B + C =$ ____

*(80) 8 weeks = _____ hours

# 2017-2018 TMSCA Middle School Number Sense Key #13

(1) 12108

(2) 399

(3) 302

(4) 300

(5) $\frac{61}{400}$

(6) $\frac{69}{200}$

(7) 10

(8) 288

(9) 576

*(10) 11326 – 12518

(11) 3200

(12) 35.91

(13) 2516

(14) 13

(15) 9025

(16) 2016

(17) 4

(18) 900

(19) 280

*(20) 315994 – 349256

(21) 38

(22) 3610

(23) 89

(24) $403\frac{3}{5}$

(25) $3\frac{2}{3}$

(26) 7

(27) 65

(28) 2

(29) 6250

*(30) 22824 – 25226

(31) 26

(32) 11772

(33) $56\frac{6}{25}$

(34) 155

(35) 95

(36) 438

(37) 12

(38) 420

(39) $\frac{25}{64}$

*(40) 62983 – 69611

(41) 86

(42) 11

(43) 50

(44) 55

(45) 30

(46) $2\frac{16}{221}$

(47) 255

(48) 176

(49) 42

*(50) 614 – 677

(51) 15

(52) 36

(53) 3

(54) 9

(55) 259081

(56) 2111

(57) 144

(58) $\frac{8}{3}$ or $2\frac{2}{3}$

(59) 7

*(60) 189 – 207

(61) 120

(62) 94637

(63) $19\frac{8}{13}$

(64) 4555

(65) 22

(66) 16

(67) 76

(68) 216

(69) 1440

*(70) 79345 – 87697

(71) 15

(72) – 6

(73) 36100

(74) 9

(75) $\frac{3}{16}$ , .1875

(76) 3

(77) 120

(78) 19

(79) 36

*(80) 1277 – 1411