1st Score:	2nd Score:	3rd Score:					
Grader:	Grader:	Grader:	Final Score				
PLACE LABEL BELOW							
Name:		School:					
SS/ID Number:		City:					
Grade: 4 5 6	7 8 Cla	ssification: 1A 2A	3A	4A	5A	6A	

Academic Excellence in Mathematics and Science through Competition T M S C A						
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TMSCA MIDDLE SCHOOL NUMBER SENSE TEST #6© DECEMBER 1, 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 <u>non-black</u> 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 <u>FIVE</u> points. <u>FOUR</u> 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 #6

(1) 631 – 136 = ______ (2) 73 × 6 = _____

(3) 304575 ÷ 15 =____

(4) **0.55** = _____ (fraction)

(5) 24 × 11 = _____

(6) 14 + 23 + 32 + 41 + 50 =

(7) 834 ÷ 9 has a remainder of _____

(8) $28^2 =$

(9) $17 \div 2 + 13 - 12 \div 2 =$ _____(decimal)

*(10) 437 + 2019 - 752 =

(11) 75 × 68 =_____

(12) 84 × 86 =_____

 $(13) 48 \times 68 =$

 $(14) 21^2 =$

(15) $5 \times 3 - 4 \div 2 + 1 =$

(16) The mean of the smallest 6 prime numbers is_____

(17) Which of $\frac{5}{13}$ or $\frac{3}{8}$ is smaller?

 $(18) \ 73 \times 47 - 43 \times 47 = \underline{\hspace{1cm}}$

(19) 37 × 54 =_____

*(20) 729 × 444 =_____

(21) 1400 = 25 ×_____

(22) 94 × 95 =____

(23) 235.7 mm = ______meters

(24) The GCD of 45 and 85 is_____

(25) The multiplicative inverse of $\frac{5}{11}$ is _____(decimal)

(26) The sum of the smallest
14 positive odd integers is _____

 $(27) 729 \times 101 =$

(28) The area of a rhombus with diagonals 18 and 24 is_____

 $(29) 6^3 - 6^2 = \underline{\hspace{1cm}}$

*(30) 332 × 832 =

 $(31) 125 \times 248 =$

 $(32) 14^2 + 42^2 = \underline{\hspace{1cm}}$

(33) If the mean of 11, 19, and x is 20, then x =_____

(34) What is the smallest 3-digit number when divided by 5 and 7 gives a remainder of 1?

(35) $9\frac{1}{3} \times 8\frac{2}{3} =$ (mixed number)

(36) If $63^2 = 1 + 3 + 5 + ... + k$, then k =

(37) Find the area of a triangle with base 28 and height 12.

(38) 13.5 × 13.5 = (decimal)

(39) $72 \times 16\frac{2}{3} =$

*(40) 237412 ÷ 589 =

(41) If three angles of a quadrilateral have an equal measure of 85°, then the other angle is ______°

(42) If x = 3 and y = 2, then $25x^2 + 10xy + y^2 = _____$

 $(43) \ \ 28^3 = 7^3 \times \underline{\hspace{1cm}}$

- $(44) \sqrt{9216} =$
- $(45) (2+4+6+...+84)-42^2 = \underline{\hspace{1cm}}$
- (46) A regular polygon with an exterior angle of 36° has how many sides? _____
- (47) The 9th pentagonal number is______
- $(48) 48^2 + 76^2 = \underline{\hspace{1cm}}$
- (49) $153_7 = \underline{\hspace{1cm}}_{10}$
- *(50) Find the volume of a square pyramid that has a base with a side of 15 and height 12._____
- $(51) 62^2 12^2 = \underline{\hspace{1cm}}$
- (52) $14 \times \frac{14}{17} =$ (mixed number)
- (53) The area of an equilateral triangle with side 18 is $k\sqrt{3}$, k =_____
- (54) A set with 26 elements
 has how many 3-element subsets is ______
- (55) The two solutions of |x c| = dare – 4 and 26. The value of d is ______
- (56) If f(5x-3) = 12x + 4, then f(12) =
- (57) If the midpoint of (-3, 7) and (8, 19) is (a, b), then b = _____
- (59) $4^7 \div 3$ has a remainder of _____
- * $(60) \sqrt{150} \times \sqrt{170} \times \sqrt{190} =$
- (61) 0.848484... = $\frac{a}{b}$, where a and b have no common factors. a + b =

- (62) $55 \times 65 =$
- (63) $f(x) = 5x^2 9x + 6$. f(4) =_____
- (64) $\frac{7}{12} + \frac{7}{20} + \frac{7}{30} + \frac{7}{6} =$ _____(fraction)
- (65) If a line perpendicular to 2x + 3y = 7 is Ax + 2y = 13, then A =_____
- (66) $23 \times \frac{27}{29} =$ (mixed number)
- $(67) (23_8)^2 = __8$
- (68) $1+2+2^2+2^3+...+2^7=$
- (69) If 1 + 3 + 5 + ... + 53 = 9k, then $k = _____$
- *(70) $\sqrt{632 \times 1032} =$
- (71) $12 + 4 + \frac{4}{3} + \dots =$
- (72) If $f(x) = 3x^2 8x + 14$, then f(x-3) has an axis of symmetry of x =_____
- (73) $\log_{10}20 + \log_{10}5 =$
- (74) If $f(x) = 3(x h)^2 + k$ has a vertex of (2,9), then the y-intercept is
- (75) How many distinct 6-letter arrangements can be made from {p,r,o,p,e,r}?_____
- (76) If $f(x) = x^3 + 3x^2 + 3x + 1$, then f(6) =
- (77) $2x^2 13x + 5 = 0$ has a discriminant of _____
- $(78) 64^{\frac{2}{3}} = \underline{\hspace{1cm}}$
- (79) $f(x) = x^3 6x^2 + cx + d$ has factors (x 3), (x 5) and (x k). k =_____
- *(80) The surface area of a sphere with radius 35 is______

2018-2019 TMSCA Middle School Number Sense Key #6

		v	
(1) 495	(24) 5	(44) 96	(62) 3575
(2) 438	(25) 2.2	(45) 42	(63) 50
(3) 20305			(64) $2\frac{1}{3}$ or $\frac{7}{3}$
$(4) \frac{11}{20}$	(26) 196	(46) 10	3 3
(5) 264	(27) 73629	(47) 117	(65) -3
(6) 160	(28) 216	(48) 8080	$(66) \ 21\frac{12}{29}$
(7) 6	(29) 180	(49) 87	(67) 551
(8) 784	*(30) 262413 – 290035	*(50) 955 045	(68) 255
(0) 15.5		*(50) 855 – 945	
(9) 15.5	(31) 31000	(51) 3700	(69) 81
*(10) 1619 – 1789	(32) 1960	$(52) \ 11\frac{9}{17}$	*(70) 768 – 847
(11) 5100	(33) 30	17	(71) 18
(12) 7224	(24) 107	(53) 81	(72) $4\frac{1}{3}$ or $\frac{13}{3}$
(13) 3264	(34) 106		` ' 3 3
(14) 441	$(35) 80\frac{8}{9}$	(54) 2600	(73) 2
(15) 14	(36) 125	(55) 15	(74) 21
(16) $\frac{41}{6}$ or $6\frac{5}{6}$	(30) 123		
	(37) 168	(56) 40	(75) 180
$(17) \frac{3}{8}$	(38) 182.25		(76) 343
(18) 1410	(39) 1200	(57) 13	
. ,		(58) 100110	(77) 129
(19) 1998	*(40) 383 – 423		(78) 16
*(20) 207402 220950		(59) 1	

*(20) 307493 - 339859

(41) 10

(22) 8930

(21) 56

(23) .2357

(41) 105

(42) 289

(43) 64

*(60) 2092 - 2311

(61) 61

(79) - 2

*(80) 14625 - 16163