1st Score:	2nd Score:	3rd Score:	-					
Grader:	Grader:	Grader:	_	Final Score				
PLACE LABEL BELOW								
Name:		School:						
SS/ID Number:		City:						
Grade: 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 #4© NOVEMBER 11, 2017

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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2017-2018 TMSCA Middle School Number Sense Test 4

 $(1) \ \ 2018 - 1234 =$

(2) $35 \times 12 =$

(3) 14 + 20 + 26 - 15 =

(4) $48 \times 25 =$

(5) 11 × 94 = _____

(6) $4^3 =$ _____

(7) 483742 ÷ 3 has a remainder of _____

(8) Find the sum of the smallest 4 prime numbers. ____

*(10) 2018×248=_____

(11) 41 × 49 = _____

(12) $93 \div 2 =$ _____(mixed number)

(13) $93 \times 95 =$

(14) 2 feet + 9 inches = _____ inches

 $(15) 18^2 = \underline{\hspace{1cm}}$

(16) 42 × 37 =_____

(17) 67 × 111 =____

 $(18) 83 \times 35 - 48 \times 35 = \underline{\hspace{1cm}}$

(19) $\frac{9}{13} - \frac{4}{7} =$ (fraction)

*(20) 334 × 839 = _____

(21) $12 \times 33 \frac{1}{3} =$

(22) The arithmetic mean of 15, 24, and _____ is 25

 $(23) 97 \times 17 =$

(24) 2018 ÷ 9 = _____(mixed number)

(25) 1 + 3 + 5 + ... + 37 =

 $(26) 23^2 - 17^2 =$

(27) How many integers between 50 and 100 are the square of an integer? _____

(28) What is the LCM of 44 and 99?_____

(29) $102 \times 114 =$

*(30) 43281÷143 =_____

 $(31) \frac{10!}{8!} =$

(32) 62 has how many positive integral divisors?_____

 $(33) \ 25^2 + 75^2 = \underline{\hspace{1cm}}$

(34) $\frac{9}{11} + \frac{11}{9} =$ _____(mixed number)

(35) By how much does the sum of the smallest 16 positive odd integers exceed the sum of the smallest 9 positive odd integers?

(36) How many fractions with a numerator of 2 are between $\frac{1}{3}$ and $\frac{1}{5}$?_____

(37) Find the hypotenuse of a right triangle which has legs of 9 and 12.

 $(38) \quad 5625 = 73 \times 77 + \underline{\hspace{1cm}}$

(39) If 3(2x-5) = 40, then 9(5-2x) =

*(40) $\sqrt{381459}$ = ______

(41) The area of a square with diagonal $3\sqrt{6}$ is _____

 $(42) \sqrt{8649} =$

- (44) The exterior angle of an equilateral triangle has a measure of______°
- $(45) 92^2 + 11^2 =$
- (46) The product of 1.7 and its additive inverse is____
- (47) The set {a,g,h,i,k,m,n,o} has how many subsets have with either 2 or 6 elements?_____
- (48) 48 × 34 =_____
- (49) If 4 + 8 + 12 + ... + 56 = 4k, then k =
- *(50) Find the 50th pentagonal number.
- (51) $27 \times \frac{26}{23} =$ (mixed number)
- (52) How many terms are in the arithmetic sequence 5, 11, 17, ..., 89? _____
- (53) $5 \times 6 \times 7 \times 8 + 1 = k^2$ and k > 0, then $k = _____$
- (54) Find the slope of a line perpendicular to the line which contains the points (4, 3) and (8, 9). _____
- (55) $7\frac{3}{4} \times 5\frac{3}{4} =$ _____(mixed number)
- (56) The 7th triangular number is _____
- (57) $\frac{3}{4}$ of a mile = ______yards
- (58) The remainder when the sum of the digits of 3¹⁶ is divided by 9 is ______
- (59) $17.5^2 16.5^2 + 15.5^2 14.5^2 =$
- *(60) 92×95×96 =
- (62) The sum of the solutions of |x-2.75|=4 is _____

- (63) The longest leg of a 30 60 90 right triangle with a hypotenuse of $14\sqrt{3}$ is______
- (64) If f(x) = 12x + 19, then f(108) f(7) =
- (65) How many integer solutions does $7 \le 2x \le 39$ have?
- (66) The y-intercept of y 4 = 2(x 3) is _____
- $(67) (35_8)^2 = _8$
- (68) If p, q, and r, are roots of $x^3 4x^2 15x + 12 = 0$, then $p + q + r + pqr = _____$
- (69) The set {a,g,h,i,k,m,n,o}
 has how many subsets?______
- *(70) $22^2 \times 18^2 =$
- (71) $f(x) = 3x^2 2x + 5$ has ______ real roots
- (72) The geometric mean of 5^9 , 5^{10} , 5^{11} and 5^{14} is 5^x , where x =______
- (73) If f(x) is a parabola with vertex (2, 5), then Qf(x-4) + 7 has vertex (6, 22). Q =_____
- $(74) 704^2 =$
- $(75) \quad \sqrt{\frac{9!2!}{7!}} = \underline{\hspace{1cm}}$
- (76) Find the probability of choosing a divisor of 12 from the smallest 12 natural numbers. ____
- (77) How many positive integers less than 26 are relatively prime to 26?_____
- (78) If a line with an x-intercept of -4 has a slope of 2, then it has a y-intercept of _____
- (79) If x 3 = 11, then $x^2 8x + 16 =$
- *(80) 60% of 132 × 300 =_____

2017-2018 TMSCA Middle School Number Sense Key #4

2017-2018 TMSCA Middle School Number Sense Key #4						
(1) 784	(23) 1649	(43) 83				
(2) 420	$(24) \ 224\frac{2}{9}$	(44) 120	(63) 21			
(3) 45	(25) 361	(44) 120 (45) 8585	(64) 1212			
(4) 1200	(26) 240	(45) 8585	(65) 16			
(5) 1034	(27) 2	$(46) -2.89, -2\frac{89}{100}, -\frac{289}{100}$	(66) -2			
(6) 64	(27) 2(28) 396	(47) 56				
(7) 1	(29) 11628	(48) 1632	(67) 1511			
(8) 17	*(30) 288 - 317	(49) 105	(68) – 8			
(9) 60	(31) 90	*(50) 3539 – 3911				
*(10) 475441 – 525487	(32) 4	$(51) \ \ 30\frac{12}{23}$	(69) 256			
(11) 2009	(33) 6250	23	*(70) 148976 – 164656			
$(12) \ 46\frac{1}{2}$	$(34) \ 2 \frac{4}{99}$	(52) 15	(71) 0			
(13) 8835	` ´ 99	(53) 41	(72) 11			
(14) 33		2				
(15) 324	(35) 175	$(54) - \frac{2}{3}$	(73) 3			
(16) 1554	(36) 3	$(55) \ 44\frac{9}{16}$	(74) 495616			
(17) 7437	(30) 3	(56) 28	(75) 12			
(18) 1225	(37) 15	(57) 1320				
$(19) \frac{11}{91}$	(38) 4		$(76) \frac{1}{2}$			
*(20) 266215 – 294237	(39) – 120	(58) 0				
(21) 400	*(40) 587 – 648	(59) 64	(77) 12			

(21) 400

(22) 36

(41) 27

(42) 93

*(60) 797088 - 880992

(61) 1100111

(79) 100

(78) 8

(62) 5.5, $5\frac{1}{2}$, $\frac{11}{2}$

*(80) 22572 - 24948