

1st Score: _____	2nd Score: _____	3rd Score: _____	Final Score
Grader: _____	Grader: _____	Grader: _____	
PLACE LABEL BELOW			
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 #13 ©

FEBRUARY 26, 2022

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.

[illegible]

2021-2022 TMSCA Middle School Test 13

- (1) $746 + 151 =$ _____
- (2) $543 - 643 =$ _____
- (3) $\frac{3}{4} =$ _____ (decimal)
- (4) $7.7 + 2.3 =$ _____
- (5) $48 \div 9 =$ _____ (mixed number)
- (6) $23^2 =$ _____
- (7) $275\% =$ _____ (mixed number)
- (8) $17 \times 8 - 10 \times 8 =$ _____
- (9) $\frac{7}{12} - \frac{1}{3} =$ _____
- *(10) $973 - 112 - 256 =$ _____
- (11) $37 \times 33 =$ _____
- (12) $65 \times 45 =$ _____
- (13) $8\frac{2}{5} \times 8\frac{3}{5} =$ _____ (mixed number)
- (14) $88 \times 98 =$ _____
- (15) Which is smaller, $\frac{5}{9}$ or $\frac{7}{11}$? _____
- (16) $16 + 20 + 24 + 28 =$ _____
- (17) $77 \times 37 =$ _____
- (18) $(11)^3 =$ _____
- (19) $45 \div 0.15 =$ _____
- *(20) $753 \times 28 =$ _____
- (21) 75% of 72 plus 6 is _____
- (22) 8 pints + 8 quarts = _____ gallons
- (23) $(108)^2 =$ _____
- (24) If Sarah has \$9.25 in quarters, then she has _____ quarters
- (25) If $A = \{1, 3, 5, 7\}$ and $B = \{3, 4, 5, 6, 7\}$, then $A \cap B$ has how many elements? _____
- (26) The GCD of 16, 32 and 80 is _____
- (27) 20% of 88 is 80% of _____
- (28) $\frac{3}{8} + \frac{3}{16} + \frac{3}{32} =$ _____ (fraction)
- (29) $43 \times 25 =$ _____
- *(30) $194 \times 68 \div 6 =$ _____
- (31) $\frac{8!}{5!3!} =$ _____
- (32) If $6^x = 12$, then $6^{x+1} =$ _____
- (33) What is 6% tax on \$25.00? \$ _____
- (34) $(51)^2 =$ _____
- (35) $0.212121... =$ _____ (fraction)
- (36) The cost of driving 96 miles at 25¢ per mile is \$ _____
- (37) $\frac{11}{21}$ of a gallon = _____ in³
- (38) $95 \times 103 =$ _____
- (39) A pentagon has _____ diagonals
- *(40) One mile = _____ inches
- (41) The largest prime divisor of 42 is _____
- (42) $473_8 + 305_8 =$ _____₈

(43) $286 \times 56 =$ _____

(44) $436527 \div 11$ has a remainder of _____

(45) $S = \{0, 3, 8, 15, 24, 35, m, n, \dots\}$. $m + n =$ _____

(46) $\frac{2}{5} \times \frac{3}{8} \times \frac{5}{12} =$ _____ (fraction)

(47) If the total surface area of a cube is 384 cm^2 , then the length of an edge is _____ cm

(48) The larger root of $(2x - 1)^2 = \frac{4}{25}$ is _____

(49) The measure of an exterior angle of a regular hexagon is _____ $^\circ$

*(50) $\sqrt[3]{519} \times \sqrt[3]{717} =$ _____

(51) The multiplicative inverse of 3.6 is _____

(52) 120 mph = _____ ft/s

(53) The slope of a line containing the points $(-2, -8)$ and $(4, 10)$ is _____

(54) The fourteenth triangular number is _____

(55) How many positive integers less than or equal to 20 are relatively prime to 20? _____

(56) If $f(x) = 2x^2 - 1$, then $f(f(2)) =$ _____

(57) $111101_2 =$ _____ $_8$

(58) $1009 \times 1011 =$ _____

(59) $9^{-3} + 9^{-2} + 9^{-1} =$ _____

*(60) $12^6 \times 17 \div 12^3 =$ _____

(61) $11 \times \frac{13}{15} =$ _____ (mixed number)

(62) $41^3 - 40^3 =$ _____

(63) If the roots of $4x^2 + 8x - 5 = 0$ are P and Q, then $PQ + (P + Q) =$ _____

(64) Two dice are rolled. The probability of getting a sum of 3 or 11 is _____

(65) If $45^4 \div 15 = (3^x)(5^y)$, then $x + y =$ _____

(66) $0.2666\dots =$ _____ (fraction)

(67) If the vertex of the parabola $y = x^2 - 8x + 12$ is (h, k) , then $k =$ _____

(68) If $46^2 - 54^2 = 10k$, then $k =$ _____

(69) $\left(\frac{1331}{2197}\right)^{\frac{2}{3}} =$ _____ (fraction)

*(70) $e^3 \times \pi^6 =$ _____

(71) The sum of the squares of the roots of $4x^2 + 4x - 3 = 0$ is _____

(72) If $x^2 + y^2 = 180$, $x > y > 0$, and x and y are both integers, then $x + y =$ _____

(73) $(342_7) \times (5_7) =$ _____ $_7$

(74) If $f(x) = \frac{11x+6}{4} + 10$, then $f^{-1}(-5) =$ _____

(75) The first 4 digits of the decimal for $\frac{52}{333}$ is 0. _____

(76) The volume of a sphere with a radius of 6 cm is _____ $\pi \text{ cm}^3$

(77) The sum of the reciprocals of the first ten triangular numbers is _____

(78) $1^3 + 2^3 + 3^3 + 4^3 + 5^3 + 6^3 + 7^3 =$ _____

(79) The smallest angle formed by the hands of a clock at 7:30 is _____ $^\circ$

*(80) The volume of a cone with diameter = 26 cm and height = 18 cm is _____ cm^3

2021020222 TMSCA MSNS Test 13 Key

(1) 897	(22) 3	(43) 16016	(63) $-\frac{13}{4}, -3\frac{1}{4}, -3.25$
(2) -100	(23) 11664	(44) 3	(64) $\frac{1}{9}$
(3) .75	(24) 37	(45) 111	(65) 10
(4) 10	(25) 3	(46) $\frac{1}{16}$	(66) $\frac{4}{15}$
(5) $5\frac{1}{3}$	(26) 16	(47) 8	(67) -4
(6) 529	(27) 22	(48) $\frac{7}{10}$ or .7	(68) -80
(7) $2\frac{3}{4}$	(28) $\frac{21}{32}$	(49) 60	(69) $\frac{121}{169}$
(8) 56	(29) 1075	*(50) 69-75	*(70) 18345-20275
(9) $\frac{1}{4}$ or .25	*(30) 2089-2308	(51) $\frac{5}{18}$	(71) $\frac{5}{2}, 2\frac{1}{2}, 2.5$
*(10) 575-635	(31) 56	(52) 176	(72) 18
(11) 1221	(32) 72	(53) 3	(73) 2403
(12) 2925	(33) 1.50	(54) 105	(74) -6
(13) $72\frac{6}{25}$	(34) 2601	(55) 8	(75) 1561
(14) 8624	(35) $\frac{7}{33}$	(56) 97	(76) 288
(15) $\frac{5}{9}$	(36) 24.00	(57) 75	(77) $1\frac{9}{11}$ or $\frac{20}{11}$
(16) 88	(37) 121	(58) 1020099	(78) 784
(17) 2849	(38) 9785	(59) $\frac{91}{729}$	(79) 45
(18) 1331	(39) 5	*(60) 27908-30844	*(80) 3027-3344
(19) 300	*(40) 60192-66528	(61) $9\frac{8}{15}$	
*(20) 20030-22138	(41) 7	(62) 4921	
(21) 60	(42) 1000		