

2015-2016 TMSCA Middle School Number Sense Regional Qualifier

- (1) $2014 + 2015 + 2016 + 2017 + 2018 =$ _____
- (2) $14 \times 9 =$ _____
- (3) $1842 \div 6 =$ _____
- (4) $2016 \times 25 =$ _____
- (5) $0.96 =$ _____ (fraction)
- (6) $3574 \div 9$ has a remainder of _____
- (7) $\frac{3}{11} + \frac{2}{5} =$ _____ (fraction)
- (8) $(7^2 - 1) \div (3^2 - 1) =$ _____
- (9) $\frac{7}{11} \times 88 =$ _____
- *(10) $12 \times 2016 + 8 \times 2007 =$ _____
- (11) $35 \times 44 =$ _____
- (12) 9 feet + 5 inches = _____ inches
- (13) $44 \times 46 =$ _____
- (14) $49 \times 69 =$ _____
- (15) $32 \times 37 \frac{1}{2} =$ _____
- (16) $\frac{5+6+7+8+9}{5} =$ _____
- (17) $95^2 =$ _____
- (18) $44 \times 52 - 44 \times 32 =$ _____
- (19) What is the smallest number that 6, 9, and 12 divide into without a remainder? _____
- *(20) $667 \times 336 =$ _____
- (21) $21 \times 2.1 =$ _____ (decimal)
- (22) $46 \times 54 =$ _____
- (23) $11235 = 107 \times$ _____
- (24) $16 \times 5 \frac{3}{8} =$ _____
- (25) The sum of the smallest 16 positive odd integers is _____
- (26) $19 \div 11 + 14 \div 11 + 7 =$ _____
- (27) The multiplicative inverse of $2 \frac{3}{5}$ is _____ (fraction)
- (28) $(20 + 1)(20 - 1) =$ _____
- (29) The perimeter of a rectangle with area 48 and width 4 is _____
- *(30) $9^3 + 10^3 + 11^3 =$ _____
- (31) Find the area of a triangle with sides of 9, 12, and 15 is _____
- (32) 90 has how many positive integral divisors? _____
- (33) $11 \frac{1}{5} \times 11 \frac{4}{5} =$ _____ (mixed number)
- (34) $16^2 + 48^2 =$ _____
- (35) $32^2 - 18^2 =$ _____
- (36) The mean of the first 13 even numbers is _____
- (37) $\frac{10}{7} + \frac{7}{10} =$ _____ (mixed number)
- (38) The angle that forms a linear pair with a 48 degree angle is _____ °
- (39) If $f(x) = x^2 + 10x + 25$, then $f(9) =$ _____
- *(40) $\sqrt{83421} =$ _____
- (41) How many proper subsets does the set {a,b,c,d,e,f,g} have? _____

(42) If $2 + 4 + 6 + \dots + 48 = 12k$, then $k =$ _____

(43) $22 \times \frac{5}{9} =$ _____ (mixed number)

(44) Find the area of a rhombus with diagonals of 88 and 90 is _____

(45) $315 \times 111 =$ _____

(46) A regular polygon with an exterior angle of 60° and a side of 14 has a perimeter of _____

(47) If $f(x) = 11x$, then $f(37) =$ _____

(48) If $Ax + 9y = 12$ has a slope of $-\frac{1}{3}$, then $A =$ _____

(49) $421_7 =$ _____₁₀

*(50) $18 \times 19 \times 20 =$ _____

(51) $13\frac{1}{5} \times 7\frac{1}{5} =$ _____ (mixed number)

(52) $9 \times \frac{11}{13} =$ _____ (mixed number)

(53) A set with 20 elements has how many 2-element subsets? _____

(54) The area of an equilateral triangle with side 10 is $k\sqrt{3}$, $k =$ _____

(55) $3 - \left(\frac{3}{4} + \frac{4}{3}\right) =$ _____ (fraction)

(56) If $3x - 14 > 62$, then the smallest integer solution of x is _____

(57) $82(\text{base } 9) - 34(\text{base } 9) =$ _____ (base 9)

(58) $8\sqrt{8} \times 3\sqrt{2} =$ _____

(59) How many distinct diagonals can be drawn inside a 14-sided polygon? _____

*(60) A square with area 15000 has side _____

(61) $3 + 6 + 9 + \dots + 60 =$ _____

(62) $95 \times 35 =$ _____

(63) What is the 11th triangular number? _____

(64) If four times a number is the same as the sum of the number and 12, then the number is _____

(65) $(14,)^2 =$ _____₉

(66) The side length of a rhombus with diagonals 12 and 16 is _____

(67) The sum of the positive integral divisors of 21 is _____

(68) If P and Q are roots of $6x^2 - 17x - 10 = 0$, then $P + Q =$ _____

(69) $44_5 \div 3_5 =$ _____₅

*(70) $\sqrt{378} \times \sqrt{460} =$ _____

(71) If the x -intercept of $4x - 5y = k$ is $(5, 0)$, then the ordinate of the y -intercept is _____

(72) The sum of the coefficients of $(7x - 3)^2$ is _____

(73) $904^2 =$ _____

(74) The number of elements in $\{2,3,5,7,11\} \cap \{1,3,5,7,9,11\}$ is _____

(75) $\frac{1}{42} + \frac{1}{56} + \frac{1}{72} =$ _____ (fraction)

(76) The discriminant of $2x^2 + 3x - 4 = 0$ is _____

(77) If $3x - 2y = 11$ and $x + y = 4.5$, then $x =$ _____

(78) $16^{1.25} =$ _____

(79) $\frac{1+3+5+\dots+35}{1+3+5+\dots+11} =$ _____

*(80) 560 square miles = _____ acres

2015-2016 TMSCA Middle School Number Sense Regional Qualifier Key

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|-----------------------|------------------------|-----------------------|-----------------------------------|
| (1) 10080 | (23) 105 | (42) 50 | (61) 630 |
| (2) 126 | (24) 86 | (43) $12\frac{2}{9}$ | (62) 3325 |
| (3) 307 | | | (63) 66 |
| (4) 50400 | (25) 256 | | |
| (5) $\frac{24}{25}$ | (26) 10 | (44) 3960 | (64) 4 |
| (6) 1 | | (45) 34965 | (65) 207 |
| (7) $\frac{37}{55}$ | (27) $\frac{5}{13}$ | (46) 84 | (66) 10 |
| (8) 6 | (28) 399 | (47) 407 | |
| (9) 56 | (29) 32 | (48) 3 | (67) 32 |
| *(10) 38236 – 42260 | *(30) 2907 – 3213 | (49) 211 | (68) $\frac{17}{6}, 2\frac{5}{6}$ |
| (11) 1540 | (31) 54 | *(50) 6498 – 7182 | (69) 13 |
| (12) 113 | (32) 12 | (51) $95\frac{1}{25}$ | *(70) 397 – 437 |
| (13) 2024 | (33) $132\frac{4}{25}$ | (52) $7\frac{8}{13}$ | |
| (14) 3381 | (34) 2560 | (53) 190 | (71) –4 |
| (15) 1200 | (35) 700 | (54) 25 | (72) 16 |
| (16) 7 | (36) 14 | (55) $\frac{11}{12}$ | (73) 817216 |
| (17) 9025 | (37) $2\frac{9}{70}$ | (56) 26 | (74) 4 |
| (18) 880 | (38) 132 | (57) 47 | (75) $\frac{1}{18}$ |
| (19) 36 | (39) 196 | (58) 96 | (76) 41 |
| *(20) 212907 – 235317 | *(40) 275 – 303 | (59) 77 | (77) 4 |
| (21) 44.1 | (41) 127 | *(60) 117 – 128 | (78) 32 |
| (22) 2484 | | | (79) 9 |
| | | | *(80) 340480 – 376320 |