

2017-2018 TMSCA Middle School Number Sense State Test

- (1) $2013 + 2018 + 2023 =$ _____
- (2) $0.56 =$ _____ (fraction)
- (3) $11 \times 78 =$ _____
- (4) $148 \times 25 =$ _____
- (5) $93 \times 9 =$ _____
- (6) $\frac{11}{14} - \frac{4}{7} =$ _____ (fraction)
- (7) $495628 \div 7 =$ _____
- (8) $3\frac{2}{5} \times 20 =$ _____
- (9) $478321 \div 9$ has a remainder of _____
- *(10) $1423 - 1687 + 2345 =$ _____
- (11) $18\frac{3}{4}\% =$ _____ (fraction)
- (12) $12 \times 83 =$ _____
- (13) $86 \times 26 =$ _____
- (14) $76 \times 84 =$ _____
- (15) $104 \times 115 =$ _____
- (16) $72 \times 16\frac{2}{3} =$ _____
- (17) $97^2 =$ _____
- (18) $990 \times 0.333\dots =$ _____
- (19) $1 + 3 + 5 + \dots + 69 =$ _____
- *(20) $626 \times 479 =$ _____
- (21) 29 gallons = _____ quarts
- (22) $2018 \div 6 =$ _____ (mixed number)
- (23) What is the smallest 2-digit number which has a remainder of 1 when divided by 12 and 18? _____
- (24) How many 2-digit numbers are divisible by 5? _____
- (25) $939 \times 111 =$ _____
- (26) $16^2 + 48^2 =$ _____
- (27) The sum of the distinct prime divisors of 90 is _____
- (28) How many integers between 200 and 900 are the square of an integer? _____
- (29) The largest prime divisor of 245 is _____
- *(30) $570^2 \div 5^2 =$ _____
- (31) 66 has how many positive integral divisors? _____
- (32) $\left(\frac{4}{7}\right)^3 =$ _____ (fraction)
- (33) $9\frac{2}{5} \times 9\frac{3}{5} =$ _____ (mixed number)
- (34) $9025 = 92 \times 98 +$ _____
- (35) $(7^2 + 3 \times 4 + 11 \times 5) \div 6$ has a remainder of _____
- (36) $\frac{4}{9} + \frac{9}{4} =$ _____ (mixed number)
- (37) $5\frac{5}{7} \times 6\frac{2}{7} =$ _____ (mixed number)
- (38) Find the area of a trapezoid with bases of 17 and 27 with a height of 18. _____
- (39) How many fractions between $\frac{1}{3}$ and 1 have a denominator of 9 with an integer numerator? _____
- *(40) 268 gallons = _____ cubic inches
- (41) $97 \times 109 =$ _____
- (42) The area of a square with diagonal $7\sqrt{10}$ is _____

- (43) 75 (base 11) = _____ (base 10)
- (44) 231 (base 4) = _____ (base 2)
- (45) The measure of the exterior angle of an 18-sided polygon. _____ °
- (46) $\sqrt{16129}$ = _____
- (47) How many 3-element subsets does a 9-element set have? _____
- (48) Find the 11th pentagonal number. _____
- (49) If $f(x) = 9x^2 + 24x + 16$, then $f(6)$ = _____
- *(50) $\sqrt{731524}$ = _____
- (51) $432_8 - 155_8 =$ _____₈
- (52) $19 \times \frac{23}{24} =$ _____ (mixed number)
- (53) $1014 \times 1016 =$ _____
- (54) $25 \frac{1}{12} \times 11 \frac{1}{12} =$ _____ (mixed number)
- (55) If $3^{5x+2} = 9^6$, then $x =$ _____
- (56) $8 + 13 + 18 + \dots + 58 =$ _____
- (57) $\frac{9! + 8!}{7!} =$ _____
- (58) If $f(x) = 8x + 17$ and $f(p) - f(q) = 176$, then $p - q =$ _____
- (59) The sum of the solutions of $|3x - 25| = 15$ is _____
- *(60) $103 \times 106 \times 109 =$ _____
- (61) $(42_6)^2 =$ _____₆
- (62) The area of an equilateral triangle with side $4\sqrt{2}$ is $k\sqrt{3}$, $k =$ _____
- (63) If $f(x) = x^2 + 6x - 11$, then $f(21) - f(11) =$ _____
- (64) If $(3, 2)$ is on $y + 4 = m(x - 7)$, then $m =$ _____
- (65) $0.545454\dots =$ _____ (fraction)
- (66) Find the sum of the integer solutions of $1 \leq 2x \leq 21$. _____
- (67) The axis of symmetry of $f(x) = (3x - 5)(x - 4)$ is $x =$ _____
- (68) The discriminant of $(3x - 4)^2 = 0$ is _____
- (69) The number of triangles which can be drawn from a given vertex of a decagon is _____
- *(70) The number of distinct diagonals of a regular 75-sided polygon is _____
- (71) The geometric mean of 4^7 , 4^9 and 4^{23} is 4^x , $x =$ _____
- (72) Find the x^2 coefficient of $(3x^2 + x + 4)(x^2 - 3x + 2)$. _____
- (73) If $\frac{9!}{5!} + 1 = k^2$ and $k > 0$, then $k =$ _____
- (74) If the roots of $f(x) = x^2 + bx + c$ are 3 and 8, then $c =$ _____
- (75) P, Q, and R are roots of $f(x) = 7x^3 + bx + 14x + d$. If $PQR + P + Q + R = -5$, then $b + d =$ _____
- (76) The first 4 decimal places of $\frac{37}{90}$ is 0. _____
- (77) Find the sum of the infinite geometric sequence: $10 + 10 \times \left(\frac{2}{3}\right)^2 + 10 \times \left(\frac{2}{3}\right)^4 + \dots =$ _____
- (78) Find the probability of choosing a divisor of 24 from the smallest 24 positive integers. _____
- (79) If $5x + By = C$ has an x-intercept of 9 and a y-intercept of 15, then $B =$ _____
- *(80) 55.5% of (540×285) is _____

2017-2018 TMSCA Middle School Number Sense State Key

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|-----------------------|------------------------|--|---|
| (1) 6054 | (23) 37 | (43) 82 | (63) 380 |
| (2) $\frac{14}{25}$ | (24) 18 | (44) 101101 | (64) $-1.5, -1\frac{1}{2},$ or $-\frac{3}{2}$ |
| (3) 858 | (25) 104229 | (45) 20 | (65) $\frac{6}{11}$ |
| (4) 3700 | (26) 2560 | (46) 127 | (66) 55 |
| (5) 837 | (27) 10 | (47) 84 | (67) $\frac{17}{6}$ or $2\frac{5}{6}$ |
| (6) $\frac{3}{14}$ | (28) 15 | (48) 176 | (68) 0 |
| (7) 70804 | (29) 7 | (49) 484 | (69) 36 |
| (8) 68 | *(30) 12347 – 13645 | *(50) 813 – 898 | *(70) 2565 – 2835 |
| (9) 7 | (31) 8 | (51) 255 | (71) 13 |
| *(10) 1977 – 2185 | (32) $\frac{64}{343}$ | (52) $18\frac{5}{24}$ | (72) 7 |
| (11) $\frac{3}{16}$ | (33) $90\frac{6}{25}$ | (53) 1030224 | (73) 55 |
| (12) 996 | (34) 9 | (54) $278\frac{1}{144}$ | (74) 24 |
| (13) 2236 | (35) 2 | (55) 2 | (75) 35 |
| (14) 6384 | (36) $2\frac{25}{36}$ | (56) 363 | (76) 4111 |
| (15) 11960 | (37) $35\frac{45}{49}$ | (57) 80 | (77) 18 |
| (16) 1200 | (38) 396 | (58) 22 | (78) $\frac{1}{3}$ |
| (17) 9409 | (39) 5 | (59) $16\frac{2}{3}$ or $\frac{50}{3}$ | (79) 3 |
| (18) 330 | *(40) 58813 – 65003 | *(60) 1130559 – 1249565 | *(80) 81144 – 89685 |
| (19) 1225 | (41) 10573 | (61) 3044 | |
| *(20) 284862 – 314846 | (42) 245 | (62) 8 | |
| (21) 116 | | | |
| (22) $336\frac{1}{3}$ | | | |