





## 2018 – 2019 TMSCA Middle School Number Sense Test #6

- (1)  $631 - 136 =$  \_\_\_\_\_
- (2)  $73 \times 6 =$  \_\_\_\_\_
- (3)  $304575 \div 15 =$  \_\_\_\_\_
- (4)  $0.55 =$  \_\_\_\_\_ (fraction)
- (5)  $24 \times 11 =$  \_\_\_\_\_
- (6)  $14 + 23 + 32 + 41 + 50 =$  \_\_\_\_\_
- (7)  $834 \div 9$  has a remainder of \_\_\_\_\_
- (8)  $28^2 =$  \_\_\_\_\_
- (9)  $17 \div 2 + 13 - 12 \div 2 =$  \_\_\_\_\_ (decimal)
- \*(10)  $437 + 2019 - 752 =$  \_\_\_\_\_
- (11)  $75 \times 68 =$  \_\_\_\_\_
- (12)  $84 \times 86 =$  \_\_\_\_\_
- (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)  $73 \times 47 - 43 \times 47 =$  \_\_\_\_\_
- (19)  $37 \times 54 =$  \_\_\_\_\_
- \*(20)  $729 \times 444 =$  \_\_\_\_\_
- (21)  $1400 = 25 \times$  \_\_\_\_\_
- (22)  $94 \times 95 =$  \_\_\_\_\_
- (23)  $235.7 \text{ mm} =$  \_\_\_\_\_ 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)  $6^3 - 6^2 =$  \_\_\_\_\_
- \*(30)  $332 \times 832 =$  \_\_\_\_\_
- (31)  $125 \times 248 =$  \_\_\_\_\_
- (32)  $14^2 + 42^2 =$  \_\_\_\_\_
- (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  $63^2 = 1 + 3 + 5 + \dots + k$ , then k = \_\_\_\_\_
- (37) Find the area of a triangle with base 28 and height 12. \_\_\_\_\_
- (38)  $13.5 \times 13.5 =$  \_\_\_\_\_ (decimal)
- (39)  $72 \times 16\frac{2}{3} =$  \_\_\_\_\_
- \*(40)  $237412 \div 589 =$  \_\_\_\_\_
- (41) If three angles of a quadrilateral have an equal measure of  $85^\circ$ , then the other angle is \_\_\_\_\_ $^\circ$
- (42) If x = 3 and y = 2, then  $25x^2 + 10xy + y^2 =$  \_\_\_\_\_
- (43)  $28^3 = 7^3 \times$  \_\_\_\_\_

(44)  $\sqrt{9216} =$  \_\_\_\_\_

(45)  $(2 + 4 + 6 + \dots + 84) - 42^2 =$  \_\_\_\_\_

(46) A regular polygon with an exterior angle of  $36^\circ$  has how many sides? \_\_\_\_\_

(47) The 9<sup>th</sup> pentagonal number is \_\_\_\_\_

(48)  $48^2 + 76^2 =$  \_\_\_\_\_

(49)  $153_7 =$  \_\_\_\_\_<sub>10</sub>

\*(50) Find the volume of a square pyramid that has a base with a side of 15 and height 12. \_\_\_\_\_

(51)  $62^2 - 12^2 =$  \_\_\_\_\_

(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  $|x - c| = d$  are  $-4$  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  $b =$  \_\_\_\_\_

(58)  $46_8 =$  \_\_\_\_\_<sub>2</sub>

(59)  $4^7 \div 3$  has a remainder of \_\_\_\_\_

\*(60)  $\sqrt{150} \times \sqrt{170} \times \sqrt{190} =$  \_\_\_\_\_

(61)  $0.848484\dots = \frac{a}{b}$ , 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)  $(23_8)^2 =$  \_\_\_\_\_<sub>8</sub>

(68)  $1 + 2 + 2^2 + 2^3 + \dots + 2^7 =$  \_\_\_\_\_

(69) If  $1 + 3 + 5 + \dots + 53 = 9k$ , 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)  $64^{\frac{2}{3}} =$  \_\_\_\_\_

(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

- |                                       |                       |                       |                                       |
|---------------------------------------|-----------------------|-----------------------|---------------------------------------|
| (1) 495                               | (24) 5                | (44) 96               | (62) 3575                             |
| (2) 438                               | (25) 2.2              | (45) 42               | (63) 50                               |
| (3) 20305                             | (26) 196              | (46) 10               | (64) $2\frac{1}{3}$ or $\frac{7}{3}$  |
| (4) $\frac{11}{20}$                   | (27) 73629            | (47) 117              | (65) - 3                              |
| (5) 264                               | (28) 216              | (48) 8080             | (66) $21\frac{12}{29}$                |
| (6) 160                               | (29) 180              | (49) 87               | (67) 551                              |
| (7) 6                                 | *(30) 262413 - 290035 | *(50) 855 - 945       | (68) 255                              |
| (8) 784                               | (31) 31000            | (51) 3700             | (69) 81                               |
| (9) 15.5                              | (32) 1960             | (52) $11\frac{9}{17}$ | *(70) 768 - 847                       |
| *(10) 1619 - 1789                     | (33) 30               | (53) 81               | (71) 18                               |
| (11) 5100                             | (34) 106              | (54) 2600             | (72) $4\frac{1}{3}$ or $\frac{13}{3}$ |
| (12) 7224                             | (35) $80\frac{8}{9}$  | (55) 15               | (73) 2                                |
| (13) 3264                             | (36) 125              | (56) 40               | (74) 21                               |
| (14) 441                              | (37) 168              | (57) 13               | (75) 180                              |
| (15) 14                               | (38) 182.25           | (58) 100110           | (76) 343                              |
| (16) $\frac{41}{6}$ or $6\frac{5}{6}$ | (39) 1200             | (59) 1                | (77) 129                              |
| (17) $\frac{3}{8}$                    | *(40) 383 - 423       | *(60) 2092 - 2311     | (78) 16                               |
| (18) 1410                             | (41) 105              | (61) 61               | (79) - 2                              |
| (19) 1998                             | (42) 289              |                       |                                       |
| *(20) 307493 - 339859                 | (43) 64               |                       | *(80) 14625 - 16163                   |
| (21) 56                               |                       |                       |                                       |
| (22) 8930                             |                       |                       |                                       |
| (23) .2357                            |                       |                       |                                       |