Number Dojo High School Number Sense Test 18.01

Instructions: Use only a PEN (no pencils allowed). Give yourself 10 minutes to complete as many problems as you can, in the order they appear. All problems are to be solved mentally; make no calculations with calculator or paper and pencil. Starred *() problems require approximate INTEGRAL answers that are within 5% of the exact answers. Write only the answer in the space provided. No scratch work, mark-outs, or mark-overs are allowed. Answers with a $ require 2 decimal places. You will earn 5 points for every correct answer, less 4 points for every skipped or incorrect answer.

(1) 2017 + 2018 = _____

(2) 141 – 258 = _____

(3) 2018 ÷ 9 = _____ (mixed number)

(4) $4\frac{1}{6}$% = _____ (fraction)

(5) $\frac{7}{9}+\frac{3}{4}$ = _____ (mixed number)

(6) 3.14% = _____ (decimal)

(7) 47^2 = _____

(8) 2018 ÷ 3 has a remainder of _____

(9) 4.08 ÷ .4 = _____ (decimal)

*(10) 4321 – 1234 + 5678 = _____

(11) 35 x 18 – 17 x 18 = _____

(12) 16 ÷ 7 + 6 + 12 ÷ 7 = _____

(13) 75 x 45 = _____

(14) 18 is _____ % (mixed number) of 144

(15) 18 in x 24 in x 30 in = _____ ft^3

(16) The LCM of 8, 10, and 12 is _____

(17) 2018 ÷ 11 has a remainder of _____

(18) $\frac{4}{9}+\frac{9}{4}$ = _____ (mixed number)

(19) The sum of the positive integral divisors of 24 is _____

*(20) 2017 x 18 + 2018 = _____

(21) If 15 pens cost $1.95 then 7 pens cost _____¢

(22) $\sqrt{1764}$ = _____

(23) 48 x 42 = _____

(24) (15 x 17 + 19) ÷ 7 has a remainder of ___

(25) $(1.2)^2 + (3.6)^2$ = _____ (decimal)

(26) 2 + 4 + 6 + … + 20 = _____

(27) 187.5% of 64 is _____

(28) There are ____ positive integers less than 28 that are relatively prime to 28.

(29) 0.575757… = _____ (fraction)

*(30) 83 x 602 = _____

(31) $\sqrt[3]{29791}$ = _____

(32) In the sequence 4, 1, 5, 6, 11, …, x, y, 118, …, x + y = _____

(33) The slope of the line 6x – 2y = -7 is _____

(34) 67 = _____^{3}

(35) $\sqrt{96} \times \sqrt{54}$ = _____

(36) $(4.8)^2 \div (1.2)^2 \times (0.3)^2$ = _____ (decimal)

(37) 8.9 x 9.6 = _____ (decimal)

(38) 4 rods = _____ feet

(39) A rhombus with diagonals 8 and 14 has area _____

*(40) 36 x 40 x 44 = _____

(41) 28 is to 12 as 21 is to _____

(42) The length of the hypotenuse of a right triangle with short leg 13 is _____

(43) $18^2 - 32^2$ = _____

(44) If 3^{x+1} is 75 then 3^{2x} = _____

(45) $423_5 \times 4_5$ = _____$_5$

(46) 101 x 682 = _____

(47) The central angle of a dodecagon is ____°

(48) The 29th term of the sequence 2, 7, 12, 17, 22, … is _____

(49) The sum of the reciprocals of the positive integral divisors of 15 is _____

*(50) 19 x 21 x 23 x 25 = _____

(51) A 14-gon has _____ distinct diagonals

(52) The number of triangles that can be formed from one vertex of a 14-gon is __

(53) $(4 - 2i)(3 + i) = a + bi$. a + b = _____

(54) 314 x 213 = _____

(55) $\log_x 16 = -4$. x = _____

(56) $21 + 14 + 9\frac{1}{3} + 6\frac{2}{9} + \ldots$ = _____

(57) ${}_7C_3$ = _____

(58) Round $\sqrt{6}$ to the hundredth place. _____

(59) The probability of randomly choosing a vowel from the word SEQUENCE is ____

*(60) 74 x 21 + 19 x 76 = _____

(61) The sum of the 16th and 17th triangular numbers is _____

(62) The surface area of a cube with edge 7 is _____

(63) If sin 38° = cos A and A ∈ Q1, A = _____°

(64) The first 4 digits of The decimal of $\frac{5}{7}$ is 0._____

(65) The surface area of a sphere with diameter 6 is kπ and k = _____

(66) The Greatest Integer Function is written as f(x) = [x]. Find $[3\sqrt{8}]$. _____

(67) If f(x) = 2x – 3 and $g(x) = x^2 + 1$, then g[f(3)] = _____

(68) The determinant of $\begin{bmatrix} -3 & 7 \\ 2 & 5 \end{bmatrix}$ is _____

(69) $314_7 \div 6_7$ has a remainder of _____$_7$

*(70) $199^2 \div 11^2$ = _____

(71) $2^6 \times 3^3 \times 5^4$ = _____

(72) 93 x 107 + 49 = _____

(73) $\frac{2}{3} + \frac{2}{15} + \frac{2}{35} + \frac{2}{63} + \frac{2}{99}$ = _____

(74) If $f(x) = 4x^3 - 3x^2 + x - 1$, then f'(-3) is ____

(75) The probability of drawing a red 3 from a standard deck of 52 cards is _____

(76) The slope of the line tangent to $f(x) = 3x^3 - 4x^2 + 7x - 15$ at x = -2 is _____

(77) $11^{12} \div 12$ has a remainder of _____

(78) $\int_0^3 (2x - 7)\ dx$ = _____

(79) The sum of the radii of the inscribed circle and circumscribed circle of a 6, 8, 10 right triangle is _____ units

*(80) 428.571 x 29 = _____