Number Sense Exam 073, 11/9/2018

(1) \( \frac{\frac{2}{3}}{\frac{5}{6}} = \) ______________

(2) \( \frac{\frac{3}{5}}{\frac{2}{2}} = \) ______________

(3) \( 12 - 8 ÷ 4 \times 2 - 3 = \) ______________

(4) \( 876 - 389 = \) ______________

(5) \( 1283 ÷ 4 = \) ______________ (decimal)

(6) \( \frac{3}{5} - 2.2 = \) ______________

(7) \( \frac{\frac{1}{4} + \frac{1}{2}}{\frac{6}{2}} = \) ______________ (mixed number)

(8) \( 20.10 ÷ 5 = \) ______________

(9) \( 10 - 8 + 6 \times 4 ÷ 2 = \) ______________

*(10) \( 5279 - 989 + 98 = \) ______________

(11) How many positive integers less than 24 are relatively prime to 24? ______________

(12) 16\% of 20 = ______________

(13) \( 213 \times 14 = \) ______________

(14) \( 125 \times 425 = \) ______________

(15) If 6 poles cost $2.36 then 24 poles cost $ ______________

(16) In 1951, the average burger cost \( \frac{37}{2} \) cents. Express this as a fraction of a dollar. ______________

(17) \( 2 + 6 + 10 + 14 + 18 + 22 + 26 = \) ______________

(18) The LCM of 42 and 48 is ______________

(19) The median of 17, 22, 19, 12, and 25 is ______________

*(20) \( \sqrt{3846} \times 68 = \) ______________

(21) 14 more than 14\% of 1400 is ______________

(22) 223355\(k\) is divisible by 9. Find \( k \). ______________

(23) One-third of what number gives the same results as that number minus 6? ______________

(24) \( 11011_2 = \) ______________ s

(25) \( (7^3 + 8^2 - 9^1) ÷ 6 \) has a remainder of ______________

(26) \( 0.120120120… = \) ______________ (proper fraction)

(27) \( .5313131… = \) ______________ (fraction)

(28) 80 has ______________ positive integral divisors.

(29) \( 9^3 = \) ______________

*(30) \( 43205 ÷ 111 = \) ______________

(31) If \( x < 0 \) and \( x \) is to 2 as 8 is to \( x \), then \( x = \) ______________

(32) Which of the following is a deficient number: 36, 45, or 54? ______________

(33) Set \( A \) has 8 elements, set \( B \) has 12, \( A \cap B \) has 5, and \( A \cup B \) has \( k \). Find \( k \). ______________

(34) \( .2888… = \) ______________ (fraction)

(35) If \( x = 1 \) and \( y = 2 \) then \( (x - y)(x^2 + xy + y^2) = \) ______________

(36) \( 5 \times 4! - 6 \times 3! = \) ______________

(37) \( 1^2 + 3^2 + 4^2 + 7^2 + 11^2 = \) ______________

(38) \( 96 \times 103 = \) ______________

(39) If \( 8x^3 - 18x^2 - 17x = 3 \) and \( P, Q, \) and \( R \) are the real roots, then \( PQ + QR + PR \) is ______________

*(40) \( 31.25\% \times 481 \div \frac{1}{16} = \) ______________

(41) 18\% of \( \frac{2}{3} \) = ______________

(42) \( 20 + 15 + 35 + 50 + 85 + 135 + 220 + 355 = \) ______________

(43) The hypotenuse of a right triangle with integral sides is 41 in. The shortest leg is ______________ in.
(44) The sides of a right triangle are integers. If one
leg is 7 in., then the other leg is ___________ in.

(45) \((x, y)\) is the midpoint of the line segment whose
equations are \((2, 5)\) and \((5, 9)\). \(y = \) ___________

(46) Find the area of an equilateral triangle if its sides
measure 4 in. ___________________________ sq. in.

(47) If \(12x - 2e + 7 = 49\), then \(6x - e = \) __________

(48) The sum of the product of the roots taken two at
a time of \(x^4 - 2x^3 - 13x^2 + 14x = -24\) is ________

(49) \(67_9 - 8_9 = \) __________

* (50) \(16.666 \times 1941 = \) __________

(51) \(\sin \left(\frac{\pi}{3}\right) \times \cos \left(\frac{5\pi}{6}\right) = \) __________

(52) \((4 + 7i)(3 - 5i) = a + bi\). Find \(a - b\). __________

(53) Find the units digit of \(13^7\). __________

(54) The larger root of \(18x^2 + 11x + 1 = 0\) is ________

(55) \(11 \times \frac{14}{17} = \) ___________ (mixed number)

(56) \(2 + 3 + 4 + 5 + \ldots + 24 = \) __________

(57) The coefficient of the 4th term of the expansion of
\((x - 3y)^5\) is __________

(58) \(\sqrt{7744} = \) __________

(59) \(\left(\frac{x^2 - 6x + 9}{x - 3}\right) \left(\frac{x^2 + 6x + 9}{x^2 - 9}\right) = x+ \) __________

* (60) \(36 \times 41 \times 44 = \) __________

(61) \((\tan^2 30^\circ - \sec^2 30^\circ)^3 = \) __________

(62) \(\log 16 \div \log 4 \times \log 100 = \) __________

(63) \((53_6)(45_6) \div 5\) has a remainder of ________

(64) The shortest distance between the line \(4x + 3y = 11\) and the point \((-2, 3)\) is ________

(65) \(\sin \left(\frac{\pi}{3}\right) \times \cos \left(\frac{\pi}{6}\right) = \) __________

(66) \(\sqrt{42436} = \) __________

(67) If \(\begin{vmatrix} 2 & 3 \\ 4 & 5 \end{vmatrix} = x\), then \(x - 1 = \) ______

(68) \(\log_2 6 + \log_2 6 - 2\log_2 3 = \) __________

(69) \(\cos^2(150^\circ) - \sin^2(150^\circ) = \) __________

* (70) \(34343 \div 124 = \) __________

(71) Let \(f(x) = \sqrt{3 - 4x}\) be a real valued function,
where \(x \in \{\text{Reals}\}\). The domain of \(f(x)\) is
\(\{x \mid x \leq \) __________ \}\)

(72) The sum of the first nine terms of the Fibonacci
sequence 1, 1, 2, 3, 5, ... is __________

(73) \(\log_3 [\log_4 (\log_5 625)] = \) __________

(74) \(f(x) = \log(3x - 2)\) has an asymptote at \(x = \) ______

(75) \(\int_2^4 (x + 2) \, dx = \) __________

(76) The slope of the line tangent to the function
\(f(x) = 2x^2 - x + 1\) at the point \((1, 2)\) is ________

(77) \(\frac{1}{12} - \frac{1}{20} - \frac{1}{30} = \) __________

(78) If \(f(x) = 3x - 1\), then \(f^{-1}(2) = \) __________

(79) Find the slope of the tangent to \(y = x^2 - 1\)
at \((2, 3)\). __________

* (80) \(18 \times 36 \times 54 \div 72 = \) __________