Number Sense Exam 102, 1/30/2021

1. \[15 + 24 + 33 + 42 + 51 = \] 
2. \[3 \cdot \frac{1}{2} + 20 \cdot \frac{1}{5} = \] (mixed number) 
3. CCCXIV + CDXIV = _____ (Arabic Numerals) 
4. 1421 + 594 = 
5. \[30.6 \div 0.4 = \] (decimal) 
6. 92% = 
7. \[13^3 = \] 
8. 3212015 \div 9 has a remainder of 
9. \[40\% \text{ of } (4 + \frac{1}{4}) = \] 
10. \[951 - 246 - 837 = \] 
11. CMIX - CDIV = _____ (Arabic Numerals) 
12. MMLIII + CCXIII = _____ (Arabic Numerals) 
13. The mode of 4, 3, 7, 4, 2, 7, 5, and 4 is 
14. The largest prime divisor of 65 is 
15. \[12^3 = \] 
16. The number 110 has ____ distinct positive prime divisors.
17. \[40 \times 23 - 17 \times 23 = \] 
18. \[1 + 3 + 6 + 10 + 15 + 21 = \] 
19. \[\left(\frac{2}{3}\right)^2 = \] (mixed number) 
20. \[\sqrt{780} \times \sqrt{1080} = \] 
21. \[41 \times 44 = \] 
22. 234 base 10 equals ________ base 5
23. 48 has ________ positive integral divisors
24. Let \(A = -1\), \(B = -A\), and \(C = AB\), then \(A - B - C = \) 
25. \((2 + 3^2 \times 4^3) \div 5\) has a remainder of 
26. \(63^2 - 47^2 = \) 
27. If \[\frac{8}{x} = \frac{x}{10}\] and \(x > 0\), then \(x = \) 
28. \(1.444\ldots + 2.333\ldots = \) (improper fraction) 
29. Which is larger: \(-0.83\) or \(-\frac{5}{6}\)? 
30. \[\frac{1}{5} \times 12515 \div 16 = \] 
31. The square has a perimeter of 48 in. and a diagonal of \(k\sqrt{2}\) in. Find \(k\). 
32. \[3127 = \] 
33. The roots of a cubic equation are 1, 2, and 3. The equation is \(x^3 - 6x^2 + 11x = \) 
34. The LCM of 12, 18, and 20 is 
35. If \((5x + 3)^2 = ax^2 + bx + c\), then \(a + b + c = \) 
36. The product of the largest prime even integers and the smallest prime odd integer is 
37. \[12.5 \times 480 = \] 
38. If 8 is to 9 as 10 is to \(x\), then \(x = \) 
39. If \(\sqrt{150} - \sqrt{54} = \sqrt{x}\) then \(x = \) 
40. \[\frac{16}{2}\% \text{ of } 598 \times 11 = \] 
41. \[369 \times 101 = \] 
42. The fifth pentagonal number is 
43. The hypotenuse of a right triangle with integral sides is 41 in. The shortest leg is ________ in.
44. Let \(r, s,\) and \(t\) be the roots of \(2x^3 + 4x = 5\). Then \(r \times s \times t = \)
(45) The complementary angle of 74° is ________°

(46) \(32 \times 1111 = \) ____________

(47) The midpoint between the points \((-5, 4)\) and \((3, -5)\) is \((h, k)\). Find \(h + k\). ____________

(48) The product of the roots of \((2x + 3)^2 = 0\) is ____________

(49) The cube root of 389017 is ____________

*(50) \(12 \times 24 \times 36 \times 48 = \) ____________

(51) The probability of selecting an even integer between 1 and 11 is ________ (proper fraction)

(52) The larger root of \(6x^2 - 7x - 5 = 0\) is ____________

(53) The legs of a right triangle are 5 and 12. The length of the altitude to the hypotenuse is ____________

(54) If \(x^2 + y^2 = 169\), \(x > y\) and both \(x\) and \(y\) are positive integers, then \(x - y = \) ____________

(55) \(\sqrt[3]{9}\) = ____________

(56) The axis of symmetry of \(x^2 - 5\) is \(y = \) ____________

(57) \(62 \times 68 = 16 = \) ____________

(58) The smaller root of \(3x^2 - 14x + 11 = 0\) is ____________

(59) When two dice are tossed, the probability that the sum of the faces will be 7 is ____________

*(60) \(4^2 \times 18^3 \div 24^2 = \) ____________

(61) \(3\cos^230° + 3\sin^230° = \) ____________

(62) \(\cos^230° - \sin^230° = \) ____________

(63) How many 3-digit integers end in a 5? ________

(64) \(43_9 = \) ____________

(65) 480 miles per hour ____________ feet per second

(66) The product of the coefficients of \((a - b)^4\) is ____________

(67) \(95° F = \) ____________° C

(68) \(X\) varies inversely as \(Y\). If \(X = 16\) when \(Y = 4\), find \(Y\) when \(X = 12\). ____________

(69) If \(Z \div 101 = 212\), then \(Z = \) ____________

*(70) \((1 + 2 + 3 + \ldots + 29)^2 = \) ____________

(71) \(\lim_{x \to 2} \left(\frac{x^2 - 1}{x - 2}\right) = \) ____________

(72) \(f(x) = x + \frac{1}{x}\) has ____________ asymptotes

(73) If \(f(x) = \frac{4x + 3}{2x - 1}\), then \(f'(1) = \) ____________

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

(75) If \(h(x)\) is the slant asymptote of \(f(x) = \frac{x^2 - 3x + 1}{x - 3}\), then \(h(1) = \) ____________

(76) \(12^{10} \div 8\) has a remainder of ____________

(77) The \(n\)-th term of 4, 7, 10, 13, \ldots is ____________

(78) \(\int_0^4 \sqrt{x} \, dx = \) ____________

(79) \(0.141414\ldots = \) ____________ (proper fraction)

*(80) \((2\pi) \times (3\pi) \times (2\pi) = \) ____________