The University Interscholastic League
Number Sense Test, Series 9563

Final _____ _____
2nd _____ _____
1st _____ _____
Score Initials

Contestant's Number _____

Read Directions Carefully Before Beginning Test

Do Not Unfold This Sheet Until Told To Begin

DIRECTIONS: Do not turn this page until the person conducting this test gives the signal to begin. This is a ten-minute test. There are 80 problems. Solve accurately and quickly as many as you can in the order in which they appear. ALL PROBLEMS ARE TO BE SOLVED MENTALLY. Make no calculations with paper and pencil. Write only the answer in the space provided at the end of each problem. Problems marked with a (*) require approximate integral answers; any answer to a starred problem that is within five per cent of the exact answer will be scored correct; all other problems require exact answers.

The person conducting this contest should explain these directions to the contestants.

Stop - Wait for Signal!

(1) $25 \times 42 =$ _____.

(2) $5738 \div 19 =$ _____.

(3) $26^2 =$ _____.

(4) Which is smaller, $\frac{7}{9}$ or $\frac{11}{13}$? _____.

(5) $\frac{11}{10} + \frac{10}{11} =$ _____ (Mixed Number).

(6) XCV = _____ (Arabic Numeral).

(7) $56 \times 12 \div 8 - 3 =$ _____.

(8) 28% = _____ (fraction).

(9) $.5678 + .8765 =$ _____.

*(10) $4217 + 392 + 1379 + 210 =$ _____.

(11) 320 centimeters = _____ meters.

(12) $\frac{3}{16} =$ _____ % (Mixed Number).

(13) The GCD of 18, 36 and 63 is _____.

(14) 16% of 250 is _____.

(15) $10 \div 2\frac{1}{3} =$ _____ (Mixed Number).

(16) If one gram = .04 oz. then 1.2 grams = _____ oz.

(17) 24 is _____ % of 40.

(18) $1\frac{2}{3}$ yards = _____ inches.

(19) $8 \times 123456 \div 6 =$ _____.

*(20) $298 \times 339 - 1600 =$ _____.

(21) $13 + 16 + 19 + 22 + 25 + 28 =$ _____.

(22) $28 \times 42 + 32 \times 42 =$ _____.

(23) The largest prime divisor of 280 is _____.

(24) $38^2 + 19^2 =$ _____.

(25) The median of 14, 18, 22 and 26 is _____.

(26) $13 \times 28 =$ _____.

(27) $(3^3 - 1 + 7) \div 5$ has a remainder of _____.

(28) The simple interest on $800 at 5.5% interest for two years is $ _____.

(29) If $11^n = 1331$ then n = _____.

*(30) $28542 \div 142 =$ _____.

(31) The number of positive integral divisors of 108 is _____.

(32) $46_8 =$ _____ $_{10}$

(33) Divide 67 into 2 parts such that the larger number exceeds the smaller number by 15. Find the smaller number. _____.

(34) $6\frac{1}{3} \times 9\frac{1}{3} =$ _____ (Mixed Number).

(35) If the area of a triangle is 54 sq. in. and its height is 3 times its base, then the base equals _____ in.

(36) If $\frac{7}{2x} = \frac{1}{3}$ then $x =$ _____ (decimal).

(37) The cube root of 216 is _____.

(38) .696969... = _____ (fraction).

(39) If $A = B = 4$ and $C = 6$ then $AB \div C =$ _____.

*(40) $39 \times 89 + 40 \times 88 =$ _____.

(41) If $2x - 1 = 6$ then $-6x + 3 =$ _____.

(42) $65 \times 45 =$ _____.

(43) How many real roots does $x^3 - 27 = 0$ have? _____.

(44) $14342 \div 101 =$ _____.

(45) $(.3 \times 130)^2 =$ _____.

(46) The next term of 2,8,4,10,6,... is _____.

(47) If $5^x = 3$ then $5^{x+2} =$ _____.

(48) $1234 \div 9 =$ _____ (Mixed Number).

(49) $98 \times 97 =$ _____.

*(50) $\sqrt{262440} =$ _____.

(51) If $1 + 2x < x + 9$ then $x <$ _____.

(52) The geometric mean of 2 and 18 is _____.

*(53) $\sqrt{16901} =$ _____

(53) The hypotenuse of a right triangle is 145 and one leg is 144. The other leg is _____.

(54) ${}_6P_2 =$ _____.

(55) If $5 < x$ then $x^2 + 3 >$ _____.

(56) $57^2 + 65^2 =$ _____.

(57) The vertex of the parabola $y = 6x^2 + 8x - 7$ is (h,k) and $h =$ _____.

(58) $\cos 240° =$ _____.

(59) $996^2 =$ _____.

*(60) $23 \times 142857 =$ _____.

(61) If $\ln 4 = 1.386$ then $\ln 16 =$ _____.

(62) $12 + 6 + 3 + \ldots =$ _____.

(63) If $\csc A = 4$ then $\sin A =$ _____.

(64) Find the number of proper fractions in lowest terms with a denominator of 40. _____.

(65) If $\sqrt{3x + 22} = 4$ then $x =$ _____.

(66) The sum of the coefficients in the expansion of $(3x + 2y)^4$ is _____.

(67) $1111_2 =$ _____

(68) If $2^{-1} + x^{-1} = 4$ then $x =$ _____.

(69) Two dice are rolled. Find the probability that the sum is a multiple of 10. _____.

*(70) $21^3 =$ _____.

(71) Let P_n denote the nth pentagonal number. Find the value of $P_2 + P_3$. _____.

(72) $105 \times 108 =$ _____.

(73) Find the largest value of k so that the 3-digit number 22k is divisible by 4. _____.

(74) $31^2 - 23^2 = 8k$ and $k =$ _____

(74) If $f(x) = 2x + 1$ then $f[f(2)] =$ _____.

(75) The radius of the inscribed circle of an 11,60,61 right - triangle is _____.

(76) Find x if $\det \begin{vmatrix} 3 & x \\ 4 & -5 \end{vmatrix} = 13$. $x =$ _____.

(77) If $f(x) = 2x^2 + 3x - 1$ then $f'(2) =$ _____.

(78) $\lim_{x \to \infty} \frac{2x^2 + 3}{x^2 - 5} =$ _____.

(79) $\int_0^5 (x + 2)\,dx =$ _____.

*(80) $(1 + 2 + 3 + \ldots + 15)^2 =$ _____.