The University Interscholastic League
Number Sense Test, Series 9561

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) $34 + 79 =$ _____.

(2) $2\frac{1}{2} \times 3 =$ _____ (Mixed Number).

(3) $5134 \div 17 =$ _____.

(4) $\frac{1}{2} - \frac{1}{4} - \frac{1}{8} =$ _____.

(5) $13 \times 27 + 27 \times 27 =$ _____.

(6) $17^2 =$ _____.

(7) $789 + 987 =$ _____.

(8) $215 \div 9 =$ _____ (Mixed Number).

(9) $24 \times 1.5 =$ _____.

*(10) $23 + 149 + 3215 + 64387 =$ _____.

(11) XC = _____ (Arabic Numeral).

(12) $\frac{1}{8} + .47 =$ _____ (decimal).

(13) $48 \div 12 \times 3 - 2 =$ _____.

(14) $\frac{3}{8} =$ _____% (Mixed Number).

(15) $75 \times 42 =$ _____.

(16) $21 - 18 + 15 - 12 + 9 - 6 =$ _____.

(17) The mean of 23, 16 and –9 is _____.

(18) $9 \times 54321 - 1 =$ _____.

(19) How many odd integers are between 8 and 29? _____.

*(20) $29 \times 743 - 1200 =$ _____.

(21) If 4 apples cost 92 cents then 16 apples cost $ _____.

(22) $16^2 + 32^2 =$ _____.

(23) 14% of 750 is _____.

(24) If A = 3, B = 6 and C = 4 then $AB^2 \div C =$ _____.

(25) $15 \times 64 =$ _____.

(26) If the area of a rectangle is 4 times its length then its width is _____ units.

(27) 16% of 400 is _____ % of 200.

(28) $(28 \times 4 + 5) \div 6$ has a remainder of _____.

(29) $3\frac{1}{4} \times 16 =$ _____.

*(30) $19454 \div 142 =$ _____.

(31) The GCD of 72 and 56 is _____.

(32) The number of positive integral divisors of 40 is _____.

(33) 24 is _____ % more than 20.

(34) The largest prime number less than 29 is _____.

(35) $3.2 \times 48 =$ _____.

(36) $123_7 =$ _____ 10.

(37) Divide 56 into 3 parts such that the ratio of the 3 numbers is 1:1:2. Find the larger number. _____.

(38) Evaluate F(4) if $F(x) = x^2 - 6x + 2$. _____.

(39) The next term of 5,7,11,13,17,19,... is _____.

*(40) $\sqrt{14101} =$ _____.

(41) If $3x - 5 = -29$ then $x =$ _____.

(42) The cube root of −125 is _____.

(43) If $x > 0$ and $|4x - 12| = 12$ then $x =$ _____.

(44) $12524 \div 101 =$ _____.

(45) The number 120 has _____ positive prime divisors.

(46) The GCD of 24 and x is 6 and their LCM is 72.

$x =$ _____.

(47) $4\frac{1}{3} \times 8\frac{1}{3} =$ _____ (Mixed Number).

(48) $43^2 - 47^2 =$ _____.

(49) If $x = -2$ and $y = 3$ then $x^2 + 2xy =$ _____.

*(50) $(.625 \times 2448)^2 =$ _____.

(51) The sum of three consecutive odd integers is 45. The square of the middle integer is _____.

(52) $.515151\ldots =$ _____ (fraction).

(53) The sum of the roots of $3x^2 - 8 = 7x$ is _____.

(54) If $3^{x+1} = 7.2$ then $3^x =$ _____.

(55) Find the modulus of $9 + 40i$. _____.

(56) $\log_4 8 =$ _____ (decimal).

(57) A right triangle has integral sides. If one leg is 7 then the length of the other leg is _____.

(58) $26^2 + 58^2 =$ _____.

(59) If $2x + y = 10$ and $x + y = 7$ then $y =$ _____.

*(60) $22 \times 24 + 38 \times 48 =$ _____.

(61) The tenth term of 7,11,15,19,... is _____.

(62) $(3 - 2i)(4 + 5i) = a + bi$ and $a =$ _____.

(63) $\det \begin{vmatrix} 2 & 5 \\ 4 & 8 \end{vmatrix} =$ _____.

(64) The smallest palindrome greater than 399 is _____.

(65) The largest integer x such that $x - 5 > 2x + 3$ is _____.

(66) Find the number of proper fractions in lowest terms with a denominator of 24. _____.

(67) If $\sin A = -.5$, $A \in$ QIII then $A =$ _____ degrees.

(68) What number times 4 and added to 27, gives the same result? _____.

(69) $\frac{\pi}{12}$ radians = _____ degrees.

*(70) How many seconds in $2\frac{1}{2}$ days? _____.

(71) The greatest integer less than or equal to $\frac{7\pi}{16}$ is _____.

(72) $92^2 =$ _____.

(73) Change .13 base 4, to a base 10 fraction. _____.

(74) If $f(x) = 3x - 2$, find $f[f^{-1}(3)]$. _____.

(75) Find the smallest value of k, $k > 0$ such that $4k + 1$ is a perfect square. _____.

(76) The radius of the inscribed circle of a 7,24,25 right triangle is _____.

(77) The maximum value of $y = -x^2 + 7$ is _____.

(78) $\lim_{x \to 7} \frac{2x - 14}{x - 7} =$ _____.

(79) $\int_0^8 (x + 2)\,dx =$ _____.

*(80) $49 \times 50 \times 51 \times 52 =$ _____.