The University Interscholastic League
Number Sense Test, Series 9901

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

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) $1999 - 1998 + 2000 =$ _____.

(2) $2.37 + 4.43 =$ _____.

(3) $942 - 249 =$ _____.

(4) $213 \div 5 =$ _____ decimal.

(5) $\frac{1}{3} + \frac{2}{9} + \frac{1}{18} =$ _____.

(6) $3(2) + 3(29) + 4(7) =$ _____.

(7) $1.209 \div 3 =$ _____.

(8) $48 - 36 \div 4 + 2 =$ _____.

(9) If $\frac{3}{4} + x = \frac{1}{20}$ then $x =$ _____ (decimal).

*(10) $989 - 624 + 459 - 136 =$ _____.

(11) $105\% =$ _____ (improper fraction).

(12) $23 \times 47 + 47 \times 37 =$ _____.

(13) $62.5\% =$ _____ (fraction).

(14) 324 centimeters = _____ meters.

(15) 17% of 23 = _____.

(16) $2.5 \times 16.8 =$ _____.

(17) $46^2 =$ _____.

(18) $16 \div 3\frac{1}{3} =$ _____ (decimal).

(19) $231 \div 9 =$ _____ (mixed number).

*(20) $18 \times 368 =$ _____.

(21) Find the cost of driving 139 miles at 25 cents per mile. $_____

(22) $12 \times 137 =$ _____.

(23) What number times 5 and subtracted from 24, gives the same result? _____.

(24) 14.2 is _____% (mixed number) of 40.

(25) $18 \times 3367 =$ _____.

(26) If one dozen apples cost $7.08 then two apples cost $_____.

(27) 16% of _____ is 32% of 40.

(28) The average of 32, 37 and 48 is _____.

(29) Find the GCD of 216 and 276. _____.

*(30) $26656 \div 238 =$ _____.

(31) $3\frac{2}{5}\% =$ _____ (fraction).

(32) If $(12)(63) = 21y$ then $y =$ _____.

(33) $32 =$ _____ (Roman Numeral).

(34) 16431 ÷ 9 has a remainder of _____.

(35) If $31 = x^2 - y^2$ and x,y are positive integers, then y = _____.

(36) 47 x 53 = _____.

(37) The number of positive integral divisors of 84 is _____.

(38) 153_7 = _____ 10.

(39) $6\frac{1}{3} \times 6\frac{2}{3}$ = _____ (mixed number).

*(40) 29 x 38 x 41 = _____.

(41) If today is February 13, 2000, then 18 days ago was January _____, 2000.

(42) The largest prime number less than 41 is _____.

(43) The sum of the roots of $2x^2 - 6x = 9$ is _____.

(44) If x − 17 = 3x − 5 then x = _____.

(45) The cube root of 39,304 is _____.

(46) If x + y = 7 and 2x − y = 8 then x = _____.

(47) .369369... = _____ (fraction).

(48) A regular polygon with a central angle of 60° has a perimeter of 24". Each side is _____ inches long.

(49) If $3^{x+1} = 9^{x-2}$ then x = _____.

*(50) $\sqrt{115000}$ = _____.

(51) The sides of a right triangle are integers. If one leg is 13 then the hypotenuse is _____.

(52) 109 x 112 = _____.

(53) A regular hexagon has an interior angle of _____ degrees.

(54) .125 mile = _____ feet.

(55) If x < 0 and $|x + 1| = 3$ then x = _____.

(56) If 3x + 2 > x − 2 then x > _____.

(57) (13 x 4 + 12) ÷ 7 has a remainder of _____.

(58) 94 x 95 = _____.

(59) The LCM of 42 and 98 is _____.

*(60) 32 x 31 + 29 x 30 = _____.

(61) $23^2 + 46^2$ = _____.

(62) 1 + 3 + 5 + ... + 21 = _____.

(63) A pair of dice are tossed. Find the probability of getting a sum of 5. _____.

(64) 39 x 111 = _____.

(65) $(3 + 4i)^2 = a + bi$ and a = _____.

(66) If A is in QI and sinA = cos40° then A = _____ degrees.

(67) $2 + \frac{1}{2} + \frac{1}{8} + \ldots$ = _____.

(68) $\log_2 8 + \log_5 5$ = _____.

(69) The next term of 3,7,15,31,... is _____.

*(70) 21^3 = _____.

(71) Change .36, base 7, to a base 10 fraction. _____.

(72) 1.5π radians = _____ degrees.

(73) If $f(x) = \frac{3x + 4}{5x + 6}$ and $f^{-1}(x) = \frac{ax + 4}{cx + d}$ then d = _____.

(74) If f(x) = 3x + 1 then f[f(3)] = _____.

(75) Find the value of x if x + y = 16, the product xy^3 is a maximum and x,y > 0. _____.

(76) $\lim_{x \to 2} \frac{2x^2 - 8}{x - 2}$ = _____.

(77) The minimum value of $y = 3x^2 - 2$ is _____.

(78) cosπ = _____.

(79) $\int_0^1 x \, dx$ = _____.

*(80) $3\frac{1}{4} \times 102400 \div 26$ = _____.