The University Interscholastic League
Number Sense Test, Series 934A

Contestant's Number _____ Contestant's Score _____

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) $1414 \div 7 =$ _____.

(2) $25 \times 37 =$ _____.

(3) $2\frac{3}{8} - 1\frac{3}{4} =$ _____.

(4) $17^2 =$ _____.

(5) Which is smaller $\frac{6}{7}$ or $\frac{4}{5}$? = _____.

(6) $32 \times 3 \div 8 - 2 =$ _____.

(7) $6\frac{1}{4}\% =$ _____ (fraction).

(8) XXXI = _____(Arabic Numeral).

(9) $37 \times 11 =$ _____.

*(10) $279 + 561 + 1321 + 1742 =$ _____.

(11) The negative reciprocal of $\frac{4}{5}$ is _____.

(12) $75 \times 17 =$ _____.

(13) 14.5% = _____ (decimal).

(14) $12 \times 32 =$ _____.

(15) If 1 gram = .04 oz., then 36 grams = _____oz.

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

(17) $27 + 30 + 33 + 36 + 39 + 42 =$ _____.

(18) $3423 - 2334 =$ _____.

(19) $3\frac{1}{4} \times 48 =$ _____.

*(20) $298 \times 301 + 200 =$ _____.

(21) The GCD of 14, 26 and 39 is _____.

(22) $15 \times 38 =$ _____.

(23) If 4 pencils cost 49 cents, then 2 dozen pencils cost $ _____.

(24) $(32 - 5 \times 4) \div 8$ has a remainder of _____.

(25) Find the simple interest on $1500 at 3% for two years. $ _____.

(26) $41^2 - 43^2 =$ _____.

(27) Divide 54 into 2 parts such that the larger integer exceeds the smaller by 18. Find the larger number. _____.

(28) $22 \times 62 =$ _____.

(29) The cube root of 729 is _____.

*(30) $48759 \div 245 =$ _____.

(31) The product of the roots of $3x^2 + 6x - 5 = 0$ is _____.

(32) 15 ft/sec. = _____ yards/minute.

(33) .636363. . . = _____ (fraction).

(34) The smallest root of $(3x + 3)^2 = 1$ is _____.

(35) If x is to 4 as 5 is to 8 then x = _____.

(36) $35_8 =$ _____ 10.

(37) If $2x + y = 16$ and $x + y = 12$ then $2x =$ _____ .

(38) Evaluate F(4) if $F(x) = x^4 - 6x^2 + 9$. _____ .

(39) The sum of the positive integral divisors of 28 is ____ .

*(40) $\sqrt{288} + \sqrt{959} =$ _____ .

(41) What number times seven and added to three gives the same result? _____ .

(42) $28179 \div 101 =$ _____ .

(43) The perimeter of a regular polygon is 60 inches and its exterior angles measure 72°. The length of a side is _____ inches.

(44) If $4^x = 4.8$ then $2^{2x-1} =$ _____ .

(45) A circle has an area of 12π sq. in. Its diameter squared is _____ inches.

(46) The next term of 1, 4, 5, 9, 14, 23, . . . is _____ .

(47) $2104 \div 9 =$ _____ (Mixed Number).

(48) $91 \times 92 =$ _____ .

(49) A triangle has integral sides of 7, 10 and x. The largest value of x is _____ .

*(50) $39 \times 38 + 32 \times 40 =$ _____ .

(51) The smallest palindrome greater than 143 is _____ .

(52) The vertex of the parabola $y = 3x^2 + 5x + 1$ is (h, k) and h = _____ .

(53) $(3 + 2i) \div i = a + bi$ and b = _____ .

(54) $995^2 =$ _____ .

(55) 148 is the _____ term in the sequence 4, 7, 10, 13, ...

(56) $212_3 =$ _____ 9.

(57) $25^2 + 26^2 =$ _____ .

(58) The fifth pentagonal number is _____ .

(59) If $x + 3 > 5$ then $x - 1 > =$ _____ .

*(60) $(17)^4 =$ _____ .

(61) If $\log_{4x}16 = 4$ then x = _____ .

(62) If $x < 0$ and $|2x + 5| = 9$ then x = _____ .

(63) Using {1, 4, 9}, write the largest two digit prime number _____ .

(64) In how many ways can you group 6 distinct objects in groups of two? _____ .

(65) $\sin 150^\circ =$ _____ .

(66) $\left(\frac{1}{\sqrt{4}}\right)^4 \cdot \left(\frac{1}{\sqrt{5}}\right)^4 =$ _____ .

(67) Two dice are rolled. What is the probability that the sum of the numbers showing is greater than 2? _____

(68) Change .14, base 6, to a base 10 fraction. _____ .

(69) If $x^2 + y^2 = 37$, $x > y$ and they are negative integers, then x = _____ .

*(70) $(1 + 2 + 3 + \ldots + 13)^2 =$ _____ .

(71) $3^9 \div 6$ has a remainder of _____ .

(72) If $f[g(x)] = 2x - 3$ and $f(x) = 2x + 1$ then $g(x) =$ _____ .

(73) The inverse of $y = 2^x$ is y = _____ .

(74) $413_5 \div 2 =$ _____ 5.

(75) $102 \times 109 =$ _____ .

(76) The remainder when $x^3 \times 4x + 1$ is divided by x + 3 is _____ .

(77) Find x, $0 \leq x \leq 6$, if $3x - 1 \equiv 11 \pmod 7$. _____ .

(78) Find x, if $\det \begin{vmatrix} 5 & 3 \\ \times & 6 \end{vmatrix} = 6$. x = _____ .

(79) The probability of drawing three aces from a standard deck of 52 cards is _____ .

*(80) $(139 \times 45) + (30 \times 23) =$ _____ .