# The University Interscholastic League
## Number Sense Test, Series 956A

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 30 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) $353 - 57 + 19 =$ _____.

(2) $5(2) + 5(7) + 5(11) =$ _____.

(3) $456 + 654 =$ _____.

(4) $8008 \div 8 =$ _____.

(5) $1\frac{3}{4} + 1\frac{2}{3} =$ _____.

(6) $1234 \times 8 + 4 =$ _____.

(7) $47 \times 7 + 47 \times 4 =$ _____.

(8) 15 is _____% of 50.

(9) $25 \times 123 =$ _____.

*(10) $349 \times 41 =$ _____.

(11) $23^2 =$ _____.

(12) $32 =$ _____ (fraction).

(13) If one gram = .04 oz., then 5.5 grams = _____ oz.

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

(15) $48 \div 1\frac{1}{2} =$ _____.

(16) The largest prime divisor of 89 is _____.

(17) Find the cost of driving a car 16 miles at 5.29 per mile.

$ _____.

(18) $18^2 + 9^2 =$ _____.

(19) CCX = _____ (Arabic Numeral).

*(20) $46011 \div 313 =$ _____.

(21) The average of 16, 32, 28 and 96 is _____.

(22) $3\frac{1}{2} \times 18 =$ _____.

(23) $4.3 \times 4.7 =$ _____.

(24) $1 + 7 + 13 + 19 + 25 + 31 =$ _____.

(25) How many integers between 7 and 85 are divisible by 7 inclusively? _____.

(26) $\frac{1}{3}$ of 54 = _____.

(27) If $10^n$ = 1 million, then n = _____.

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

(29) $(16 \times 3 + 4) \div 7$ has a remainder of _____.

*(30) How many hours are in 365 days? _____.

(31) If $\frac{2}{3}$ of a quart is to a gallon as x pints is to 4 quarts, then x = _____.

(32) $1 - 4 + 7 - 10 + 13 - 16 + 19 =$ _____.

(33) The sum of three consecutive even integers is 372. The largest integer is _____.

(34) .515151... = _____ (fraction).

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

(36) If $4^n \times 2^n = 16^n$ then n = _____.

(37) The absolute value of x + 3 is 8. The smallest value of x is _____.

(38) $124_7$ = _____ 10

(39) $48^2 - 33^2$ = _____.

*(40) $\sqrt{14600}$ = _____.

(41) 44 is what percent more than 32? _____ % (Mixed Number).

(42) The fourth root of 256 is _____.

(43) The remainder of (7 x 8) ÷ 3 plus the remainder of 14 ÷ 5 is _____.

(44) Find y if 2x = 4 and x + y = 7. y = _____.

(45) How many real roots does $x^2 = 9$ have? _____.

(46) The LCM of 24 and 18 is _____.

(47) The distance between the points (1,4) and (2,4) is _____.

(48) If xy = 2 then $(x + y)^2 - (x^2 + y^2)$ = _____.

(49) An octagon has _____ sides.

*(50) $(15)^3$ = _____.

(51) $(3 + 2i)^2 = a + bi$ and a = _____.

(52) $\frac{2}{3} + \frac{2}{9} + \frac{2}{27} + \ldots$ = _____.

(53) A die is tossed. What is the probability that it shows a prime number? _____.

(54) $\log_{10} 1000$ = _____.

(55) The product of the GCD and LCM of 12 and 16 is _____.

(56) Find the modulus of 3 + 4i. _____.

(57) The x-intercept farthest to the left of $f(x) = x^2 - x - 6$ is x = _____.

(58) $27^2 + 68^2$ = _____.

(59) y varies directly as x. If x = 6 when y = 8, find y when x = 12. y = _____.

*(60) 19 x 124 + 62 x 38 = _____.

(61) The smallest palindrome greater than 525 is _____.

(62) $\det \begin{vmatrix} 3 & 5 \\ 6 & 4 \end{vmatrix}$ = _____.

(63) $42_8$ = _____ 4

(64) If $\log_a 2 = .69$ then $\log_a 4$ = _____.

(65) If the sides of an equilateral triangle are 4 inches, then its altitude is _____ inches.

(66) The next term of 3, 7, 15, 31, 63, ... is _____.

(67) Three coins are tossed. What is the probability that at least one is a head? _____.

(68) 97 x 94 = _____.

(69) Let $P_n$ denote the nth pentagonal number. Find the value of $P_1 + P_2$. _____.

*(70) 15 x 142857 = _____.

(71) Find the number of proper fractions in lowest terms, with a denominator of 18. _____.

(72) If cotA = 3/5 then tanA = _____.

(73) Change .15 base 8, to a base 10 fraction. _____.

(74) $\frac{2\pi}{3}$ radians = _____ degrees.

(75) The inverse of y = x + 1 is y = _____.

(76) $\lim_{x \to 3} \frac{x^2 - 9}{x - 3}$ = _____.

(77) The radius of the inscribed circle of a 20, 21, 29 right triangle is _____.

(78) The maximum value of $f(x) = -2x^2 - 1$ is _____.

(79) $\int_0^6 (x + 2)\,dx$ = _____.

*(80) $(1 + 2 + 3 + \ldots + 11)^2$ = _____.