The University Interscholastic League
Number Sense Test, Series 9341

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) $1994 + 4991 =$ _____ .

(2) $\frac{3}{8} + \frac{2}{5} =$ _____ .

(3) $.24 \times 3 =$ _____ .

(4) $424 \div 9 =$ _____ (Mixed Number).

(5) $\frac{5}{8} =$ _____ %.

(6) $135 \times 6 \div 8 =$ _____ .

(7) $2\frac{1}{4} \times 2\frac{1}{4} =$ _____ (Mixed Number).

(8) XXV = _____ (Arabic Number).

(9) The largest prime divisor of 65 is _____ .

*(10) $1419 + 671 + 39 + 3 =$ _____ .

(11) Which is larger, $\frac{11}{15}$ or $\frac{13}{17}$? _____ .

(12) $48 \times 3 \div 8 + 1 =$ _____ .

(13) The GCD of 12, 24 and 64 is _____ .

(14) $12 \times 56 =$ _____ .

(15) $23^2 =$ _____ .

(16) $3952 - 5239 =$ _____ .

(17) 221 less 10% of 260 is _____ .

(18) $11 + 13 + 15 + 17 + 19 + 21 =$ _____ .

(19) 17 is what percent less than 20? _____ %.

*(20) $198 \times 302 + 109 =$ _____ .

(21) 3 square feet = _____ square inches.

(22) $1 \div 2\frac{1}{2} =$ _____ (decimal).

(23) If one dozen pencils cost $4.68 then three pencils cost $ _____ .

(24) $31 \times 35 =$ _____ .

(25) The simple interest on $326.00 at 5% for 6 months is $ _____ .

(26) Evaluate F(3) if $F(x) = x^4 + 2x^2 + 1$. _____ .

(27) The largest root of $2x^2 - 7x - 15 = 0$ is _____ .

(28) $(29 + 3 \times 4 + 2) \div 7$ has a remainder of _____ .

(29) How many integers between 17 and 85 are divisible by 9? _____ .

*(30) How many seconds are in 2 hours 15 minutes? _____ .

(31) The number of positive integral divisors of 36 is _____ .

(32) .474747 . . . = _____ (fraction).

(33) $15 \times 124 =$ _____ .

(34) $212_4 =$ _____ 10.

(35) Divide 57 into 2 parts such that the larger number exceeds the smaller number by 21. Find the larger number. _____ .

(36) Find x if $\frac{1}{x} + \frac{1}{5} = \frac{1}{2}$. _____ .

(37) Three numbers are in the ratio of 2:3:4. If their sum is 63, find the smaller number. _____ .

(38) $34542 \div 101 =$ _____ .

(39) What number times 6 and subtracted from 14 gives the same result? _____ .

*(40) $78996 \div 227 =$ _____ .

(41) The GCD of 18 and x is 3 and their LCM is 90. x = _____ .

(42) If $4^4 \times 16^3 \div 64^2 = 4^n$, then n = _____ .

(43) (x,y) is the midpoint of the line segment whose endpoints are (2,6) and (3,8). y = _____ .

(44) $97 \times 94 =$ _____ .

(45) A square with an area of 64 sq. in. is inscribed in a circle. The radius of the circle is $a\sqrt{b}$ in. and a = _____ .

(46) If $2^{x+1} = 6.42$ then $2^x =$ _____ .

(47) An interior angle of a regular octagon has a measure of _____ degrees.

(48) $35_8 =$ _____ 4.

(49) The legs of a right triangle are $3\frac{1}{2}$ and 12. Find the length of the hypotenuse. _____ (decimal).

*(50) $(.375 \times 2240)^2 =$ _____ .

(51) Find the smallest number greater than 4 that divides 784. _____ .

(52) Two dice are rolled. Find the probability that the sum is a 3 or a 5. _____ .

(53) $104 \times 107 =$ _____ .

(54) If $\log_4 x = 1.5$ then x = _____ .

(55) If $3x - 2 < 22$ then x < _____ .

(56) The largest palindrome less than 573 is _____ .

(57) $(2 - 3i)^2 = a + bi$ and b = _____ .

(58) $32 \times 72 =$ _____ .

(59) The next term of 1, 5, 6, 11, 17, ... is _____ .

*(60) $21^4 =$ _____ .

(61) $17^3 - 16^3 =$ _____ .

(62) $1 + 3^{-1} + 3^{-2} + \ldots =$ _____ .

(63) Two dice are rolled. What is the probability that the sum is greater than 6? _____ .

(64) The eleventh pentagonal number is _____ .

(65) The area of the ellipse $4x^2 + y^2 = 16$ is $k\pi$ and k = _____ .

(66) $\frac{1}{2} + \frac{1}{4} + \frac{1}{8} + \frac{1}{16} =$ _____ .

(67) How many ways can 7 people be seated 3 at a time in a row of 3 chairs? _____ .

(68) $\text{Cos}^{-1}(.5) =$ _____ degrees.

(69) The parabola $x^2 = 8y$ has its focus at (0, k) and k = _____ .

*(70) $(120 \times 48)^2 \div (119 \times 96) =$ _____ .

(71) The odds of winning are 3 to 5. What is the probability of losing? _____ .

(72) If f(3) = 7 then $f^{-1}(7) =$ _____ .

(73) If g(x) = x + 3 than g[g(2)] = _____ .

(74) Find the smallest value of x so that $f(x) = \sqrt{2x + 1}$ is real valued. _____ .

(75) $\det \begin{vmatrix} 3 & 7 \\ 4 & 6 \end{vmatrix} =$ _____ .

(76) If $\frac{a}{11}$ has a remainder of 6 and $\frac{b}{11}$ has a remainder of 8 then $\frac{ab}{11}$ has a remainder of _____ .

(77) .15555... = _____ (fraction).

(78) $\lim_{x \to 0} \frac{\sin x}{x} =$ _____ .

(79) $\int_0^6 (5 - x)\, dx =$ _____ .

*(80) $28 \times 142857 =$ _____ .