The University Interscholastic League

Number Sense Test, Series 9562

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) $29 \div 57 =$ _____.

(2) $2\frac{1}{2} \times 5 =$ _____ (Mixed Number).

(3) $3075 \div 15 =$ _____.

(4) $14 \times 28 \div 28 \times 26 =$ _____.

(5) $\frac{1}{4} - \frac{1}{8} - \frac{1}{16} =$ _____.

(6) $143 \div 9 =$ _____ (Mixed Number).

(7) $18^2 =$ _____.

(8) $678 \div 876 =$ _____.

(9) $38 \times 2.5 =$ _____.

*(10) $29 + 251 + 1946 + 51874 =$ _____.

(11) XL = _____ (Arabic Numeral).

(12) $\frac{3}{8} + .46 =$ _____ (decimal).

(13) $75 \times 62 =$ _____.

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

(15) $64 \div 16 \times 2 - 3 =$ _____.

(16) $31 - 27 + 23 - 19 + 15 - 11 =$ _____.

(17) The mean of 28, 14 and –9 is _____.

(18) $9 \times 654321 - 1 =$ _____.

(19) How many even integers are between 10 and 31? _____.

*(20) $39 \times 657 \div 1600 =$ _____.

(21) If 4 apples cost 88 cents then 16 apples cost $ _____.

(22) $17^2 + 34^2 =$ _____.

(23) 12% of 850 is _____.

(24) $15 \times 46 =$ _____.

(25) If A = 4, B = 6 and C = 9 then $AB^2 \div C =$ _____.

(26) 18% of 600 is _____ % of 300.

(27) $(27 \times 3 + 7) \div 6$ has a remainder of _____.

(28) If the area of a rectangle is 3 times its length then its width is _____ units.

(29) $4\frac{1}{3} \times 18 =$ _____.

*(30) $19734 \div 138 =$ _____.

(31) The number of positive integral divisors of 56 is _____.

(32) 35 is _____ % more than 28.

(33) The GCD of 72 and 63 is _____.

(34) $2.3 \times 37 =$ _____.

(35) The smallest prime number greater than 23 is _____.

(36) Evaluate F(3) if $f(x) = x^2 - 4x + 2$. _____.

(37) The next term of 5,8,12,15,19,22,... is _____.

(38) $215_6 =$ _____ 10°

(39) Divide 48 into 3 parts such that the ratio of the 3 numbers is 1:1:2. Find the smaller number. _____.

*(40) $\sqrt{13920} =$ _____.

(41) The cube root of –64 is _____.

(42) If $2x + 5 = -11$ then $x =$ _____.

(43) If $x > 0$ and $|3x - 8| = 10$ then $x =$ _____.

(44) $13332 \div 101 =$ _____.

(45) $6\frac{1}{4} \times 10\frac{1}{4} =$ _____ (Mixed Number).

(46) The GCD of 32 and x is 8 and their LCM is 96.

$x =$ _____.

(47) The number 80 has _____ positive prime divisors.

(48) If $x = -4$ and $y = 5$ then $x^2 + 2xy =$ _____.

(49) $53^2 - 57^2 =$ _____.

*(50) $(3216 \times .625)^2 =$ _____.

(51) If $.484848... = \frac{8}{x}$ then $x =$ _____ (fraction).

(52) If $4^{x+1} = 9.2$ then $4^x =$ _____.

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

(54) The sum of the roots of $2x^2 - 7 = 5x$ is _____.

(55) A right triangle has integral sides. If one leg is 11 then the length of the other leg is _____.

(56) $\log_9 27 =$ _____ (decimal).

(57) Find the modulus of $7 + 24i$. _____.

(58) $28^2 + 78^2 =$ _____.

(59) If $2x - y = 7$ and $x + y = 8$ then $y =$ _____.

*(60) $32 \times 24 + 33 \times 48 =$ _____.

(61) $(2 - 3i)(5 + 2i) = a + bi$ and $a =$ _____.

(62) The tenth term of 6,11,16,21,... is _____.

(63) $\det \begin{vmatrix} 3 & 6 \\ 5 & 7 \end{vmatrix} =$ _____.

(64) The largest integer x such that $x - 8 > 2x + 7$ is _____.

(65) The smallest palindrome greater than 299 is _____.

(66) Find the number of proper fractions in lowest terms with a denominator of 28. _____.

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

(68) $\frac{\pi}{15}$ radians = _____ degrees.

(69) What number times 3 and added to 28, gives the same result? _____.

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

(71) $93^2 =$ _____.

(72) The greatest integer less than or equal to $\frac{3\pi}{8}$ is _____.

(73) Change .12 base 3, to a base 10 fraction. _____.

(74) If $f(x) = 2x + 1$, find $f[f^{-1}(4)]$. _____.

(75) Find the smallest value of k, $k > 1$ such that $6k + 1$ is a perfect square. _____.

(76) The radius of the inscribed circle of an 8,15,17 right triangle is _____.

(77) The maximum value of $y = -x^2 + 5$ is _____.

(78) $\lim_{x \to 4} \frac{2x - 8}{x - 4} =$ _____.

(79) $\int_0^4 (x + 2)\,dx =$ _____.

*(80) $39 \times 40 \times 41 \times 42 =$ _____.