

**The University Interscholastic League
Number Sense Test, Series 9784**

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!

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| <p>(1) $5998 + 9895 =$ _____</p> <p>(2) $28^2 =$ _____</p> <p>(3) $4.13 - 1.87 =$ _____</p> <p>(4) $11 \times 4.36 =$ _____</p> <p>(5) CXV = _____ (Arabic Numeral).</p> <p>(6) $2131 \div 9 =$ _____ (mixed number).</p> <p>(7) Which is larger, $\frac{13}{14}$ or $\frac{11}{12}$? _____</p> <p>(8) $4321 \times 9 - 1 =$ _____</p> <p>(9) $17 \times 28 - 17 \times 15 =$ _____</p> <p>*(10) $56 + 566 + 5666 + 56666 =$ _____</p> <p>(11) $23 + 8 \times 6 \div 4 - 5 =$ _____</p> <p>(12) $\frac{8}{13} - \frac{8}{26} - \frac{10}{39} =$ _____</p> <p>(13) $181230 \div 6 =$ _____</p> <p>(14) $\frac{19}{22} \times 19 =$ _____ (mixed number).</p> <p>(15) The largest prime factor of 455 is _____</p> <p>(16) $1.18\% =$ _____ (fraction).</p> | <p>(17) The LCM of 18, 28 and 63 is _____</p> <p>(18) $9 + 13 + 17 + 21 + 25 + 29 =$ _____</p> <p>(19) 8.5 feet = _____ inches.</p> <p>*(20) $19 \times 39 \times 399 =$ _____</p> <p>(21) If 4 tires cost \$312 then 5 tires cost \$ _____</p> <p>(22) $\frac{7}{13} - \frac{13}{27} =$ _____</p> <p>(23) 153 is what percent of 425? _____ %.</p> <p>(24) Evaluate $F(-3)$ if $F(x) = 9x^2 - 6x + 1$. _____</p> <p>(25) If $23^2 - 17^2 = 8x$ then $x =$ _____</p> <p>(26) How many days are there from Feb. 6, 1998 to July 19, 1998? _____</p> <p>(27) $(35 \times 7 + 13) \div 9$ has a remainder of _____</p> <p>(28) If $A = 3$, $B = 6$ and $C = -4$ then $BC \div A =$ _____</p> <p>(29) $321_6 =$ _____₁₀</p> <p>*(30) $2\frac{4}{7} \times 14021 \div 9 =$ _____</p> <p>(31) The number 360 has _____ positive integral divisors.</p> <p>(32) $92 \times 97 =$ _____</p> |
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- (33) If $3x - 5 = 16$ then $x + 3 =$ _____
- (34) $5\frac{1}{4} \times 4\frac{1}{5} =$ _____ (mixed number).
- (35) Three numbers are in the ratio of 13:14:15. If their sum is 126, find the larger number. _____
- (36) 24% of 144 is _____ % of 108.
- (37) The area of an equilateral triangle is $16\sqrt{3}$ sq. units. Its perimeter is _____
- (38) $232 \times 238 =$ _____
- (39) A square with an area of 8 sq. units is inscribed in a circle. The radius of the circle is _____
- *(40) $136764 \div 261 =$ _____
- (41) If $2^k = 4^x$ then $x =$ _____ k.
- (42) If $4^{-1} + x^{-1} = 7^{-1}$ then $x =$ _____
- (43) The next term of 2, 5, 14, 41, 122, ... is _____
- (44) What number times 4 and subtracted from 36, gives the same number? _____
- (45) $46 \times 48 + 1 =$ _____
- (46) An aquarium 11" by 42" by 8" holds _____ gallons of water.
- (47) If $1 + 3x < 5x + 6$ then $x >$ _____
- (48) A triangle has sides of 3, 8 and x units. Its perimeter must be greater than _____
- (49) $97 \times 104 =$ _____
- *(50) $\sqrt{28569} =$ _____
- (51) Find k so that the four digit number 31k7 is divisible by 7 _____
- (52) The sum of the coefficients of $(5x - 3y)^5$ is _____
- (53) A right triangle has legs of 35 and x . If the hypotenuse is 37 then $x =$ _____
- (54) $16^2 + 59^2 =$ _____
- (55) $(1 + i)^2 + 2(3 - i) =$ _____
- (56) If $\log_3(x-2) = 3$ then $x =$ _____
- (57) The endpoints of a diameter of a circle are $(-3,5)$ and $(5,9)$. If the center is (h,k) then $k =$ _____
- (58) $14874 \div 111 =$ _____
- (59) The length of the tangent from $(25,0)$ to the circle $x^2 + y^2 = 49$ is _____
- *(60) $31 \times 35 + 33 \times 34 =$ _____
- (61) A box contains 6 blue and 8 red balls. If 2 balls are drawn without replacement, what is the probability that both balls are red? _____
- (62) If $(\log_2 4)(\log_x 64) = 6$ then $x =$ _____
- (63) $\cos 150^\circ =$ _____
- (64) How many positive integers less than or equal to 68 are relatively prime to 68? _____
- (65) If $\sin A = 2/3$ then $\cos 2A =$ _____
- (66) $.0242424... =$ _____ (fraction).
- (67) The radius squared of the inscribed circle of a 16,30,34 right triangle is _____
- (68) If $f(x) = 2x + 3$ then $f[f(4)] =$ _____
- (69) Five coins are tossed. Find the probability of getting 3 heads and 2 tails. _____
- *(70) $32^4 =$ _____
- (71) Write the first four nonzero digits of the decimal for $\frac{59}{90}$; 0. _____
- (72) $3^{21} \div 4$ has a remainder of _____
- (73) What is the fourteenth triangular number? _____
- (74) Change .41, base 5, to a base 10 decimal. _____
- (75) $\cos^{-1}(.4) + \sin^{-1}(.4) =$ _____ degrees.
- (76) The shortest distance between the line $4x + 3y = 2$ and the point $(2,0)$ is _____
- (77) $\int_1^5 x^{-2} dx =$ _____
- (78) The n th term of 2, 6, 12, 20, 30, ... is _____
- (79) $1^3 - 2^3 + 3^3 - 4^3 + 5^3 =$ _____
- *(80) $(2 + 4 + 6 + 8 + 10 + 12 + 14)^2 =$ _____