The University Interscholastic League
Number Sense Test • HS State • 2026

Final _____ _____

Contestant's Number _____ 2nd _____ _____

1st _____ _____

Score **Initials**

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 percent 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) $517 + 1819 =$ _____

(2) $1918 - 2026 =$ _____

(3) $519 \div 6 =$ _____ **(decimal)**

(4) $0.18\% =$ _____ **(decimal)**

(5) $9 \times (1 - 8) \div (1 - 7) + 1 + 5 =$ _____

(6) $1991 \times 9 + 100 =$ _____

(7) $\frac{1}{16} =$ _____ **(decimal)**

(8) $(18 \times 19 - 2026) \div 5$ **has a remainder of** _____

(9) $1 + 3 + 6 + 10 + 15 + ... + 45 =$ _____

***(10)** $6202 + 9181 - 517 - 483 =$ _____

(11) $17 \times \frac{18}{19} =$ _____ **(mixed number)**

(12) **The sum of the prime divisors of 26 is** _____

(13) **LCM(52, 78) =** $4 \times$ _____

(14) $\overline{V} + MMXXVI - XVIII - XIX =$ _____ **(Arabic Numeral)**

(15) $17^2 - 19^2 = 9 \times$ _____

(16) **Find the sum of the median and the mode of 5, 1, 7, 1, 8, 1, 9, 2, 0, 2, and 6.** _____

(17) $518 \times 19 =$ _____

(18) **If** $p \times q = 95$ **and** $p - q = 14$, **then** $|p + q| =$ _____

(19) $222 \times \frac{n}{37} = 114$ **and** $n =$ _____

***(20)** $5171819 \div 2026 =$ _____

(21) **The arithmetic mean of 5, 18, 19, 20, and ____ is 26**

(22) **If** $5x + 19 = 26$, **then** $20x =$ _____

(23) $20\frac{5}{9} \times 18\frac{1}{10} =$ _____ **(mixed number)**

(24) $\sqrt{361} =$ _____

(25) $\frac{4}{5} \div \frac{4}{125} \times \frac{4}{3125} =$ _____ **(decimal)**

(26) **19% of 518 is 38% of** _____

(27) **84 is 58.333...% of** _____

(28) $0.0625 - 0.1875 - 0.3125 =$ _____ **(fraction)**

(29) $422 =$ _____$_9$

***(30)** $\sqrt{5181926} =$ _____

(31) $5\frac{1}{8} + 5\frac{1}{9} =$ _____ **(mixed number)**

(32) **If** $\frac{5}{8} - \frac{n}{57} = \frac{13}{456}$, **then** $n =$ _____

(33) **The reciprocal of 2.777... is** _____

(34) **The 10th term of the sequence** $\frac{1}{5}, \frac{4}{5}, 1\frac{2}{5}, 2, ...$ **is** $5\frac{3}{5}$. **The 8th term is** _____

(35) 0.01999... = _____ (proper fraction)

(36) If $f(x) = x^2 - 18x + 81$, then $f(19)$ = _____

(37) The number of integers n, where $5 \leq n < 19$, relatively prime to 18 is _____

(38) $(3^{17} + 2^{17} - 19) \div 5$ has a remainder of _____

(39) $5x + 19 = 8x - 17$ and x^3 = _____

***(40)** 5 yards − 1 feet + 9 inch = _____ centimeters

(41) Let $\sqrt{288} - \sqrt{98} = \sqrt{x}$. Find x. _____

(42) The five-digit number 5192k is divisible by 6. Find k. _____

(43) The product of the coefficients of the terms in the expansion of $(x - y)^5$ is _____

(44) The sum of the digits of a three-digit number is 7. How many such numbers exist? _____

(45) $181_9 + 202_9 \times 6_9$ = _____ 9

(46) $6^4 - 8$ = _____ 6

(47) A line with a slope of $\frac{3}{4}$ passes through (0, 6) and (x, 0). The value of x is _____

(48) The product of the roots of $(5x + 1)^2 = 9$ is _____

(49) ${}_5C_2 + {}_5C_3 = {}_5P_4 \times k$. Find k. _____

***(50)** $\sqrt[3]{517181926}$ = _____

(51) If $\frac{19}{225} = 0.abccc...$, then $a + b + c$ = _____

(52) $(2^3 + 3^2 + 2)^2$ = _____

(53) 48×41 = _____

(54) $555 \times \frac{2}{27}$ = _____

(55) $246_8 \div 11_8$ has a remainder of _____ 8

(56) $\lfloor 3\sqrt{2} \rfloor \times \lceil 2\sqrt{3} \rceil$ = _____

(57) 501^3 = _____

(58) The point (5, − 19) is reflected across the line $y = x - 26$ to the point (h, k). Find $h + k$. _____

(59) Three pens are randomly drawn without replacement from a box with eight blue and five red pens. The odds of two pens being blue if the first one drawn is red is _____

***(60)** 51926 inches = _____ Egyptian cubits

(61) $4x - y = 3$ and $2x + y = 3$. Find xy. _____

(62) $555 \times \frac{k}{37} = 75$ and k = _____

(63) 254×258 = _____

(64) $\cos(330°) \times \sin(-120°)$ = _____

(65) Let $g(x) = 3x - 3$. Find $g(g(3) - 3)$. _____

(66) $5^{19} \div 26$ has a remainder of _____

(67) $98765 \times 9 + 3$ = _____

(68) $\begin{vmatrix} 5 & 1 & 7 \\ 5 & 1 & 8 \\ 5 & 1 & 9 \end{vmatrix}$ = _____

(69) The point (5, − 5) lies on a circle with center at (2, 2). The area of the circle is $k\pi$. Find k. _____

***(70)** $\sqrt[4]{620291815} - 2026$ = _____

(71) $22 \times 28 = 4 \times$ _____

(72) $h(x) = \frac{5x - 19}{26}$ and $h^{-1}(x) = ax + b$. Find a. _____

(73) Change $\frac{19}{36}$ to a base 6 decimal. _____ 6

(74) Let $f(x) = \frac{3x^2 + x - 5}{x^2 + 1}$. How many asymptotes does f(x) have? _____

(75) $g(x) = x^3 + 9x^2 + 2x - 6$ and $g'(5)$ = _____

(76) Find k, $0 \leq k \leq 6$, if $5k + 1 \equiv 9 \pmod 6$. _____

(77) $\int_2^3 (2x - 1)\,dx \times \int_3^5 (2x - 1)\,dx$ = _____

(78) $0.333... + 0.1666... + 0.1 + 0.0666... + ... + 1/n = 0.75$. Find n. _____

(79) $\frac{1}{4}$ of 37.5% of 64 is _____

***(80)** The total surface area of a closed right cylindrical tube with length 19" and radius 5" is _____ in^2

DO NOT DISTRIBUTE TO STUDENTS BEFORE OR DURING THE CONTEST

University Interscholastic League - Number Sense Answer Key HS • State • 2026
***number) x — y means an integer between x and y inclusive**
NOTE: If an answer is of the type like $\frac{2}{3}$ it cannot be written as a repeating decimal

(1) 2,336

(2) — 108

(3) 86.5

(4) .0018

(5) 16.5, $\frac{33}{2}$, $16\frac{1}{2}$

(6) 18,019

(7) .0625

(8) 1

(9) 165

***(10) 13,664 — 15,102**

(11) $16\frac{2}{19}$

(12) 15

(13) 39

(14) 6,989

(15) — 8

(16) 3

(17) 9,842

(18) 24

(19) 19

***(20) 2,426 — 2,680**

(21) 68

(22) 28

(23) $372\frac{1}{18}$

(24) 19

(25) .032

(26) 259

(27) 144

(28) — $\frac{7}{16}$

(29) 518

***(30) 2,163 — 2,390**

(31) $10\frac{17}{72}$

(32) 34

(33) .36, $\frac{9}{25}$

(34) 4.4, $\frac{22}{5}$, $4\frac{2}{5}$

(35) $\frac{1}{50}$

(36) 100

(37) 5

(38) 1

(39) 1,728

***(40) 428 — 472**

(41) 50

(42) 4

(43) — 2,500

(44) 28

(45) 1504

(46) 5544

(47) — 8

(48) — .32, — $\frac{8}{25}$

(49) $\frac{1}{6}$

***(50) 763 — 842**

(51) 12

(52) 361

(53) 1,968

(54) $\frac{370}{9}$, $41\frac{1}{9}$

(55) 4

(56) 16

(57) 125,751,501

(58) — 14

(59) $\frac{14}{19}$

***(60) 2,785 — 3,077**

(61) 1

(62) 5

(63) 65,532

(64) — .75, — $\frac{3}{4}$

(65) 6

(66) 21

(67) 888,888

(68) 0

(69) 58

***(70) — 1961 — — 1775**

(71) 154

(72) 5.2, $\frac{26}{5}$, $5\frac{1}{5}$

(73) .31

(74) 1

(75) 167

(76) 4

(77) 56

(78) 28

(79) 6

***(80) 717 — 791**