Educating the leaders of tomorrow

Number Sense Practice Packet

Spring 2025 | High School

Six practice tests by Larry White

hexco

NUMBER SENSE
Practice Packet S25

Written by

Larry White, Contest Director

We are a small company that listens! If you have any questions or if there is an area that you would like fully explored, let us hear from you. We hope you enjoy this product and stay in contact with us throughout your academic journey.
~ President Hexco Inc., Linda Tarrant

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IF YOU LIKE THIS PRODUCT, WE ALSO RECOMMEND

Mental Math Notes

Number Sense Practice Packets from previous years

UIL NUMBER SENSE PRACTICE PACKET – Spring 2025

CONTENTS

Six Sets of Number Sense Tests (S25A-S25F)

Each Test Includes:

- 80 Questions - fill-in-the-blank
- Solutions

For official UIL Constitution and Contest Rules for Number Sense, please review the Section 920 document at: http://www.uiltexas.org/academics/number-sense

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Hexco 2024-25 Number Sense Test S25B

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) $452 \times 4 =$ _____

(2) $16^2 =$ _____

(3) $826 + 268 =$ _____

(4) $2025 \div 9 =$ _____

(5) $22\frac{2}{9}\% =$ _____ **(proper fraction)**

(6) $3\frac{2}{5} - 1\frac{7}{10} =$ _____ **(mixed number)**

(7) $2.25 - 6.5 =$ _____

(8) $1 + 5 \times (12 - 22) \div 35 =$ _____

(9) $24 \times 31 =$ _____

***(10)** $2025 + 5202 + 2520 + 5022 =$ _____

(11) $1891 \times 9 + 81 =$ _____

(12) $\frac{2}{3} - \frac{5}{6} + \frac{4}{9} =$ _____

(13) 15% of 34 is _____

(14) 14 pints = _____ quarts

(15) $7^3 =$ _____

(16) The LCM of 60 and 72 is _____

(17) $72 \times 16 - 16 \times 56 =$ _____

(18) 81107 ÷ 6 has a remainder of _____

(19) If 8 ♦s cost $24.40, then 10 ♦s cost $ _____

***(20)** $478 \times 82 =$ _____

(21) The number of integral divisors of 24 is _____

(22) The additive inverse of $-2\frac{1}{2}$ is _____

(23) Let P = {p,r,i,m,e}. How many 3-elements subsets of P exist? _____

(24) $(8 \times 21 - 17) \div 5$ has a remainder of _____

(25) $4\frac{5}{6} \times 4\frac{1}{6} =$ _____ **(mixed number)**

(26) $20 - |2 - 5| - 5 + |2 - 20| =$ _____

(27) If $3x + 4 = 13$, then $x - 9 =$ _____

(28) 123 base 4 is _____ in base 10

(29) Given the sequence 16, 15, 12, 7, p, q, — 20, r, ... $p + q + r =$ _____

***(30)** $13 \times 17 \times 30 =$ _____

(31) How far will a sportscar traveling 84 mph travel in an hour and 15 minutes? _____ miles

(32) 0.123123123... = _____ **(proper fraction)**

(33) 87.5% of 40 = _____

(34) If a = 3 and b = 2, then $(a - b)(a^3 + a^2b + ab^2 + b^3) =$ _____

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(36) The sum of the roots of $(3x + 8)(x - 5) = 0$ is ____

(37) $13^2 + 39^2$ = _____

(38) $\sqrt[3]{15625}$ = _____

(39) $2\frac{2}{5} \times 5\frac{1}{2}$ = _____ (mixed number)

***(40)** $\sqrt{52021225}$ = _____

(41) $3^4 \times 9^2 \div 27$ = _____

(42) $(8)^{1.5} = a\sqrt{b}$ in simplified form and a = _____

(43) $63^2 + 43^2$ = _____

(44) The hypotenuse of a right triangle with integral sides is 41". The sum of the other sides is _____ "

(45) $(14^2 + 2 \times 13 + 7) \div 13$ has a remainder of _____

(46) A central angle of a regular pentagon is _____°

(47) $4 + 6 + 10 + 16 + 26 + 42 + 68 + 110 + 178 + 288 + 466 + 754$ = _____

(48) 32% of $\frac{5}{8}$ of 32 is _____ (decimal)

(49) $18^{37} \div 19$ has a remainder of _____

***(50)** $4\frac{1}{3}$ square miles _____ acres

(51) The odds of selecting a prime digit from all of the base 11 digits is _____

(52) Let $\frac{4!}{5!} = \frac{(x-1)!}{x!}$. Find x. _____

(53) $(4 + 5i)(4 - 5i)$ = _____

(54) $202_5 + 312_5 - 34_5$ = _____ 5

(55) $203_5 + 302_5 - 32_5$ = _____ 5

(56) $212_5 + 412_5 - 14_5$ = _____ 5

(57) Given: $\{1\frac{1}{3}, 2, 2\frac{2}{3}, 3\frac{1}{3}, ...\}$. Find the 9th term. _____

(58) The point (1, — 2) is reflected across the line x = 3 to the point (h, k). Find h + k. _____

(59) If $\frac{3x+1}{x+3} - \frac{2x+1}{x+2} = \frac{ax^2+bx+c}{dx^2+ex+f}$, then $(a + b + c) - (d + e + f)$ = _____

***(60)** 23^4 = _____

(61) $\cos(\text{Tan}^{-1}(1))$ = x and x^2 = _____

(62) The remainder when $f(x) = 2x^2 + 11x - 3$ is divided by $2x - 1$ is _____

(63) The total surface area of a regular tetrahedron with side length 3 is k and k^2 = _____

(64) The Greatest Integer Function is written as $f(x) = [x]$. Find $\left[\pi\sqrt{5}\right]$. _____

(65) The determinant of $\begin{bmatrix} -1 & -1 \\ 2 & 3 \end{bmatrix}$ = 5k. k = _____

(66) $\begin{bmatrix} 0 & 1 \\ 4 & 6 \end{bmatrix} \times \begin{bmatrix} 2 & 3 \\ 5 & 7 \end{bmatrix} = \begin{bmatrix} a & b \\ c & d \end{bmatrix}$. Find a + d. _____

(67) If $\sqrt{7 + 7\sqrt{9\sqrt{9 + x}}} = 7$, then x = _____

(68) $f(x) = x - 2$, $g(x) = 3x + 4$, and $f(g(-1))$ = _____

(69) The coefficient of the x^4y^3 term if $(x + y)^7$ is _____

***(70)** $\sqrt[3]{20255202}$ = _____

(71) If $\frac{5}{10}$ base 8 = 0.abbb... base 8, then a + b = _____

(72) 252×257 = _____

(73) $57^2 + 55^2 - 56^2 - 54^2$ = _____

(74) If $f^{-1}(3) = 2$, then f(2) = _____

(75) $\int_0^2 (2x - 1)\,dx + \int_2^4 (2x - 1)\,dx$ = _____

(76) Let $f(x) = (2x - 1)^3$. Find $f'(2)$. _____

(77) The ratio of m to n is $\frac{2}{5}$ and m + n = 10. n = _____

(78) Given: 2, 6, 12, 20, k, 42... . Find k. _____

(79) The geometric mean of 1, 4, and 16 is _____

***(80)** 5202 yards = _____ *varas* (Texas)

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