The University Interscholastic League
Number Sense Test • HS SAC • 2012

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.

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STOP -- WAIT FOR SIGNAL!

(1) $2012 + 2013 =$ _____

(2) $2012 \times 6 =$ _____

(3) $2102 - 2012 =$ _____

(4) $2012 \div 5 =$ _____ **(decimal)**

(5) $3\frac{4}{5} =$ _____ **%**

(6) $16^2 =$ _____

(7) $1\frac{3}{5} + 2\frac{3}{4} =$ _____ **(mixed number)**

(8) $20 \times 12 + 20 \times 13 =$ _____

(9) $5.6 \div (-1.25) =$ _____ **(decimal)**

***(10)** $136 - 1015 + 2128 =$ _____

(11) 48 is 16 % of _____

(12) $42 \times 48 =$ _____

(13) The GCD of 51 and 85 is _____

(14) $35 + 30 \times 25 \div 15 - 10 =$ _____

(15) MCII = _____ **(Arabic Number)**

(16) 20 pounds 12 ounces = _____ **ounces**

(17) Which is larger, $\frac{11}{15}$ or $\frac{9}{13}$? _____

(18) The sum of the prime divisors of 110 is _____

(19) The mean of 1, 3, 6, 10, and 15 is _____

***(20)** $2012 + 201 \times 210 =$ _____

(21) 0.656565... = _____ **(proper fraction)**

(22) $|2 - 1| + |3 - 4| + |7 - 8| =$ _____

(23) Truncate $\sqrt{2}$ to the $\frac{1}{1000}$ place. _____ **(decimal)**

(24) If 12 WEEs cost $9.60 then 8 WEEs cost $_____

(25) If $f(x) = x^2 - 10x + 25$ then f(35) is _____

(26) The seven digit number 112358k is divisible by 8. Find k. _____

(27) How many prime numbers, P, exist such that $40 < P < 50$? _____

(28) $5! + 4! =$ _____

(29) 112 base 3 equals _____ base 10

***(30)** $1369 \times 248 =$ _____

(31) The perimeter of a square is 10 inches. The area of this square is _____square inches

(32) Find k if $29^2 - 23^2 = 12k$. k = _____

(33) $0.111... + 0.222... + 0.333... =$ _____

(34) $(9 + 18 \times 27) \div 4$ has a remainder of _____

(35) Set A has 3 elements, B has 4 elements, and $A \cup B$ has 5 elements. $A \cap B$ has _____ elements

(36) The sum of the roots of $3x^2 + 8x - 3 = 0$ is _____

(37) $17^2 + 51^2$ = _____

(38) $\sqrt{48} - \sqrt{12} = \sqrt{x}$. Find x. _____

(39) $8\frac{3}{5} \times 8\frac{2}{5}$ = _____ (mixed number)

*(40) $\sqrt{15100}$ = _____

(41) Let $A^7 \div A^5 \times A^3 = A^k$. If $A > 1$, then k = _____

(42) The slope of a line perpendicular to the line $y = 3x - 4$ is _____

(43) $123_6 + 45_6$ = _____ 6

(44) 123×231 = _____

(45) A triangle has sides of 5, 7, and x. What is the least integral value of x? _____

(46) If $\frac{x-2}{x+3} + \frac{x+3}{x-2}$ is written as the mixed number $A\frac{B}{C}$ then B = _____

(47) If $3x - 5 > 8$ then $x >$ _____

(48) $\frac{1}{4}(35^2 - 5^2)$ = _____

(49) If $4^{(5)} = 2^{(3x)}$ then x = _____

*(50) $(\pi + e)^4$ = _____

(51) How many distinct 7 letter words, real or imaginary, can be made using the letters from the word "average"? _____

(52) $10^2 - 9^2 + 8^2 - 7^2 + \ldots + 2^2 - 1^2$ = _____

(53) If $66^2 + 54^2$ = _____

(54) The simplified coefficient of the x^2y term in the expansion of $(x - 2y)^3$ is _____

(55) 60 miles per hour = _____ feet per second

(56) The number of positive integral divisors of $4 \times 5 \times 9$ is _____

(57) If $\log_8(4x) = 2$ then x = _____

(58) $(1 - 2i)(2 - i) = a + bi$. Find a. _____

(59) ${}_5C_3$ = _____

*(60) 57 radians = _____ degrees

(61) Given the sequence 8, 11, 16, 19, 24, 27, k, 35,..., find k. _____

(62) A box contains 12 red chips, 5 white chips, and 8 blue chips. The probability of randomly selecting a blue chip is _____%

(63) $(603)^2$ = _____

(64) $\sin(45°) \times \cos(45°) \times \tan(45°)$ = _____

(65) If $f(x) = x^3 + 3x^2 + 3x + 1$, then f(3) = _____

(66) $4! \div 6!$ = _____

(67) If $f(x) = \frac{x-2}{3}$, then $f^{-1}(4)$ = _____

(68) 992×996 = _____

(69) If $A = \begin{bmatrix} 1 & 3 \\ 6 & 10 \end{bmatrix}$, then $|A|$ = _____

*(70) The perimeter of $16x^2 + 9y^2 = 144$ is P. P^2 = ____

(71) Find k, $2 \leq k \leq 6$, if $6k \cong 2 \pmod 8$. _____

(72) $F(x) = x^3 + 3x^2 + 3x + 1$. Find $f'(-1)$ = _____

(73) The horizontal asymptote of $f(x) = \frac{x}{1-2x}$ is _____

(74) Change 0.56 to a base 5 decimal. _____

(75) $\lim_{x \to \infty} \left(\frac{3x-2}{x}\right)$ = _____

(76) The radius of the circumscribed circle around a 6,8,10-right triangle is _____

(77) $\frac{4}{7} + \frac{7}{4} - 2$ = _____

(78) $\int_1^2 (2x)\ dx$ = _____

(79) $\frac{1}{6} + \frac{1}{12} + \frac{1}{20} + \frac{1}{30} + \frac{1}{42}$ = _____

*(80) $13^{(4)}$ = _____

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Number Sense Test • HS A • 2013

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(1) $511 - 115 =$ _____

(2) $88 \times 25 =$ _____

(3) $2013 \div 9 =$ _____ **(mixed number)**

(4) $115 + 2013 =$ _____

(5) $\frac{3}{5} =$ _____**%** **(decimal)**

(6) $2.4 \div 1.5 =$ _____

(7) $14^2 =$ _____

(8) $5\frac{3}{4} - 4\frac{2}{3} =$ _____ **(mixed number)**

(9) **11% of $12.00 is $** _____

***(10)** $115 + 2013 - 511 + 3102 =$ _____

(11) **Which is larger** $\frac{7}{9}$ **or 0.8?** _____

(12) $40 \times 23 - 17 \times 23 =$ _____

(13) **2 bushels =** _____ **pecks**

(14) $19 \times \frac{19}{23} =$ _____ **(mixed number)**

(15) $115 \div 25 =$ _____

(16) **The mean of 1, 5, 12, 22, and 35 is** _____

(17) $115 \times 13 =$ _____

(18) $2 + 4 + 6 + 8 + ... + 22 + 24 =$ _____

(19) $32 - 16 \div 8 + 4 \times 2 =$ _____

***(20)** $(115 + 2013) \times 511 =$ _____

(21) **A 6-element set has** _____ **subsets**

(22) $\left| 2 - 3 - 4\left|5 - 6\right| + 7\right| =$ _____

(23) **123 base 6 is equivalent to** _____ **base 10**

(24) **The multiplicative inverse of** $-1.111...$ **is** _____

(25) **If** $\frac{1}{x} - \frac{4}{5} = \frac{9}{10}$ **, then x =** _____

(26) **If 6 Qtees cost $1.50 then 21 Qtees cost $** _____

(27) $0.41666... - 0.08333... =$ _____

(28) $66^2 + 54^2 =$ _____

(29) **The length of a diagonal of a square is** $3\sqrt{5}$ **cm. The area of the square is** _____ **sq. cm.**

***(30)** $141 \times 72 + 67 \times 138 =$ _____

(31) $36_7 + 25_7 + 14_7 =$ _____ $_7$

(32) $3 + 7 + 11 + 15 + 19 + ... + 43 + 47 =$ _____

(33) $24^2 + 72^2 =$ _____

(34) **The product of the roots of** $5x^2 + 4x - 3 = 0$ **is** _____

(35) $13 \times 13 \times 13 =$ _____

(36) Let P = {t,h,e}, Q = {n,e,x,t}, and R = {t,e,r,m}. The number of distinct elements in $P \cup Q \cup R$ is _____

(37) If $\sqrt{44} + \sqrt{99} = \sqrt{x}$, then x = _____

(38) The next term of the geometric sequence, ... $\frac{1}{3}$, $\frac{1}{4}$, $\frac{3}{16}$, ... is _____

(39) If a = 5 and b = 3 then $(a + b)(a^2 - ab + b^2)$ = ___

*(40) $\sqrt{887766}$ = _____

(41) $\frac{(1+4+9+16+25)}{(1+3+6+10+15)}$ = _____

(42) If $\frac{x-5}{x+4} + \frac{x+4}{x-5}$ is written as the mixed number $A\frac{B}{C}$ then B = _____

(43) $\frac{4}{11} - \frac{19}{56}$ = _____

(44) If P is $\frac{2}{3}$ of Q and Q is $33\frac{1}{3}\%$ of R, then P is what percent of R? _____%

(45) An exterior angle of a regular hexagon has a measure of _____ degrees

(46) $\frac{1}{4}(30^2 - 8^2)$ = _____

(47) If $x + y = -3$ and $xy = -4$ then $x^3 + y^3$ = _____

(48) 12% of $466\frac{2}{3}$ = _____

(49) The absolute value difference between the sum of the roots and the product of the roots of $x^3 + x^2 - 5x + 3 = 0$ is _____

*(50) 654 log 987 = _____

(51) 44 feet per second = _____ miles per hour

(52) Given the sequence 3, 8, 11, 19, ..., 79, k, 207. Find k. _____

(53) $\frac{7\pi}{4}$ radians = _____ degrees

(54) $\log_5 \sqrt{125}$ = _____

(55) A convex hexagon has _____ distinct diagonals.

(56) The legs of a right triangle are 3 and 4. The length of the altitude to the hypotenuse is _____

(57) $(35_9 + 48_9) \div 8$ has a remainder of _____

(58) $(4 + i)^2 = a + bi$. Find a. _____

(59) 243 × 151 = _____

*(60) $3.14e \times 2.72\pi \div \frac{\sqrt{5}-1}{2}$ = _____

(61) A golf store has white balls, yellow balls, pink balls, and orange balls. How many different packs of 3 balls can the store package? _____

(62) $\frac{7}{11} + \frac{11}{7} - 2$ = _____

(63) $[2\sin(\frac{\pi}{6})\cos(\frac{\pi}{6})] \times [\tan(\frac{\pi}{6})]$ = _____

(64) The $\det\left(\begin{bmatrix} 2 & 3 \\ 1 & 4 \end{bmatrix} \times \begin{bmatrix} 4 & 3 \\ 1 & 2 \end{bmatrix}\right)$ is _____

(65) 1111 × 52 = _____

(66) If $f(x) = x^3 - 3x^2 + 3x - 1$, then f(4) = _____

(67) The first 4 digits of the decimal of $\frac{17}{90}$ is 0. _____

(68) $f(x) = x^2 + 2x + 1$ and $g(x) = x^3$. f(g(−2)) = _____

(69) The odds of winning a medal is $\frac{3}{16}$. The probability of not winning a medal is _____

*(70) 48 miles per hour = _____ feet per minute

(71) The volume of a sphere with a radius of 3 inches is $k\pi$ cubic inches. Find k _____

(72) Find k, $0 < k < 5$, if $4k - 1 \cong 1 \pmod 6$. _____

(73) If $\log_b 3 = .6$ and $\log_b x = 1.8$ then x = _____

(74) Given 2, 6, 12, 20, 30, ..., 90, k, 132, ... Find k ____

(75) The slope of the line tangent to $f(x) = x^2 - 5x + 4$ at (−1, 10) is _____

(76) The polar coordinates of the rectangular coordinates $(1, \sqrt{3})$ are $(r, k\pi)$. r = _____

(77) $\int_0^1 (2 - 3x)\,dx$ = _____

(78) The function $\frac{2x^2+5x+11}{x+1}$ has _____ asymptotes

(79) The fifth pentagonal number is _____

*(80) 28.5714 x 4285.71 = _____

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Number Sense Test • HS B • 2013

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(1) $2013 - 3102 =$ _____

(2) $28 \times 15 =$ _____

(3) $310.2 + 20.13 =$ _____ **(decimal)**

(4) $2\frac{1}{3} \div 3\frac{1}{2} =$ _____

(5) $0.875 =$ _____ **(proper fraction)**

(6) $544536 \div 9 =$ _____

(7) $6543 \times 9 - 2 =$ _____

(8) $25 \times 20 - 15 + 10 \div 5 =$ _____

(9) **2.5 gallons =** _____ **quarts**

***(10)** $21347 + 1118 + 2947 + 76 =$ _____

(11) **The GCD of 54, 48, and 32 is** _____

(12) **2013 ÷ 11 has a remainder of** _____

(13) **CMLXIV =** _____ **(Arabic Numeral)**

(14) $32 \times 17 + 15 \times 32 =$ _____

(15) $3 + 7 + 11 + 15 + ... + 31 =$ _____

(16) $\frac{15}{19} \times 15 =$ _____ **(mixed number)**

(17) **The largest prime factor of 285 is** _____

(18) $\frac{7}{12} - \frac{7}{24} - \frac{7}{36} =$ _____

(19) **Which is smaller,** -0.45 **or** $-\frac{4}{9}$**?** _____

***(20)** $8 \times 15 \times 1947 =$ _____

(21) **If 9 ★s cost $6.30 then a dozen ★s cost $** _____

(22) $37^2 + 67^2 =$ _____

(23) $\left|-9 + \left|-6 + 3\right| + 1\right| =$ _____

(24) $(21 + 34 \times 7) \div 11$ **has a remainder of** _____

(25) $9.111... - 3.333... =$ _____

(26) $253 \times 14 =$ _____

(27) $(8)^{-1} \div (4)^{-2} \times (2)^{-3} =$ _____

(28) **The sum of x and 5 gives the same result as the product of x and 5. Find x.** _____

(29) $3 + 7 + 10 + 17 + ... + 71 + 115 =$ _____

***(30)** $88 \times 42 - 64 \times 42 =$ _____

(31) $15 \times 15 \times 15 =$ _____

(32) $15^2 + 45^2 =$ _____

(33) **If** $x - y = -5$ **and** $x + y = -3$ **then** $x^2 - y^2 =$ __

(34) $f(x) = 9x^2 + 6x + 1$. $f(7) =$ _____

(35) **If** $2x^3 + 3x^2 - 11x - 6 = 0$ **and P, Q, and R are the real roots, then** $PQ + QR + PR$ **is** _____

(36) 134 base 7 is equivalent to _____ base 10

(37) $5 \times 4! - 4 \times 3! - 3 \times 2!$ = _____

(38) The next term of the arithmetic sequence, ... $\frac{2}{3}$, $\frac{7}{6}$, $\frac{5}{3}$, ... is _____

(39) If $\sqrt{150} - \sqrt{54} = \sqrt{x}$, then x = _____

*(40) 201213 ÷ 748 = _____

(41) If $x + y = 5$ and $xy = 2$ then $x^3 + y^3$ = _____

(42) $101_2 + 102_3 + 103_4$ = _____ 10

(43) $\frac{5}{8} - \frac{31}{47}$ = _____

(44) 18% of $466\frac{2}{3}$ = _____

(45) An interior angle of a regular decagon has a measure of _____ degrees

(46) The sum of the product of the roots taken two at a time of $2x^3 - 3x^2 - 4x + 5 = 0$ is _____

(47) $\frac{1}{4}(28^2 - 4^2)$ = _____

(48) The y-intercept of the line going through (2, 3) and (5, 9) is (x, y). y = _____

(49) If $\frac{x+7}{x-4} + \frac{x-4}{x+7}$ is written as the mixed number $A\frac{B}{C}$ then B = _____

*(50) 44^2 = _____

(51) $\sqrt{17424}$ = _____

(52) If two dice are rolled, the probability that the sum of the faces is greater than 10 is _____

(53) $87^2 + 62^2$ = _____

(54) ${}_5C_3 + {}_4C_2$ = _____

(55) $(6 - 5i)(5 - 6i) = (a + bi)$. Find $a + b$. _____

(56) $\sin(\frac{5\pi}{3}) \times \sin(\frac{5\pi}{3})$ = _____

(57) Let $\log_9(x^3) = \frac{3}{2}$, where $x > 0$. Find x. _____

(58) 90 miles per hour = _____ feet per second

(59) 215×152 = _____

*(60) $10e \times 10\pi \times 10\phi$ = _____

(61) $6 + 12 + 18 + 24 + ... + 48$ = _____

(62) $(333_5) + (222_5) \div 4$ has a remainder of _____

(63) A box contains black pens, red pens, blue pens, and green pens. How many different sets of 3 pens can be packaged? _____

(64) The diameter of the circumscribed circle around a 7,24,25-right triangle is _____

(65) The $\det\left(\begin{bmatrix} 1 & -2 \\ 3 & -4 \end{bmatrix} + \begin{bmatrix} 1 & 2 \\ -3 & -4 \end{bmatrix}\right)$ is = _____

(66) $18 \times \frac{19}{20}$ = _____ mixed number

(67) $\sin(\arctan(\frac{7}{24}))$ = _____

(68) $\frac{3}{8} + \frac{8}{3} - 2$ = _____

(69) If $f(x) = x^5 + 5x^4 + 10x^3 + 10x^2 + 5x + 1$, then $f(-2)$ = _____

*(70) $94 \times 96 \times 102 \times 104$ = _____

(71) 101×808 = _____

(72) $6! \div 4! + 5! \div 3! - 2! \div 1!$ = _____

(73) $g(x) = 2x + 3$ and $h(x) = 2 - 3x$. $g(h(4))$ = _____

(74) The slope of the line tangent to $f(x) = 2x^2 - x - 1$ at the point (— 1, 2) is _____

(75) If $f(x) = 2x^3 + 3x^2 - 3x - 2$, then $f''(-1)$ = _____

(76) $\int_{-1}^{1} (3x^2 - x)\,dx$ = _____

(77) $\frac{1}{30} + \frac{1}{42} + \frac{1}{56} + \frac{1}{72}$ = _____

(78) Change .111, base 2, to a base 10 fraction. _____

(79) The next term of 5, 6, 7, 9, 12, 17, ... is _____

*(80) 47.2 miles = _____ feet

2012-13 TMSCA High School Number Sense Test 6

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(1) $1206 + 2012 =$ _____

(2) $2012 - 1206 =$ _____

(3) $235 \times 14 =$ _____

(4) $1206 \div 12 =$ _____ (decimal)

(5) $2.5\% =$ _____ (proper fraction)

(6) $235 \div 9$ has a remainder of _____

(7) $12 \div 6 + 20 \times (13 - 1) =$ _____

(8) $43 \times 55 - 55 \times 23 =$ _____

(9) 40% of $(.4 + \frac{1}{4}) =$ _____

*(10) $213 + 4711 + 1829 - 47 =$ _____

(11) $25 \times 248 =$ _____

(12) The LCM of 72 and 54 is _____

(13) Two-thirds of a yard is equivalent to _____ inches

(14) $27 \times 72 =$ _____

(15) $31 + 25 + 19 + 29 + 23 + 17 =$ _____

(16) The number of positive integral divisors of 100 is _____

(17) 12 is what % 20? _____%

(18) $23 \times \frac{23}{25} =$ _____ (mixed number)

(19) $29^2 =$ _____

*(20) $1206 \times 2012 =$ _____

(21) The multiplicative inverse of $-\frac{2}{3}$ is _____

(22) $14^2 + 42^2 =$ _____

(23) $|1 - 3| - |6 + 10| + |15 - 21| =$ _____

(24) 40% of 40 minus 40 is _____

(25) A pentagon has _____ distinct diagonals

(26) If $x + y = 5$ and $y - x = 3$ then $y =$ _____

(27) $0.125 \div 0.625 =$ _____

(28) $0.151515... =$ _____ (fraction)

(29) $136 \times 19 =$ _____

*(30) $21^4 =$ _____

(31) The next term of the arithmetic sequence, $\cdots \frac{1}{3}, \frac{7}{12}, \frac{5}{6}, \cdots$ is _____

(32) If 18 ★'s cost \$6.90 then 12 ★'s cost \$ _____

(33) The sum of the positive integral divisors of 40 is __

(34) If $f(x) = x^2 + 8x + 16$ then $f(4)$ is _____

(35) $54^2 + 35^2 =$ _____

(36) $3 \times 4! + 12 \times 3! =$ _____

(37) 123 base 4 is equivalent to _____ base 10

(38) If $\sqrt{50} - \sqrt{18} = \sqrt{x}$ then $x =$ _____

(39) $2 + 4 + 6 + 10 + 16 + \ldots + 68 + 110 =$ _____

*(40) $1206 \times 2012 \div 13 =$ _____

(41) A triangle has sides of 12, 7, and x. What is the greatest integral value of x? _____

(42) $\frac{1}{4}(36^2 - 4^2) =$ _____

(43) $A^3 \times A^k \div A^4 = A^5$. If $A > 1$, then $k =$ _____

(44) Find the slope of a line containing the points $(-5, 5)$ and $(3, -3)$. _____

(45) $234_7 - 56_7 =$ _____ $_7$

(46) If $\frac{x+5}{x-5} + \frac{x-5}{x+5}$ is written as the mixed number $A\frac{B}{C}$ then $B =$ _____

(47) If $9^{(x-3)} = 81$ then $x =$ _____

(48) The product of the roots minus the sum of the roots of $3x^3 + 4x^2 - 17x - 6 = 0$ is _____

(49) An interior angle of a regular pentagon has a measure of _____ degrees

*(50) $\frac{\sqrt{5}-1}{2} \times (1000) =$ _____

(51) $132 \times 214 =$ _____

(52) ${}_6C_4 =$ _____

(53) 9% of $833\frac{1}{3} =$ _____

(54) $-11^2 + 10^2 - 9^2 + 8^2 - \ldots - 1^2 =$ _____

(55) If $\log_9(x^3) = 1.5$ then $x =$ _____

(56) If P varies directly with Q and $P = 8$ when $Q = 4$, find P when $Q = 5$. _____

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

(58) How many distinct 6 letter words, imaginary or real can be made using the letters *d,e,g,r,e,e* ? ____

(59) The simplified coefficient of the x^2y^2 term in the expansion of $(2x - y)^4$ is _____

*(60) $6\frac{1}{4}$ radians = _____ degrees

(61) $(233_4)(322_4) \div 3$ has a remainder of _____

(62) $(\sin 135°)(\cos 135°)(\tan 135°) =$ _____

(63) $2 - (\frac{11}{12} + \frac{12}{11}) =$ _____

(64) If $\log_b 2 = .25$ and $\log_b x = 1$ then $x =$ _____

(65) If $A = \begin{bmatrix} 4 & 1 \\ 3 & 2 \end{bmatrix}$ and $B = \begin{bmatrix} 2 & 3 \\ 1 & 4 \end{bmatrix}$ then $|A + B| =$ ____

(66) A bank contains pennies, nickels, and dimes. How many different sets of 3 coins can be formed? ____

(67) $g(x) = x^2 + 1$ and $h(x) = 1 - x^2$. $g(h(2)) =$ _____

(68) The radius of the circumscribed circle around a 5,12,13-right triangle is _____

(69) The Greatest Integer Function is written as $f(x) = [x]$. Find $\left[\sqrt{8} \div \sqrt{2}\right]$. _____

*(70) $729 + 512 + 343 + \ldots + 27 + 8 + 1 =$ _____

(71) $6! \div 3! - 4! \div 2! =$ _____

(72) The vertical asymptote of $f(x) = \frac{2x-1}{3x+4}$ is _____

(73) $101 \times 123 =$ _____

(74) $\lim_{x \to 5} \left(\frac{x^2-25}{x-5}\right) =$ _____

(75) Given the sequence 4, 9, 25, 49,..., 289, k, 529,... find k. _____

(76) Change 0.31 base 4 to a base 10 fraction. _____

(77) $\int_0^2 (x - 2)\, dx =$ _____

(78) Find k, $0 \leq k \leq 8$, if $4k - 5 \cong 6 \pmod 7$. _____

(79) $G(x) = x^4 - 3x^2 + 5x - 7$. $G'(1) =$ _____

*(80) $416.666\ldots \times 1430 =$ _____

2012-13 TMSCA High School Number Sense Test 13

Name _____ 9th 10th 11th 12th Final _____ _____

High School _____ 1A 2A 3A 4A 5A 2nd _____ _____

1st _____ _____

Score Initials

Read directions carefully before beginning test

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STOP -- WAIT FOR SIGNAL!

(1) $3913 + 3193 =$ _____

(2) $309 - 903 =$ _____

(3) $44\% =$ _____ (proper fraction)

(4) $3913 \div 9 =$ _____ (mixed number)

(5) $26^2 =$ _____

(6) $\frac{3}{5} \div \frac{9}{25} =$ _____

(7) $40 + 32 \div 24 \times 16 - 8 =$ _____

(8) $30.9 + 20.13 =$ _____ (decimal)

(9) $3\frac{5}{7} \times 2\frac{4}{5} =$ _____

*(10) $3913 + 309 + 2013 =$ _____

(11) $37 \times 43 =$ _____

(12) $2 \text{ yds} \times 3 \text{ yds} \times 4 \text{ yds} =$ _____ cubic feet

(13) $4\frac{7}{11} - 2\frac{1}{3} =$ _____ (mixed number)

(14) $25 \times 2013 =$ _____

(15) 2.4 is what % of 60? _____%

(16) The average of 23, 57 and 11 is _____

(17) The LCM of 22, 33, and 44 is _____

(18) MMLIII + CCXIII = _____ (Arabic Numeral)

(19) Which is smaller, $\frac{121}{25}$ or $\frac{21}{5}$? _____

*(20) $201213 \div 309 =$ _____

(21) $13 \times 542 =$ _____

(22) $|-1-1|-2|3-5|-8 =$ _____

(23) How many prime numbers, P, exist such that $50 < P < 60$? _____

(24) $44 \times \frac{44}{51} =$ _____ (mixed number)

(25) $24^2 + 72^2 =$ _____

(26) The total number of 1-element subsets and 4-element subsets of the set {r,o,u,n,d} is _____

(27) If 25 ★s cost \$42.00 then 10 ★s cost \$ _____

(28) Three-fourths of what number gives the same results as that number minus 5? _____

(29) The 10th triangular number is _____

*(30) $7777 \times 888 =$ _____

(31) $234_6 \times 5_6 =$ _____ $_6$

(32) If $4x - 5 = 11$, then $6x + 1 =$ _____

(33) The next term of the arithmetic sequence, $\ldots \frac{3}{4}, \frac{19}{20}, 1\frac{3}{20}, \ldots$ is _____

(34) $5! - (4! + 3!) =$ _____

(35) $12\frac{1}{6} \times 6\frac{5}{6} =$ _____ (mixed number)

(36) How many distinct elements are in $\{p,o,i,n,t\} \cup \{l,i,n,e\} \cap \{p,l,a,i,n\}$? _____

(37) Find k if $78^2 - 72^2 = 6k$. k = _____

(38) $3 + 7 + 10 + 17 + 27 + \ldots + 115 + 186 =$ _____

(39) The units digit of 8^8 is _____

*(40) $31.25\% \times 481 \div \frac{1}{16} =$ _____

(41) Find the slope of a line perpendicular to the line containing the points (2, 4) and (— 3, 6). _____

(42) If $3 + 6x > 10$ then $x >$ _____

(43) If $8 \times 8^3 \div 8^k = 8^7$, then k = _____

(44) The sum of roots minus the product of the roots of $8x^3 + 2x^2 - x = 0$ is _____

(45) 12% of $566\frac{2}{3} =$ _____

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

(47) If $\frac{x-11}{x+14} + \frac{x+14}{x-11}$ is written as the mixed number $A\frac{B}{C}$ then B = _____

(48) A triangle has sides of 7, 24, and x. What is the greatest integral value of x? _____

(49) $\frac{1}{4}(43^2 - 7^2) =$ _____

*(50) $271.8 \times (e)^3 =$ _____

(51) If $\log_x (1{,}728) = 3$ then x = _____

(52) 440 feet per second = _____ miles per hour

(53) $76^2 + 53^2 =$ _____

(54) $(4 + 7i)(3 - 5i) = a + bi$. Find a — b. _____

(55) $12^8 \div 11$ has a remainder of _____

(56) If $\frac{2x}{7}$ has a remainder of 3 and $\frac{2y}{7}$ has a remainder of 4 then $\frac{xy}{7}$ has a remainder of _____

(57) $135 \times 152 =$ _____

(58) How many ways can 5 people be seated 3 at a time in a row of 3 chairs? _____

(59) If A is 40% more than B and B is 40% more than C, then A is _____ % more than C.

*(60) $12^3 \times 8^2 \div 4 =$ _____

(61) The determinant of $\begin{bmatrix} 1 & 1 & 2 \\ 2 & 1 & 3 \\ 3 & 1 & 4 \end{bmatrix}$ is _____

(62) $\sqrt{7.3441} =$ _____ (decimal)

(63) $f(x) = x^3 - 2$ and $g(x) = 3 + x^2$. $g(f(-2)) =$ _____

(64) $(234_6)(321_6) \div 5$ has a remainder of _____

(65) The area of the circumscribed circle around a 6,8,10-right triangle is $k\pi$. Find k. _____

(66) $\frac{5}{9} + 1.8 - \frac{16}{45} =$ _____

(67) A flower shop has tulips, daiseys, roses, and lilies. How many different packages of 3 flowers can be made? _____

(68) Les Cash has a bag containing 10 nickels and k dimes. How many coins are in the box if the odds of randomly drawing a dime is $\frac{3}{5}$? _____

(69) $\sin(120°) \times \tan(135°) \times \cos(150°) =$ _____

*(70) $(7! \times 6!) \div (5! \times 4!) \div (3! \times 2!) =$ _____

(71) $34 \times 11111 =$ _____

(72) $F(x) = x^4 + 4x^3 + 6x^2 + 4x + 1$. $F'(1) =$ _____

(73) If $\arcsin(\cos(\frac{\pi}{6})) = k\pi$, then k = _____

(74) The graph of $y = \frac{x^2 - 2x - 1}{2x - 2}$ has ____ asymptote(s)

(75) Given the sequence 1,5,14,30,55,k,140,... . k = ____

(76) $\frac{1}{18} + \frac{1}{36} + \frac{1}{60} =$ _____

(77) $\int_2^4 (\frac{x}{2} - 4)\,dx =$ _____

(78) Change $\frac{38}{125}$ to a base 5 decimal. _____

(79) $(909)^2 =$ _____

*(80) 5.5 rods + 3 yards + 12 feet = _____ inches

2012-13 TMSCA High School State Meet

Final _____ _____

Contestant's Number _____ 2nd _____ _____

1st _____ _____

Score Initials

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STOP -- WAIT FOR SIGNAL!

(1) $2013 - 201 + 13 =$ _____

(2) $3.2 \times 2.3 =$ _____ (decimal)

(3) $\frac{7}{9} \div \frac{14}{27} =$ _____

(4) $1\frac{1}{16}\% =$ _____ (decimal)

(5) $6 - 5 \times 4 \div 3 + 2 =$ _____

(6) $\frac{7}{80} =$ _____ % (decimal)

(7) $75 \times 44 =$ _____

(8) Which is larger $\frac{7}{12}$ or $\frac{9}{16}$? _____

(9) $18^2 =$ _____

*(10) $94 \times 85 - 76 =$ _____

(11) $13 \times 321 =$ _____

(12) 11235813 ÷ 6 has a remainder of _____

(13) $-2 + |-1| - |-3 + 4| =$ _____

(14) LCM(35, 55) × GCD(35, 55) = _____

(15) 11% of 24 plus 24% of 11 is _____

(16) How many positive integers divide 63? _____

(17) CDXLIV + MDLXIX = _____ (Arabic Numeral)

(18) $1\frac{2}{3}$ square yards = _____ square inches

(19) $7 + 12 + 17 + 22 + \ldots + 52 + 57 =$ _____

*(20) 224488 ÷ 111 = _____

(21) $1\frac{2}{3} \times 2\frac{3}{4} =$ _____ (mixed number)

(22) If 4 POPs cost $8.88 then 10 POPs cost $ _____

(23) 3663 ÷ 111 = _____

(24) Truncate $\sqrt{8}$ to the tenths place. _____

(25) If $f(x) = x^2 - 8x + 16$ then f(24) is _____

(26) If $3 - 4x = 5$ then $6x - 7 =$ _____

(27) 43 base ten is equivalent to _____ base six

(28) $(15 + 14 \times 13) \div 12$ has a remainder of _____

(29) $21 \times 21 + 63 \times 63 =$ _____

*(30) $\sqrt{1234} \times 56 =$ _____

(31) {T,M,S,C,A,2,0,1,3} has _____ proper subsets

(32) The multiplicative inverse of 1.8333... is _____

(33) The next term of the geometric sequence, $\ldots \frac{2}{5}, \frac{1}{4}, \frac{5}{32}, \ldots$ is _____

(34) $3 \times 2! + 4 \times 3! + 5 \times 4! =$ _____

(35) R_1 and R_2 are the roots of $2x^2 - 3x = 5$. Find $(R_1 + R_2)(R_1 \times R_2)$. _____

(36) 0.1242424... = _____ (proper fraction)

(37) $4^{-2} + 3^0 + 2^2 =$ _____

(38) $3 + 6 + 9 + 15 + 24 + \ldots + 102 + 165 =$ _____

(39) Set A has 5 elements, set B has 6 elements, and $A \cup B$ has 7 elements. $A \cap B$ has _____ elements.

*(40) $316 \times 2013 =$ _____

(41) If $9^6 \times 9^{-4} \div 9^{-2} = 9^k$ then k = _____

(42) The distance between the points (— 3, 4) and (4, — 3) is $7\sqrt{d}$. Find d. _____

(43) $86^2 + 52^2 =$ _____

(44) $113 \times 106 =$ _____

(45) The sum of the roots plus the product of the roots of the equation $8x^3 - 5x^2 - 26x + 15 = 0$ is _____

(46) $\frac{1}{4}(64^2 - 36^2) =$ _____

(47) The sum of the measures of an interior angles of a regular heptagon is _____°

(48) Find the area of a triangle with side lengths of 11 cm, 60 cm and 61 cm. _____ cm^2

(49) 90 miles per hour equals _____ feet per second

*(50) $\frac{1+\sqrt{5}}{2} \times 5 \times 10^3 =$ _____

(51) A regular polygon with a central angle of 72° has a perimeter of 60". Each side is _____ inches

(52) $\sqrt{7744} =$ _____

(53) If $\frac{x-7}{x+8} + \frac{x+8}{x-7}$ is written as the mixed number $A\frac{B}{C}$ then B = _____

(54) 12% of $416\frac{2}{3} =$ _____

(55) $(3 + 4i)^2 = a + bi$. Find a + b. _____

(56) If A is 20 more than B and C is 10 less than A, then C is how much more than B? _____

(57) If $\frac{3x}{5}$ has a remainder of 4 and $\frac{3y}{5}$ has a remainder of 1 then $\frac{xy}{5}$ has a remainder of _____

(58) ${}_8C_4 =$ _____

(59) $344 \times 522 =$ _____

*(60) $8^3 \times 5^3 \div 3^3 =$ _____

(61) $404 \times 111 =$ _____

(62) If $h(x) = 4x^2 - 2x - 1$, then $h(h(\frac{1}{2})) =$ _____

(63) A bag contains 5 red M's, 4 brown M's, and k green M's. Find k if the probability of randomly drawing a red M is $33\frac{1}{3}$%. _____

(64) $\sin(\frac{7\pi}{6}) + \cos^2(\frac{11\pi}{6}) + \tan(\frac{9\pi}{4}) =$ _____

(65) $A = \begin{bmatrix} 1 & 2 \\ 5 & 6 \end{bmatrix}$ and $B = \begin{bmatrix} 3 & 4 \\ 7 & 8 \end{bmatrix}$. Find $|A - B|$. _____

(66) The circumference of the circumscribed circle around a 20,21,29-right triangle is $k\pi$. k = _____

(67) $(2468_9 + 1357_9) \div 8$ has a remainder of _____

(68) $\frac{5}{6} + 1.2 - 2 =$ _____

(69) If $\log_b 4 = .5$ and $\log_b x = 2$ then x = _____

*(70) $(4 + 8 + 12 + \ldots + 32 + 36)^2 =$ _____

(71) A store has red, blue, green, brown, purple, and yellow crayons. How many different sets of four crayons can the store sell? _____

(72) $\sqrt{97969} =$ _____

(73) $f(x) = x^4 + 4x^3 + 6x^2 + 4x + 1$. Find $f'(-1) =$ ___

(74) The total surface area of a cube with a lateral surface area of 196 cm^2 is _____ cm^2

(75) Given: 3,5,8,11,16,19,...,32,k,42,... . Find k. _____

(76) $F(x) = x + \frac{1}{x}$ has _____ asymptotes

(77) $\int_1^2 x^{(-3)}\, dx =$ _____

(78) $\frac{1}{10} + \frac{1}{40} + \frac{1}{88} + \frac{1}{154} =$ _____

(79) The 8th term of the Lucas sequence 2,1,3,4,... is __

*(80) 91.666... x 358 = _____

The University Interscholastic League
Number Sense Test • HS District 1 • 2013

Final _____ _____

Contestant's Number _____ 2nd _____ _____

1st _____ _____

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(1) $323 + 2013 =$ _____

(2) $2013 - 323 =$ _____

(3) $318 \times 9 =$ _____

(4) $2013 \div 6 =$ _____ (decimal)

(5) $18^2 =$ _____

(6) $2357 \div 9$ has a remainder of _____

(7) $2\frac{1}{3} + 4\frac{2}{5} =$ _____ (mixed number)

(8) $3 - 2 \times 3 + 20 \div (1 - 3) =$ _____

(9) $4\frac{3}{4}\% =$ _____(proper fraction)

***(10)** $1123 - 58 + 1321 =$ _____

(11) $323 \times 13 =$ _____

(12) $\frac{16}{21} \times 16 =$ _____ (mixed number)

(13) 22 is what % 40? _____%

(14) $4\frac{1}{5} - 2\frac{2}{3} =$_____ (mixed number)

(15) $3 + 8 + 13 + 18 + ... + 33 + 38 =$ _____

(16) The GCF of 57, 76, and 95 is _____

(17) One-fourth of a gallon is _____ fluid ounces

(18) MCDLXIV = _____ (Arabic Number)

(19) $2013 \div 25 =$ _____ (decimal)

***(20)** $321 \times 2013 =$ _____

(21) $1\frac{4}{7} \times 1\frac{1}{6} =$_____ (mixed number)

(22) $4884 \div 111 =$ _____

(23) The total number of 1-element subsets and 3-element subsets of the set {m,a,t,h} is _____

(24) $13^2 + 39^2 =$ _____

(25) $6.08333... - 12.1666... =$ _____

(26) Truncate $100\sqrt{3}$ to a whole number _____

(27) How many prime numbers, P, exist such that $30 < P < 50$? _____

(28) 70% of 70 minus 70 = _____

(29) $4 + 5 + 9 + 14 + 23 + ... + 97 + 157 =$ _____

***(30)** $222 \times 88 + 92 \times 218 =$ _____

(31) $72^2 + 13^2 =$ _____

(32) $51_6 - 42_6 + 33_6 =$ _____ 6

(33) If $1\frac{1}{2}$ FRACS cost \$1.20 then 9 FRACS cost \$ ____

(34) If $x - y = 5$ and $x + y = -8$ then $x^2 - y^2 =$ _____

(35) $4! - 3! - 2! - 1! - 0! =$ _____

(36) How many distinct elements are in $\{e,v,i,l\} \cup (\{p,r,i,m,e\} \cap \{n,u,m,b,e,r\})$? _____

(37) If $f(x) = 4x^2 - 12x + 9$ then $f(24)$ is _____

(38) The next term of the geometric sequence, ... 4.5, 1.5, 0.5, ... is _____

(39) $3\frac{1}{5} \div 2\frac{2}{15}$ = _____ (mixed number)

*(40) $\sqrt{1361015}$ = _____

(41) $777\frac{7}{9}\%$ of 27 = _____

(42) The slope of a line perpendicular to the line $6 = 5x - 4y$ is _____

(43) $A^6 \times A^{-2} \div A^{-5} = A^k$ and $A > 1$. Find k. _____

(44) The angle supplementary to an interior angle of a regular pentagon has a measure of _____ degrees

(45) If $16^{(x+4)} = 64$ then x = _____

(46) If $\frac{4-x}{x+7} + \frac{x+7}{4-x}$ is written as the mixed number $A\frac{B}{C}$ then B = _____

(47) The roots of $x^3 + x^2 - 5x + 3 = 0$ are P, Q, & R. Find $(P + Q + R)(PQ + QR + PR)(PQR)$. _____

(48) $\frac{1}{10} + \frac{1}{40} + \frac{1}{88}$ = _____

(49) $\frac{1}{4}(54^2 - 46^2)$ = _____

*(50) $\left(27\pi + 31e\right)^2$ = _____

(51) How many distinct 7 letter words, real or imaginary, can be made using the letters from the word "letters"? _____

(52) 48 miles per hour = _____feet per second

(53) 543×123 = _____

(54) $\frac{13}{15} + \frac{15}{13} - 2$ = _____

(55) If P varies inversely with Q and P = 12 when Q = 3, find P when Q = 9. _____

(56) The number of positive integral divisors of $8 \times 10 \times 25$ is _____

(57) If $\log_6(9x) = 3$ then x = _____

(58) If $\frac{3x}{8}$ has a remainder of 4 and $\frac{3y}{8}$ has a remainder of 2 then $\frac{xy}{8}$ has a remainder of _____

(59) ${}_7P_2 \div {}_7C_2$ = _____

*(60) 64 radians = _____ degrees

(61) The first 4 digits of the decimal of $\frac{31}{99}$ is 0. _____

(62) $(567_8) + (432_8) \div 7$ has a remainder of _____

(63) The radius of the circumscribed circle around a 9,40,41-right triangle is _____

(64) $\sin(120°) \times \cos(150°) \times \tan(135°)$ = _____

(65) $g(x) = 2x + 3$ and $h(x) = 4 - 5x$. $h(g(-2))$ = _____

(66) $\frac{6\pi}{5}$ radians = _____ degrees

(67) If A is 30 less than B and B is 20 more than C, then A is how much less than C? _____

(68) A bag contains ♣s, ♥s, ♠s, ★s, and ●s. How many different sets of 4 of these can be formed? _____

(69) Given the sequence 2, 6, 12, 20, 30, ... 110, k, 156,..., find k. _____

*(70) The area of $7x^2 + 14y^2 = 98$ is A. A^2 = _____

(71) $f(x) = x^4 + 4x^3 + 6x^2 + 4x + 1$. Find $f'(1)$ = _____

(72) $(4! + 5!) \div 6!$ = _____

(73) Change $\frac{44}{125}$ to a base 5 decimal. _____

(74) $\sqrt{55225}$ = _____

(75) The side of a cube with a lateral surface area of 324 cm^2 is _____ cm

(76) If $\sqrt{108} + \sqrt{75} = \sqrt{x}$ then x = _____

(77) $\lim_{x \to -\infty} \left(\frac{x+7}{3x+5}\right)$ = _____

(78) $\int_0^{\pi} \sin(x)\,dx - \int_{\pi}^{2\pi} \sin(x)\,dx$ = _____

(79) The 4th triangular number plus the 4th pentagonal number is _____

*(80) 4 bushels + 32 pecks + 64 quarts = _____ pints

The University Interscholastic League
Number Sense Test • HS District 2 • 2013

Final _____ _____

Contestant's Number _____ 2nd _____ _____

1st _____ _____

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(1) $2013 - 330 =$ _____

(2) $2013 + 330 =$ _____

(3) $325 \div 9 =$ _____ **(mixed number)**

(4) $2013 \times 4 =$ _____

(5) $5\frac{3}{5} =$ _____%

(6) $6\frac{2}{7} - 3\frac{1}{8} =$ _____ **(mixed number)**

(7) $3 - 10 \times 2 + 5 \div (2 + 3) =$ _____

(8) $12^3 =$ _____

(9) $13610 \div 6$ has a remainder of _____

***(10)** $34711 - 1829 + 4776 =$ _____

(11) $331 \times 13 =$ _____

(12) $5\frac{4}{5} + 3\frac{3}{4} =$ _____ **(mixed number)**

(13) $54 + 45 + 36 + 50 + 41 + 32 =$ _____

(14) The largest prime factor of 399 is _____

(15) 5 yards + 5 feet + 5 inches = _____ inches

(16) MCDLXIV = _____ **(Arabic Number)**

(17) $2013 \div 5 =$ _____ **(decimal)**

(18) The arithmetic mean of 3, 30, 20, and 13 is _____

(19) The LCM of 105 and 180 is _____

***(20)** $33120 \div 13 =$ _____

(21) $2\frac{7}{10} \div \frac{12}{25} =$ _____ **(mixed number)**

(22) $|1 + 2| - |3 - 4| + |7 - 11| =$ _____

(23) 175 base 10 is equivalent to _____ base 8

(24) $27 \times \frac{27}{31} =$ _____ **(mixed number)**

(25) A nonagon has _____ distinct diagonals

(26) The next term of the arithmetic sequence, ... $2\frac{1}{4}, \frac{3}{4}, -\frac{3}{4}, -2\frac{1}{4}$, ... is _____

(27) If 4.5 DECIS cost $15.90 then 6 DECIS cost $ ____

(28) Five less than a number has the same value as the number divided by 3. What is the number? _____

(29) $(85 \times 32 - 11) \div 7$ has a remainder of _____

***(30)** $1000\sqrt{5} + 100\sqrt{3} =$ _____

(31) $21^2 + 63^2 =$ _____

(32) $213_9 - 47_9 - 11_9 =$ _____ 9

(33) 0.1666... + 0.666... + 1.666... = _____

(34) R_1 and R_2 are the roots of $3x^2 - 2x - 21 = 0$. Find $(R_1 + R_2)(R_1 \times R_2)$. _____

(35) If $x = 12$ and $y = -10$ then $x^2 - 2xy + y^2 =$ _____

(36) How many distinct elements are in $(\{t,e,x,a,s\} \cup \{u,n,i,v\}) \cap \{a,u,s,t,i,n\}$? _____

(37) 75 miles per hour = _____ feet per second

(38) $2 + 7 + 9 + 16 + 25 + \ldots + 107 + 173 =$ _____

(39) $5\frac{1}{4} \times 3\frac{5}{7} =$ _____ (mixed number)

***(40)** $678 \times 54 + 46 \times 786 =$ _____

(41) If $8^{(4)} = 4^{(2x)}$ then x = _____

(42) An interior angle of a regular hexagon has a measure of $k\pi$ radians. Find k. _____

(43) $\frac{29}{43} - \frac{7}{11} =$ _____

(44) $\frac{1}{4}(45^2 - 15^2) =$ _____

(45) A triangle has sides of 11, 14, and x. What is the greatest integral value of x? _____

(46) $67^2 + 64^2 =$ _____

(47) The slope of the line going through the points (2, 3) and (5, 9) is _____

(48) If $\frac{x+9}{x-8} + \frac{x-8}{x+9}$ is written as the mixed number $A\frac{B}{C}$ then B = _____

(49) $\sqrt{6889} =$ _____

***(50)** 345 log 9876 = _____

(51) The product of the simplified coefficients of the x^3y and xy^3 terms in the expansion of $(x + y)^4$ is _____

(52) 21% of $666\frac{2}{3} =$ _____

(53) ${}_6C_4 \div {}_6C_2 =$ _____

(54) $(123_8 + 456_8) \div 7$ has a remainder of _____

(55) $(3 - 2i)(2 + 3i) = a + bi$. Find $a + b$. _____

(56) The 8th triangular number is _____

(57) $15^6 \div 12$ has a remainder of _____

(58) If P varies directly with Q and P = 18 when Q = 4, find P when Q = 3. _____

(59) $245 \times 331 =$ _____

***(60)** $23^2 \times 32^2 =$ _____

(61) If $\frac{2x}{5}$ has a remainder of 4 and $\frac{2y}{5}$ has a remainder of 1 then $\frac{xy}{5}$ has a remainder of _____

(62) $21 \times \frac{22}{23} =$ _____ mixed number

(63) $g(x) = (x! - 3)$ and $h(x) = x \div 7$. $h(g(4)) =$ _____

(64) The odds of losing the game is $\frac{5}{8}$. The probability of winning a the game is _____

(65) If A is 75% of B and B is $66\frac{2}{3}$% of C, then C is what percent of A? _____%

(66) The first 4 digits of the decimal of $\frac{39}{90}$ is 0. _____

(67) $(802)^2 =$ _____

(68) The diameter of the circumscribed circle around a right triangle with legs of 11" and 60" is _____"

(69) Given the sequence 1, 3, 7, 13, 21, ... 57, k, 91,..., find k. _____

***(70)** 24 days + 60 hrs + 60 min = _____ seconds

(71) A teacher has blue pens, black pencils, red markers, and white chalk. How many different sets of 4 of these items can the teacher pass out? _____

(72) $F(x) = (x + 1)^5$. Find $f'(-2) =$ _____

(73) $F(x) = x + \frac{2}{(x+3)}$ has how many asymptotes? ____

(74) $53 \times 1111 =$ _____

(75) $\frac{1}{8} + \frac{1}{24} + \frac{1}{48} + \frac{1}{80} =$ _____

(76) Change $\frac{15}{16}$ to a base 4 decimal. _____ 4

(77) The Greatest Integer Function is written as $f(x) = [x]$. Find $\left[\sqrt{6} + \sqrt{3}\right]$. _____

(78) $\int_{\pi}^{2\pi} \sin(3x)\,dx =$ _____

(79) $\sqrt{24025} =$ _____

***(80)** 14,320 degrees = _____ radians

The University Interscholastic League
Number Sense Test • HS Regional • 2013

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.

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STOP -- WAIT FOR SIGNAL!

(1) $41813 + 31914 =$ _____

(2) $25 \times 64 =$ _____

(3) $3181 - 1913 =$ _____

(4) $1819 \div 4 =$ _____ (decimal)

(5) $4192013 \div 9$ has a remainder of _____

(6) $25^2 =$ _____

(7) $7\frac{5}{6} - 5\frac{3}{4} =$ _____ (mixed number)

(8) $4 \times (8 - 12) \div 16 + 20 =$ _____

(9) $8\frac{3}{8}\% =$ _____(proper fraction)

***(10)** $41718 - 1920 + 13 =$ _____

(11) $313 \times 13 =$ _____

(12) $\frac{14}{17} \times 14 =$ _____ (mixed number)

(13) The LCM of 48 and 84 is _____

(14) $6\frac{7}{8} + 4\frac{5}{6} =$ _____ (mixed number)

(15) How many positive integers divide 108? _____

(16) MMCDLXXVII = _____ (Arabic Number)

(17) Three-eighths of a gallon is _____ fluid ounces

(18) 44 is what % 80? _____%

(19) The average of 45, 87 and 61 is _____

***(20)** $1942013 \div 123 =$ _____

(21) The multiplicative inverse of $-2\frac{3}{4}$ is _____

(22) $(11 + 23 \times 5) \div 8$ has a remainder of _____

(23) If $3x + 4 = 7$ then $5 - 6x =$ _____

(24) $75^2 + 25^2 =$ _____

(25) 60% of 70 minus 80 is _____

(26) $0.434343... - 0.101010... =$ _____

(27) 147 base 10 is equivalent to _____ base 9

(28) $1\frac{3}{5} \div 1\frac{1}{15} =$ _____ (mixed number)

(29) If 4 ♦s cost \$16.20 then 10 ♦s cost \$ _____

***(30)** $\sqrt{4490} \times 63 =$ _____

(31) If $a = 7$ and $b = 6$ then $(a + b)(a^2 + 2ab + b^2) =$ _____

(32) $123_4 \div 3_4 =$ _____ 4

(33) $2\frac{1}{3} \times 3\frac{1}{2} =$ _____ (mixed number)

(34) $(5! + 3! + 1!) - (4! + 2! + 0!) =$ _____

(35) Find k if $89^2 - 83^2 = 3k$. $k =$ _____

(36) The area of a square is 10.24 cm^2. The perimeter of this square is _____ cm

(37) $1 + 5 + 6 + 11 + 17 + ... + 118 + 191 =$ _____

(38) Let R = {r,i,g,h,t}, S = {s,q,u,a,r,e}, and T = {t,r,i,a,n,g,l,e}. The number of distinct elements in $(R \cap T) \cup S$ is _____

(39) The next term of the arithmetic sequence, ... $2\frac{1}{4}, \frac{3}{4}, -\frac{3}{4}, -2\frac{1}{4}$ ... is _____

***(40)** $\sqrt{918273} =$ _____

(41) $\frac{1}{4}(17^2 - 43^2) =$ _____

(42) $\frac{4}{7} - \frac{21}{34} =$ _____

(43) If $\frac{x-12}{x+15} + \frac{x+15}{x-12}$ is written as the mixed number $A\frac{B}{C}$ then B = _____

(44) $\frac{1}{18} + \frac{1}{54} + \frac{1}{108} =$ _____

(45) The number of sides of a regular polygon with an interior angle measure of 144° is _____

(46) Point P(— 1, k) lies on the line going through (2, 3) and (5, 9). k = _____

(47) 18% of $466\frac{2}{3} =$ _____

(48) The roots of $2x^3 + 3x^2 - 3x - 2 = 0$ are P, Q, & R. Find $(P + Q + R)(PQ + QR + PR)(PQR)$. _____

(49) 105 miles per hour = _____ feet per second

***(50)** $\frac{1+\sqrt{5}}{2} \times \pi \times 10^4 =$ _____

(51) $\left(\frac{7}{11} + \frac{11}{7}\right) \div 2 =$ _____

(52) If $\log_9(x) = 1.5$ then x = _____

(53) $75^2 + 43^2 =$ _____

(54) ${}_8C_4 =$ _____

(55) The number of positive integral divisors of $32 \times 81 \times 64$ is _____

(56) $14^6 \div 8$ has a remainder of _____

(57) If A is 40 more than B and C is 60 less than A, then C is how much less than B? _____

(58) A box of colored pencils contains 6 red, 9 black, and 3 green. The probability of randomly selecting a red or a green pencil is _____%

(59) $(4 - 5i)(3 + 2i) = a + bi$. Find $a + b$. _____

***(60)** 42.5 radians = _____ degrees

(61) If $\frac{3x}{5}$ has a remainder of 2 and $\frac{3y}{5}$ has a remainder of 1 then $\frac{xy}{5}$ has a remainder of _____

(62) $241 \times 352 =$ _____

(63) The first 4 digits of the decimal of $\frac{427}{990}$ is 0._____

(64) $A = \begin{bmatrix} 2 & -3 \\ 3 & 2 \end{bmatrix}$ and $B = \begin{bmatrix} -1 & 4 \\ 4 & 1 \end{bmatrix}$. Find $|AB|$. _____

(65) A bank contains pennies, nickels, dimes, quarters and half-dollars. How many different sets of three coins can be formed? _____

(66) $\sin(135°) \times \cos(225°) \times \tan(315°) =$ _____

(67) $g(x) = -x^2$ and $h(x) = 1 - 2x$. $g(h(2)) =$ _____

(68) The diameter of the circumscribed circle around a 5,12,13-right triangle is _____

(69) $4! \times 5! \div 6! =$ _____

***(70)** $11^{(4)} =$ _____

(71) $72 \times 1111 =$ _____

(72) $F(x) = (x - 1)^6$. Find $F'(3) =$ _____

(73) $|3 - 2| - |5 - 7| - |12 - 19| =$ _____

(74) Change 0.102 base 3 to a base 10 fraction. _____

(75) $\int_0^{\frac{\pi}{4}} \cos(2x)\,dx =$ _____

(76) Given: 1,3,3,5,7,11,...,43,k,111,... . Find k. _____

(77) The sixth hexagonal number is _____

(78) $49 \times \frac{50}{51} =$ _____ mixed number

(79) $\sqrt{1234321} =$ _____

***(80)** 16 gallons + 8 quarts + 4 pints = _____ cups

The University Interscholastic League
Number Sense Test • HS State • 2013

Final _____ _____

Contestant's Number _____ 2nd _____ _____

1st _____ _____

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STOP -- WAIT FOR SIGNAL!

(1) $521 - 20 + 13 =$ _____

(2) $156 \times 25 =$ _____

(3) $3102 \div 5 =$ _____ **(decimal)**

(4) $2013 - 521 =$ _____

(5) $\frac{3}{16} =$ _____ **% (decimal)**

(6) $5 - 21 \times 20 \div (1 + 3) =$ _____

(7) $10\frac{11}{12} - 4\frac{5}{6} =$ _____ **(mixed number)**

(8) $20 \times 13 + 20 \times 14 =$ _____

(9) $17^2 =$ _____

***(10)** $3102 - 125 + 520 =$ _____

(11) $521 \times 13 =$ _____

(12) $23 \times \frac{23}{25} =$ _____ **(mixed number)**

(13) **MMCDLIX =** _____ **(Arabic Numeral)**

(14) **2.5 bushels =** _____ **pints**

(15) **72 is 18% of** _____

(16) $6\frac{2}{3} + 5\frac{9}{10} =$ _____ **(mixed number)**

(17) $7 + 12 + 17 + 22 + ... + 52 + 57 =$ _____

(18) $521 \div 25 =$ _____ **(decimal)**

(19) $\frac{5}{11} - \frac{7}{22} - \frac{9}{44} =$ _____

***(20)** $520 \times 521 + 2013 =$ _____

(21) **The multiplicative inverse of** $5\frac{6}{7}$ **is** _____

(22) $|-1-3| + |6-10| - |-15+21| =$ _____

(23) **The total number of 2-element subsets and 4-element subsets of the set {e,i,g,h,t} is** _____

(24) $23^2 + 69^2 =$ _____

(25) **If** $\frac{2}{x} + \frac{3}{5} = \frac{7}{10}$ **, then x =** _____

(26) **0.777... — 0.444... =** _____

(27) **55% of 60 minus 65 =** _____

(28) **The** 15^{th} **triangular number is** _____

(29) $3 + 6 + 9 + 12 + 15 + ... + 36 + 39 =$ _____

***(30)** $132 \times 57 + 65 \times 129 =$ _____

(31) **If a = 6 and b = 9 then** $(a + b)(a^2 + 2ab + b^2) =$ _____

(32) $52_7 - 120_7 + 13_7 =$ _____ $_7$

(33) $6! \div 5! + 4! \div 3! - 2! \div 1! =$ _____

(34) $f(x) = 16x^2 - 24x + 9$. $f(7) =$ _____

(35) **If a dozen tees cost 84¢ then 30 tees cost $** _____

(36) How many distinct elements are in $(\{e,x,t,r,a\} \cap \{c,r,e,d,i,t\}) \cup \{p,o,i,n,t,s\}$? _____

(37) $4\frac{2}{3} \div 2\frac{3}{4} =$ _____

(38) The next term of the arithmetic sequence, ... $\frac{3}{8}$, $\frac{31}{40}$, $1\frac{7}{40}$, ... is _____

(39) 1.0454545... = _____ (mixed number)

***(40)** $\sqrt{52113} =$ _____

(41) 33% of $609\frac{1}{11} =$ _____

(42) $\frac{31}{47} - \frac{5}{8} =$ _____

(43) The angle supplementary to an interior angle of a regular decagon has a measure of _____ degrees

(44) If $8^{(6)} = 4^{(3x+2)}$ then x = _____

(45) $3102_6 \times 5_6 =$ _____ 6

(46) If $\frac{x-16}{x+15} + \frac{x+15}{x-16}$ is written as the mixed number $A\frac{B}{C}$ then B = _____

(47) The sum of roots minus the product of the roots of $2x^3 - 3x^2 - 11x + 6 = 0$ is _____

(48) $\frac{1}{4}(44^2 - 16^2) =$ _____

(49) An interior angle of a regular hexagon has a measure of $k\pi$ radians. Find k. _____

***(50)** $(27\pi)(31e) =$ _____

(51) $93^2 + 21^2 =$ _____

(52) If two dice are rolled, the probability that the sum of the faces is less than 5 is _____%

(53) ${}_6P_4 \div {}_6C_4 =$ _____

(54) $(2+i)^2 = a + bi$. Find a − b. _____

(55) If P varies directly with Q and P = 15 when Q = 6, find Q when P = 20. _____

(56) $9\sin(\frac{\pi}{12})\cos(\frac{\pi}{12}) =$ _____

(57) Given the sequence 2, 6, 12, 20, ..., 110, k, 156. Find k. _____

(58) $521 \times 213 =$ _____

(59) 132 feet per second = _____ miles per hour

***(60)** 2013 log 1001 = _____

(61) If $\frac{3x}{8}$ has a remainder of 5 and $\frac{5y}{8}$ has a remainder of 3 then $\frac{xy}{8}$ has a remainder of _____

(62) The first 4 digits of the decimal of $\frac{617}{990}$ is 0._____

(63) $323 \times 111 =$ _____

(64) A store has pens, pencils, markers, and crayons. How many different pairs of these items can be packaged? _____

(65) If A is 40% of B and B is $\frac{3}{8}$ of C, then A is what percent of C? _____%

(66) $\frac{11\pi}{12}$ radians = _____ degrees

(67) The Greatest Integer Function is written as $f(x) = [x]$. Find $\left[\sqrt{2} + \sqrt{3} + \sqrt{5}\right]$. _____

(68) $4! \times 6! \div 8! =$ _____

(69) $\sqrt{14641} =$ _____

***(70)** 1760 yards + 3 feet + 12 inches = _____ inches

(71) $g(x) = 3x^2 + 1$ and $h(x) = 1 - 2x^3$. $g(h(-1)) =$ ____

(72) $F(x) = x^3 - 3x^2 + 3x - 1$. Find $f'(2) =$ _____

(73) If $\sqrt{72} + \sqrt{98} = \sqrt{x}$ then x = _____

(74) $\int_1^3 (x^{-2})\,dx =$ _____

(75) $97 \times \frac{98}{99} =$ _____ mixed number

(76) The 7th term of the arithmetic sequence 5, 3.5, 2, 0.5,... is _____

(77) $(\frac{5}{8} + \frac{8}{5}) \div 2 =$ _____

(78) Change $\frac{11}{16}$ to a base 4 decimal. _____ 4

(79) $(543_6)(123_6) \div 5$ has a remainder of _____

***(80)** $33 \times 33033 =$ _____

University Interscholastic League - Number Sense Answer Key HS ● SAC ● Fall 2012

***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) 4,025

(2) 12,072

(3) 90

(4) 402.4

(5) 380

(6) 256

(7) $4\frac{7}{20}$

(8) 500

(9) — 4.48

***(10) 1,187 — 1,311**

(11) 300

(12) 2,016

(13) 17

(14) 75

(15) 1,102

(16) 332

(17) $\frac{11}{15}$

(18) 18

(19) 7

***(20) 42,011 — 46,433**

(21) $\frac{65}{99}$

(22) 3

(23) 1.414

(24) $6.40

(25) 900

(26) 4

(27) 3

(28) 144

(29) 14

***(30) 322,537 — 356,487**

(31) 6.25, $\frac{25}{4}$, $6\frac{1}{4}$

(32) 26

(33) $\frac{2}{3}$

(34) 3

(35) 2

(36) $-\frac{8}{3}, -2\frac{2}{3}$

(37) 2,890

(38) 12

(39) $72\frac{6}{25}$

***(40) 117 — 129**

(41) 5

(42) $-\frac{1}{3}$

(43) 212

(44) 28,413

(45) 3

(46) 25

(47) $\frac{13}{3}$, $4\frac{1}{3}$

(48) 300

(49) $\frac{10}{3}$, $3\frac{1}{3}$

***(50) 1,121 — 1,238**

(51) 1,260

(52) 55

(53) 7,272

(54) — 6

(55) 88

(56) 18

(57) 16

(58) 0

(59) 10

***(60) 3,103 — 3,429**

(61) 32

(62) 32

(63) 363,609

(64) .5, $\frac{1}{2}$

(65) 64

(66) $\frac{1}{30}$

(67) 14

(68) 988,032

(69) — 8

***(70) 460 — 507**

(71) 3

(72) 0

(73) — .5, $-\frac{1}{2}$

(74) .24

(75) 3

(76) 5

(77) $\frac{9}{28}$

(78) 3

(79) $\frac{5}{14}$

***(80) 27,133 — 29,989**

University Interscholastic League - Number Sense Answer Key HS ● Invitation A ● 2013

***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) 396

(2) 2,200

(3) $223\frac{2}{3}$

(4) 2,128

(5) 60

(6) 1.6, $\frac{8}{5}$, $1\frac{3}{5}$

(7) 196

(8) $1\frac{1}{12}$

(9) $1.32

***(10) 4,484 — 4,954**

(11) .8, $\frac{4}{5}$

(12) 529

(13) 8

(14) $15\frac{16}{23}$

(15) 4.6, $\frac{23}{5}$, $4\frac{3}{5}$

(16) 15

(17) 1,495

(18) 156

(19) 38

***(20) 1,033,038 — 1,141,778**

(21) 64

(22) 2

(23) 51

(24) — .9, — $\frac{9}{10}$

(25) $\frac{10}{17}$

(26) $5.25

(27) $\frac{1}{3}$

(28) 7,272

(29) 22.5, $\frac{45}{2}$, $22\frac{1}{2}$

***(30) 18,429 — 20,367**

(31) 111

(32) 300

(33) 5,760

(34) — .6, — $\frac{3}{5}$

(35) 2,197

(36) 7

(37) 275

(38) .140625, $\frac{9}{64}$

(39) 152

***(40) 896 — 989**

(41) $\frac{11}{7}$, $1\frac{4}{7}$

(42) 81

(43) $\frac{15}{616}$

(44) $\frac{200}{9}$, $22\frac{2}{9}$

(45) 60

(46) 209

(47) — 63

(48) 56

(49) 2

***(50) 1,861 — 2,056**

(51) 30

(52) 128

(53) 315

(54) 1.5, $\frac{3}{2}$, $1\frac{1}{2}$

(55) 9

(56) 2.4, $\frac{12}{5}$, $2\frac{2}{5}$

(57) 4

(58) 15

(59) 36,693

***(60) 113 — 123**

(61) 20

(62) $\frac{16}{77}$

(63) .5, $\frac{1}{2}$

(64) 25

(65) 57,772

(66) 27

(67) 1888

(68) 49

(69) $\frac{16}{19}$

***(70) 4,013 — 4,435**

(71) 36

(72) 2

(73) 27

(74) 110

(75) — 7

(76) 2

(77) .5, $\frac{1}{2}$

(78) 2

(79) 35

***(80) 116,327 — 128,571**

University Interscholastic League - Number Sense Answer Key HS ● Invitation B ● 2013

***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) — 1,089

(2) 420

(3) 330.33

(4) $\frac{2}{3}$

(5) $\frac{7}{8}$

(6) 60,504

(7) 58,885

(8) 487

(9) 10

***(10) 24,214 — 26,762**

(11) 2

(12) 0

(13) 964

(14) 1,024

(15) 136

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

(17) 19

(18) $\frac{7}{72}$

(19) — .45, — $\frac{9}{20}$

***(20) 221,958 — 245,322**

(21) $8.40

(22) 5,858

(23) 5

(24) 6

(25) $\frac{52}{9}$, $5\frac{7}{9}$

(26) 3,542

(27) .25, $\frac{1}{4}$

(28) 1.25, $\frac{5}{4}$, $1\frac{1}{4}$

(29) 294

***(30) 958 — 1,058**

(31) 3,375

(32) 2,250

(33) 15

(34) 484

(35) — 5.5, — $\frac{11}{2}$, — $5\frac{1}{2}$

(36) 74

(37) 90

(38) $\frac{13}{6}$, $2\frac{1}{6}$

(39) 24

***(40) 256 — 282**

(41) 95

(42) 35

(43) — $\frac{13}{376}$

(44) 84

(45) 144

(46) — 2

(47) 192

(48) — 1

(49) 121

***(50) 1,840 — 2,032**

(51) 132

(52) $\frac{1}{12}$

(53) 11,413

(54) 16

(55) — 61

(56) .75, $\frac{3}{4}$

(57) 3

(58) 132

(59) 32,680

***(60) 13,127 — 14,508**

(61) 216

(62) 3

(63) 20

(64) 25

(65) — 16

(66) $17\frac{1}{10}$

(67) .28, $\frac{7}{25}$

(68) $\frac{25}{24}$, $1\frac{1}{24}$

(69) — 1

***(70) 90,940,263 — 100,512,921**

(71) 81,608

(72) 48

(73) — 17

(74) — 5

(75) — 6

(76) 2

(77) $\frac{4}{45}$

(78) $\frac{7}{8}$

(79) 25

***(80) 236,756 — 261,676**

2012-13 TMSCA High School Number Sense Test 6 - Answer Key

*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) 3,218

(2) 806

(3) 3,290

(4) 100.5

(5) $\frac{1}{40}$

(6) 1

(7) 242

(8) 1,100

(9) .26, $\frac{13}{50}$

*(10) 6,371 — 7,041

(11) 6,200

(12) 216

(13) 24

(14) 1,944

(15) 144

(16) 9

(17) 60

(18) $21\frac{4}{25}$

(19) 841

*(20) 2,305,149 — 2,547,795

(21) $-1.5, -\frac{3}{2}, -1\frac{1}{2}$

(22) 1,960

(23) — 8

(24) — 24

(25) 5

(26) 4

(27) .2, $\frac{1}{5}$

(28) $\frac{5}{33}$

(29) 2,584

*(30) 184,757 — 204,205

(31) $\frac{13}{12}, 1\frac{1}{12}$

(32) $4.60

(33) 90

(34) 64

(35) 4,141

(36) 144

(37) 27

(38) 8

(39) 284

*(40) 177,320 — 195,984

(41) 18

(42) 320

(43) 6

(44) — 1

(45) 145

(46) 100

(47) 5

(48) $\frac{10}{3}, 3\frac{1}{3}$

(49) 108

*(50) 588 — 648

(51) 28,248

(52) 15

(53) 75

(54) — 66

(55) 3

(56) 10

(57) 13

(58) 120

(59) 24

*(60) 341 — 376

(61) 2

(62) .5, $\frac{1}{2}$

(63) — $\frac{1}{132}$

(64) 16

(65) 20

(66) 10

(67) 10

(68) 6.5, $\frac{13}{2}, 6\frac{1}{2}$

(69) 2

*(70) 1,924 — 2,126

(71) 108

(72) $-\frac{4}{3}, -1\frac{1}{3}$

(73) 12,423

(74) 10

(75) 361

(76) $\frac{13}{16}$

(77) — 2

(78) 8

(79) 3

*(80) 566,042 — 625,625

2012-13 TMSCA High School Number Sense Test 13 - Answer Key

*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) 7,106

(2) — 594

(3) $\frac{11}{25}$

(4) $434\frac{7}{9}$

(5) 676

(6) $\frac{5}{3}, 1\frac{2}{3}$

(7) $\frac{160}{3}, 53\frac{1}{3}$

(8) 51.03

(9) 10.4, $\frac{52}{5}, 10\frac{2}{5}$

*(10) 5,924 — 6,546

(11) 1,591

(12) 648

(13) $2\frac{10}{33}$

(14) 50,325

(15) 4

(16) $\frac{91}{3}, 30\frac{1}{3}$

(17) 132

(18) 2,266

(19) 4.2, $\frac{21}{5}, 4\frac{1}{5}$

*(20) 619 — 683

(21) 7,046

(22) — 10

(23) 2

(24) $37\frac{49}{51}$

(25) 5,760

(26) 10

(27) $16.80

(28) 20

(29) 55

*(30) 6,560,678 — 7,251,274

(31) 2102

(32) 25

(33) 1.35, $\frac{27}{20}, 1\frac{7}{20}$

(34) 90

(35) $83\frac{5}{36}$

(36) 4

(37) 150

(38) 480

(39) 6

*(40) 2,285 — 2,525

(41) 2.5, $\frac{5}{2}, 2\frac{1}{2}$

(42) $\frac{7}{6}, 1\frac{1}{6}$

(43) — 3

(44) — .25, $-\frac{1}{4}$

(45) 68

(46) 135

(47) 625

(48) 30

(49) 450

*(50) 5,187 — 5,732

(51) 12

(52) 300

(53) 8,585

(54) 46

(55) 1

(56) 3

(57) 20,520

(58) 60

(59) 96

*(60) 26,266 — 29,030

(61) 0

(62) 2.71

(63) 103

(64) 4

(65) 25

(66) 2

(67) 20

(68) 16

(69) .75, $\frac{3}{4}$

*(70) 100 — 110

(71) 377,774

(72) 32

(73) $\frac{1}{3}$

(74) 2

(75) 91

(76) .1, $\frac{1}{10}$

(77) — 5

(78) .123

(79) 826,281

*(80) 1,274 — 1,408

2012-13 TMSCA High School State Meet Number Sense - Answer Key

*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) 1,825

(2) 7.36

(3) 1.5, $\frac{3}{2}$, $1\frac{1}{2}$

(4) ~~106.25~~ .010625

(5) $\frac{4}{3}$, $1\frac{1}{3}$

(6) 8.75

(7) 3,300

(8) $\frac{7}{12}$

(9) 324

*(10) 7,519 — 8,309

(11) 4,173

(12) 3

(13) — 2

(14) 1,925

(15) 5.28, $\frac{132}{25}$, $5\frac{7}{25}$

(16) 6

(17) 2,013

(18) 2,160

(19) 352

*(20) 1,922 — 2,123

(21) $4\frac{7}{12}$

(22) $22.20

(23) 33

(24) 2.8, $\frac{14}{5}$, $2\frac{4}{5}$

(25) 400

(26) — 10

(27) 111

(28) 5

(29) 4,410

*(30) 1,869 — 2,065

(31) 511

(32) $\frac{6}{11}$

(33) $\frac{25}{256}$

(34) 150

(35) — 3.75, $-\frac{15}{4}$, $-3\frac{3}{4}$

(36) $\frac{41}{330}$

(37) 5.0625, $\frac{81}{16}$, $5\frac{1}{16}$

(38) 426

(39) 4

*(40) 604,303 — 667,913

(41) 4

(42) 2

(43) 10,100

(44) 11,978

(45) — 1.25, $-\frac{5}{4}$, $-1\frac{1}{4}$

(46) 700

(47) 900

(48) 330

(49) 132

*(50) 7,686 — 8,494

(51) 12

(52) 88

(53) 225

(54) 50

(55) 17

(56) 10

(57) 1

(58) 70

(59) 179,568

*(60) 2,252 — 2,488

(61) 44,844

(62) 5

(63) 6

(64) 1.25, $\frac{5}{4}$, $1\frac{1}{4}$

(65) 0

(66) 29

(67) 4

(68) $\frac{1}{30}$

(69) 256

*(70) 30,780 — 34,020

(71) 126

(72) 313

(73) 0

(74) 294

(75) 39

(76) 2

(77) .375, $\frac{3}{8}$

(78) $\frac{1}{7}$

(79) 29

*(80) 31,176 — 34,457

University Interscholastic League - Number Sense Answer Key HS ● District 1 ● 2013

***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) 1,690

(3) 2,862

(4) 335.5

(5) 324

(6) 8

(7) $6\frac{11}{15}$

(8) — 13

(9) $\frac{19}{400}$

***(10) 2,267 — 2,505**

(11) 4,199

(12) $12\frac{4}{21}$

(13) 55

(14) $1\frac{8}{15}$

(15) 164

(16) 19

(17) 32

(18) 1,464

(19) 80.52

***(20) 613,865 — 678,481**

(21) $1\frac{5}{6}$

(22) 44

(23) 8

(24) 1,690

(25) $-\frac{73}{12}, -6\frac{1}{12}$

(26) 173

(27) 5

(28) — 21

(29) 406

***(30) 37,613 — 41,571**

(31) 5,353

(32) 42

(33) $7.20

(34) — 40

(35) 14

(36) 6

(37) 2,025

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

(39) $1\frac{1}{2}$

***(40) 1,109 — 1,224**

(41) 210

(42) — .8, $-\frac{4}{5}$

(43) 9

(44) 72

(45) — 2.5, $-\frac{5}{2}, -2\frac{1}{2}$

(46) 121

(47) — 15

(48) $\frac{3}{22}$

(49) 200

***(50) 27,162 — 30,020**

(51) 1,260

(52) 70.4, $\frac{352}{5}$, $70\frac{2}{5}$

(53) 66,789

(54) $\frac{4}{195}$

(55) 4

(56) 20

(57) 24

(58) 0

(59) 2

***(60) 3,484 — 3,850**

(61) 3131

(62) 6

(63) 20.5, $\frac{41}{2}$, $20\frac{1}{2}$

(64) .75, $\frac{3}{4}$

(65) 9

(66) 216

(67) 10

(68) 70

(69) 132

***(70) 919 — 1,015**

(71) 32

(72) .2, $\frac{1}{5}$

(73) .134

(74) 235

(75) 9

(76) 363

(77) $\frac{1}{3}$

(78) 4

(79) 32

***(80) 852 — 940**

University Interscholastic League - Number Sense Answer Key HS ● District 2 ● 2013

***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) 1,683

(2) 2,343

(3) $36\frac{1}{9}$

(4) 8,052

(5) 560

(6) $3\frac{9}{56}$

(7) — 16

(8) 1,728

(9) 2

***(10) 35,776 — 39,540**

(11) 4,303

(12) $9\frac{11}{20}$

(13) 258

(14) 19

(15) 245

(16) 1,464

(17) 402.6

(18) 16.5, $\frac{33}{2}$, $16\frac{1}{2}$

(19) 1,260

***(20) 2,421 — 2,675**

(21) $5\frac{5}{8}$

(22) 6

(23) 257

(24) $23\frac{16}{31}$

(25) 27

(26) $-3.75, -\frac{15}{4}, -3\frac{3}{4}$

(27) $21.20

(28) 7.5, $\frac{15}{2}$, $7\frac{1}{2}$

(29) 0

***(30) 2,289 — 2,529**

(31) 4,410

(32) 144

(33) 2.5, $\frac{5}{2}$, $2\frac{1}{2}$

(34) $-\frac{14}{3}, -4\frac{2}{3}$

(35) 484

(36) 6

(37) 110

(38) 446

(39) $19\frac{1}{2}$

***(40) 69,130 — 76,406**

(41) 3

(42) $\frac{2}{3}$

(43) $\frac{18}{473}$

(44) 450

(45) 24

(46) 8,585

(47) 2

(48) 289

(49) 83

***(50) 1,310 — 1,447**

(51) 16

(52) 140

(53) 1

(54) 0

(55) 17

(56) 36

(57) 9

(58) 13.5, $\frac{27}{2}$, $13\frac{1}{2}$

(59) 81,095

***(60) 514,612 — 568,780**

(61) 1

(62) $20\frac{2}{23}$

(63) 3

(64) $\frac{8}{13}$

(65) 200

(66) 4333

(67) 643,204

(68) 61

(69) 73

***(70) 2,178,540 — 2,407,860**

(71) 35

(72) 5

(73) 2

(74) 58,883

(75) $\frac{1}{5}$

(76) .33

(77) 4

(78) $-\frac{2}{3}$

(79) 155

***(80) 238 — 262**

University Interscholastic League - Number Sense Answer Key HS ● Regional ● 2013

***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) 73,727

(2) 1,600

(3) 1,268

(4) 454.75

(5) 2

(6) 625

(7) $2\frac{1}{12}$

(8) 19

(9) $\frac{67}{800}$

***(10) 37,821 — 41,801**

(11) 4,069

(12) $11\frac{9}{17}$

(13) 336

(14) $11\frac{17}{24}$

(15) 12

(16) 2,477

(17) 48

(18) 55

(19) $\frac{193}{3}$, $64\frac{1}{3}$

***(20) 15,000 — 16,578**

(21) $-\frac{4}{11}$

(22) 6

(23) — 1

(24) 6,250

(25) — 38

(26) $\frac{1}{3}$

(27) 173

(28) $1\frac{1}{2}$

(29) $40.50

***(30) 4,011 — 4,432**

(31) 2,197

(32) 21

(33) $8\frac{1}{6}$

(34) 100

(35) 344

(36) 12.8, $\frac{64}{5}$, $12\frac{4}{5}$

(37) 495

(38) 9

(39) $-3.75, -\frac{15}{4}, -3\frac{3}{4}$

***(40) 911 — 1,006**

(41) — 390

(42) $-\frac{11}{238}$

(43) 729

(44) $\frac{1}{12}$

(45) 10

(46) — 3

(47) 84

(48) 2.25, $\frac{9}{4}$, $2\frac{1}{4}$

(49) 154

***(50) 48,291 — 53,373**

(51) $\frac{85}{77}$, $1\frac{8}{77}$

(52) 27

(53) 7,474

(54) 70

(55) 60

(56) 0

(57) 20

(58) 50

(59) 15

***(60) 2,314 — 2,556**

(61) 3

(62) 84,832

(63) 4313

(64) — 221

(65) 35

(66) .5, $\frac{1}{2}$

(67) — 9

(68) 13

(69) 4

***(70) 13,909 — 15,373**

(71) 79,992

(72) 192

(73) — 8

(74) $\frac{11}{27}$

(75) .5, $\frac{1}{2}$

(76) 69

(77) 66

(78) $48\frac{2}{51}$

(79) 1,111

***(80) 282 — 310**

University Interscholastic League - Number Sense Answer Key HS • State • 2013

***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) 514

(2) 3,900

(3) 620.4

(4) 1,492

(5) 18.75

(6) — 100

(7) $6\frac{1}{12}$

(8) 540

(9) 289

***(10) 3,323 — 3,671**

(11) 6,773

(12) $21\frac{4}{25}$

(13) 2,459

(14) 160

(15) 400

(16) $12\frac{17}{30}$

(17) 352

(18) 20.84

(19) $-\frac{3}{44}$

***(20) 259,287 — 286,579**

(21) $\frac{7}{41}$

(22) 2

(23) 15

(24) 5,290

(25) 20

(26) $\frac{1}{3}$

(27) — 32

(28) 120

(29) 273

***(30) 15,114 — 16,704**

(31) 3,375

(32) — 22

(33) 8

(34) 625

(35) $2.10

(36) 8

(37) $1\frac{23}{33}$

(38) 1.575, $\frac{63}{40}$, $1\frac{23}{40}$

(39) $1\frac{1}{22}$

***(40) 217 — 239**

(41) 201

(42) $\frac{13}{376}$

(43) 36

(44) $\frac{7}{3}$, $2\frac{1}{3}$

(45) 23514

(46) 961

(47) 4.5, $\frac{9}{2}$, $4\frac{1}{2}$

(48) 420

(49) $\frac{2}{3}$

***(50) 6,791 — 7,505**

(51) 9,090

(52) $\frac{50}{3}$, $16\frac{2}{3}$

(53) 24

(54) — 1

(55) 8

(56) 2.25, $\frac{9}{4}$, $2\frac{1}{4}$

(57) 132

(58) 110,973

(59) 90

***(60) 5,738 — 6,341**

(61) 1

(62) 6232

(63) 35,853

(64) 10

(65) 15

(66) 165

(67) 5

(68) $\frac{3}{7}$

(69) 121

***(70) 60,238 — 66,578**

(71) 28

(72) 3

(73) 338

(74) $\frac{2}{3}$

(75) $96\frac{2}{99}$

(76) — 4

(77) 1.1125, $\frac{89}{80}$, $1\frac{9}{80}$

(78) .23

(79) 2

***(80) 1,035,585 — 1,144,593**