The University Interscholastic League
Number Sense Test ● HS SAC ● 2015

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) $915 + 519 =$ _____

(2) $337 - 245 =$ _____

(3) $231 \times 4 =$ _____

(4) $2418 \div 6 =$ _____

(5) 44% = _____ (proper fraction)

(6) $3\frac{4}{5} =$ _____ (decimal)

(7) 0.125 = _____ (proper fraction)

(8) $8 + 12 \times 4 \div 6 =$ _____

(9) $16^2 =$ _____

***(10)** $2016 + 201 + 216 + 26 =$ _____

(11) $1\frac{1}{2} + 2\frac{2}{3} =$ _____ (mixed number)

(12) $64 \times 25 =$ _____

(13) 345 ÷ 9 has a remainder of _____

(14) 15% of 38 = _____

(15) Which is smaller, $\frac{4}{9}$ or $\frac{6}{11}$? _____

(16) $2\frac{2}{3} - 1\frac{1}{2} =$ _____ (mixed number)

(17) The GCD of 28, 56, and 63 is _____

(18) CCLVIII = _____ (Arabic Numeral)

(19) 2 yards + 1 foot = _____ inches

***(20)** $92015 \div 498 =$ _____

(21) $3^2 + 9^2 =$ _____

(22) $9 + |15 - 10| - |1 - 5| =$ _____

(23) If 6 eggs cost 78¢ then 9 eggs cost $ _____

(24) $2 + 4 + 6 + 8 + ... + 18 + 20 =$ _____

(25) The sum of the prime numbers less than 10 is ____

(26) $\sqrt[3]{729} =$ _____

(27) 15% of $233\frac{1}{3} =$ _____

(28) Let x = − 5. Find 4 + 3x. _____

(29) Set m = {m,e,n,t,a,l} and M = {m,a,t,h}. $M \cup m$ contains how many distinct elements? _____

***(30)** $2\frac{1}{4} \times 92015 \div 9 =$ _____

(31) 44 base 5 in base 10 is _____

(32) If 5 − 2x = 3, then 2 + 3x = _____

(33) 0.151515... = _____ (proper fraction)

(34) $2\frac{2}{3} \times 1\frac{1}{2}$ = _____

(35) $(17 \times 22 + 35) \div 4$ has a remainder of _____

(36) 37×43 = _____

(37) $12 \times \frac{13}{14}$ = _____ (mixed number)

(38) The perimeter of a rectangle with a of length of 4.25" and a width of 3.25" is _____ inches

(39) If a = 13 and b = 8, then $a^2 + 2ab + b^2$ = _____

*(40) $\sqrt{91015}$ = _____

(41) 20% of 30 — 40% of 50 is _____

(42) Let $12^3 \times 12^{-5} = 12^k$. Find k. _____

(43) $13 \times 15 + 1$ = _____

(44) The midpoint of the segment with endpoints (1, 3) and (5, 7) is (x, y). Find x + y. _____

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

(46) The leg opposite the 30° angle in a right triangle is 6 inches. The hypotenuse is _____ inches

(47) If $5^{-1} + x^{-1} = 2^{-1}$ then x = _____

(48) The product of the roots of $(x + 3)^2 = 0$ is _____

(49) The least value of x such that $|x - 1| \leq 3$ is _____

*(50) $15^2 \times 11^3$ = _____

(51) $(5 + 6i)(5 - 6i) = (a + bi)$. Find (a + b). _____

(52) The number of Platonic solids is _____

(53) Find the 8th term of the arithmetic sequence, 11, 8, 5, 2, ... _____

(54) $\frac{3!}{4!}$ = _____

(55) ${}_8C_6 - {}_8P_2$ = _____

(56) How many subsets containing only 4 elements does the set {p,r,e,c,a,l} have? _____

(57) The sum of the terms in the 4th row of Pascal's triangle is _____

(58) 151×212 = _____

(59) The probability of selecting a prime number from the set of digits is _____%

*(60) $69875 \div 142.857$ = _____

(61) The sum of the positive integral divisors of 20 is __

(62) $(x^3 - 6x - 10) \div (x - 2)$ has a remainder of ____

(63) Find k if $\begin{vmatrix} k & 3 \\ 2 & -5 \end{vmatrix} = 7$. k = _____

(64) If $\log_5(2x + 1) = 3$ then x = _____

(65) The volume of a cone with a diameter of 8" and a height of 12" is _____π cu. in

(66) Change 0.22 base 4 to a base 8 decimal. _____$_8$

(67) The Greatest Integer Function is written as $f(x) = [x]$. Find $[\sin 30° + \cos 30°]$. _____

(68) $F(x) = 3x^2 - 1$. $G(x) = 3 + 2x$. F(G(—1)) = _____

(69) $\sin^2(\frac{2\pi}{3}) + \cos^2(\frac{2\pi}{3})$ = _____

*(70) $(2 + 4 + 6 + 8 + 10 + 12 + 14)^2$ = _____

(71) The sum of the first 3 pentagonal numbers is _____

(72) The first four digits of the decimal for $\frac{16}{90}$ is 0.___

(73) $11^{10} \div 9$ has a remainder of _____

(74) The domain of the function $\sqrt{2 - 3t}$ is $t \leq$ _____

(75) If $f(x) = 1 + \frac{2x-3}{4}$, then $f^{-1}(5)$ = _____

(76) Let $f(x) = x^3 - 5x^2 + 2x + 4$. Find $f'(3)$ = _____

(77) $\int_1^2 (2x - 1)\,dx$ = _____

(78) Round $3\sqrt{2}$ to the nearest tenth. _____

(79) The minimum value of $f(x) = 3(x - 2)^2 + 5$ is ____

*(80) The interest on $5000 for 5 years at 5.5% compounded annually is _____ dollars

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Number Sense Test • HS A • 2016

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(1) $116 + 611 =$ _____

(2) $345 - 612 =$ _____

(3) $116 \times 5 =$ _____

(4) $0.444... =$ _____ **(proper fraction)**

(5) $36\% =$ _____ **(proper fraction)**

(6) $14^2 =$ _____

(7) $1616 \div 4 =$ _____

(8) $9 - 12 \times 6 \div 3 =$ _____

(9) $2\frac{1}{8} =$ _____ **(decimal)**

***(10)** $1601 + 1610 + 1160 + 1061 =$ _____

(11) $1\frac{1}{6} + 2\frac{3}{4} =$ _____ **(mixed number)**

(12) $65 \times 25 =$ _____

(13) $345 \div 9 =$ _____ **(mixed number)**

(14) 15% of $44 =$ _____

(15) Which is larger, 0.63 or $\frac{5}{8}$? _____

(16) MDCVI = _____ **(Arabic numeral)**

(17) The GCD of 35, 56, and 70 is _____

(18) 2 yards — 1 foot — 6 inches = _____ inches

(19) $3\frac{4}{7} - 1\frac{3}{5} =$ _____ **(mixed number)**

***(20)** $373 \times 464 =$ _____

(21) 12% of $166\frac{2}{3} =$ _____

(22) The additive inverse of 0.444... is _____

(23) $12^2 + 4^2 =$ _____

(24) $\sqrt[3]{2197} =$ _____

(25) $41 \times 39 =$ _____

(26) $|1 + 4 - 7| - |7 + 1 - 4| =$ _____

(27) If 12 pens cost \$1.60 then 9 pens cost \$ _____

(28) 0.3111... = _____ **(proper fraction)**

(29) Set T = {t,i,m,e,s} and M = {s,q,u,a,r,e}. $T \cap M$ contains how many distinct elements? _____

***(30)** $3\frac{1}{5} \times 12515 \div 16 =$ _____

(31) $(21 \times 7 - 14) \div 6$ has a remainder of _____

(32) If $5x - 1 = 9$, then $x - 5 =$ _____

(33) $1\frac{2}{5} \times 1\frac{1}{14} =$ _____ **(mixed number)**

(34) $1 + 3 + 5 + 7 + ... + 17 + 19 =$ _____

(35) If $x = 11$ and $y = 8$ then $x^2 - 2xy + y^2 =$ _____

(36) 67 base 8 in base 10 is _____

(37) $14 \times \frac{15}{16}$ = _____ (mixed number)

(38) The area of a rectangle with a length of 1.25 ft and a width of 3.2 ft is _____sq. ft

(39) The product of the first 3 prime numbers is _____

***(40)** $\sqrt{12515}$ = _____

(41) 35% of 40 + 45% of 50 is _____

(42) The leg opposite the 60° angle in a right triangle is $12\sqrt{3}$ cm. The hypotenuse is _____ cm

(43) If $x^{-1} - 2^{-1} = 3^{-1}$ then x = _____

(44) The midpoint of the segment with endpoints (— 1, — 2) and (3, 4) is (x, y). Find x + y. _____

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

(46) Let $16^{-2} \times 16^3 \div 16^5 = 16^k$. Find k. _____

(47) $18 \times 22 + 4$ = _____

(48) $123_6 - 45_6$ = _____$_6$

(49) The sum of the solutions of $|x - 1| = 3$ is _____

***(50)** $12^3 \times 6^2$ = _____

(51) The middle term of the 5th row of Pascal's triangle is _____

(52) Each face of a Platonic octahedron has _____ sides

(53) Find the 7th term of the Fibonacci sequence, 1, 1, 2, 3, ... _____

(54) If $\frac{4!}{6!} = \frac{1}{x}$, then x = _____

(55) ${}_6C_4 - {}_6C_2$ = _____

(56) $12^2 \div 6^2 \times 3^2$ = _____

(57) $(2 + 3i)(4 - 5i) = (a + bi)$. Find ab. _____

(58) 221×133 = _____

(59) The probability of selecting an even integer between 1 and 11 is _____ (proper fraction)

***(60)** 322.3×37.73 = _____

(61) The number of positive integral divisors of 48 is __

(62) $11^{13} \div 15$ has a remainder of _____

(63) The Greatest Integer Function is written as $f(x) = [x]$. Find $\left[1 - \frac{\sqrt{5}+1}{2}\right]$. _____

(64) If $f(x) = (x - 3)(x^2 - 6x + 9)$, then f(18) = _____

(65) The volume of a rectangular prism with base width 5", base length 12", and height 13" is _____ in^3

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

(67) Find k if $\begin{vmatrix} -1 & -3 \\ 6 & 10 \end{vmatrix} = 15k$. _____

(68) $2\sin(\frac{\pi}{4})\cos(\frac{\pi}{4})$ = _____

(69) Change 0.123 base 4 to a base 10 fraction. _____

***(70)** $(28 + 24 + 20 + 16 + 12 + 8 + 4)^2$ = _____

(71) The product of the 2nd triangular number and the 2nd pentagonal number is _____

(72) $0.242424..._5$ = _____ $_5$ (proper fraction)

(73) Truncate $(2\sqrt{3} + 3\sqrt{2})$ to the nearest whole. ___

(74) The first four digits of the decimal for $\frac{14}{33}$ is 0. ___

(75) If $f(x) = \sqrt{x + 2}$, then $f^{-1}(4)$ = _____

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

(77) $\int_1^2 (3x - 4)\,dx$ = _____

(78) The largest number in the domain of $y^2 = 4 - x^2$ is _____

(79) The minimum value of $f(x) = 5(x - 3)^2 + 2$ is ____

***(80)** The interest on $6000 for 6 years at 6% compounded semiannually is _____ dollars (integer)

The University Interscholastic League
Number Sense Test • HS B • 2016

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(1) $2312 - 2016 =$ _____

(2) $212 + 316 =$ _____

(3) $2016 \div 3 =$ _____

(4) $231 \times 6 =$ _____

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

(6) $23 \times 11 =$ _____

(7) $0.375 - \frac{1}{4} =$ _____

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

(9) $3\frac{1}{2} - 2\frac{1}{6} =$ _____ (mixed number)

***(10)** $136 + 1015 - 2128 + 3645 =$ _____

(11) $23^2 =$ _____

(12) 14% of 16 = _____ (decimal)

(13) $1 + 2 + 3 + 4 + 5 + ... + 19 + 20 =$ _____

(14) $17 \times 23 =$ _____

(15) $12^3 =$ _____

(16) $3\frac{1}{5} + 2\frac{3}{4} =$ _____ (mixed number)

(17) 3 gallons — 2 quarts = _____ pints

(18) MMXVI × IV = _____ (Arabic numeral)

(19) 21231216 ÷ 8 has a remainder of _____

***(20)** $31216 \div 396 =$ _____

(21) $2^4 + 3^3 + 4^2 =$ _____

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

(23) The multiplicative inverse of — 1.25 is _____

(24) $7^3 =$ _____

(25) Let x = — 2. Find 3 — 4x. _____

(26) If 15 ★s cost $18.45 then 10 ★s cost $ _____

(27) $11 \times \frac{14}{17} =$ _____ (mixed number)

(28) $3\frac{3}{5} \times 1\frac{2}{9} =$ _____ (mixed number)

(29) Set E = {e,l,p,a,s,o} and A = {a,u,s,t,i,n}. E ∪ A contains how many distinct elements? _____

***(30)** $4\frac{2}{7} \times 6390 \div 15 =$ _____

(31) 0.515151... = _____ (proper fraction)

(32) $12^2 + 36^2 =$ _____

(33) $(37 + 27 \times 17) \div 8$ has a remainder of _____

(34) 27% of $211\frac{1}{9} =$ _____

(35) If a = 12 and b = 11, then $9a^2 - 6ab + b^2 =$ _____

(36) 15% of 30 minus 45 is _____

(37) 312 base 5 in base 10 is _____

(38) 73×23 = _____

(39) The perimeter of a square is 14". The area of the square is _____ sq. in.

*(40) $\sqrt{44044}$ = _____

(41) $22 \times 28 + 9$ = _____

(42) If $9^{-1} - x^{-1} = 10^{-1}$ then x = _____

(43) 75% of 80 = 30% of _____

(44) A face of a Platonic dodecahedron has ____vertices

(45) Let $21^7 \times 21^{-3} \div 21^5 = 21^k$. Find k. _____

(46) The area of a right triangle with a base of 7 cm and a hypotenuse of 25 cm is _____ sq. cm

(47) $(\frac{3}{4})^2 \div (\frac{3}{8})^2 \times (\frac{3}{16})^2$ = _____

(48) How many subsets containing only 3 elements does the set {p,r,i,m,e} have? _____

(49) $312_4 \times 3_4$ = _____ 4

*(50) $12^3 \times 21^2$ = _____

(51) Find the units digit of 17^6. _____

(52) The midpoint of the segment with endpoints (x, y) and (1, — 7) is (— 3, 5). Find $x + y$. _____

(53) $7 + 9 + 16 + 25 + 41 + 66 + 107 + 173$ = _____

(54) ${}_5C_3 + {}_5C_2$ = _____

(55) The probability of selecting a multiple of three from the set of positive digits is _____

(56) The sum of the roots of $(x + 5)^3 = 0$ is _____

(57) The sum of coeficients of the x^2y^2 term and the xy^3 term of $(x + y)^4$ is _____

(58) $\frac{6!}{3!3!}$ = _____

(59) 271×314 = _____

*(60) $212312 \div 201.6$ = _____

(61) The Greatest Integer Function is written as f(x) = [x]. Find $\left[\sin(\frac{\pi}{4}) + \cos(\frac{\pi}{4}) + \tan(\frac{\pi}{4})\right]$. ____

(62) How many positive integers less than 30 are relatively prime to 30? _____

(63) If $\begin{vmatrix} 1 & -5 \\ 12 & 22 \end{vmatrix} = 35 - k$ then k = _____

(64) If $2\log_4(3x - 1) = 3$ and $x > 0$ then x = _____

(65) The smallest integral value of x such that $|2x - 3| \leq 4$ is _____

(66) Change 0.2111... base 5 to a base 10 fraction. _____

(67) $F(x) = 2x^3 - 4$. $G(x) = 1 - x$. F(G(—2)) = _____

(68) $\sec(\frac{\pi}{3}) + \csc(\frac{\pi}{6})$ = _____

(69) The volume of a rectangular based pyramid with a base width 5", a base length 12", and a height 13" is _____ in^3

*(70) $(2 + 4 + 6 + 8 + ... + 18 + 20)^2$ = _____

(71) The first four digits of the decimal for $\frac{31}{111}$ is 0.___

(72) Truncate $(2\sqrt{3} - \sqrt{5})$ to the nearest whole. ____

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

(74) $f(x) = 2x^3 + 6x^2 + 6x + 2$. Find $f''(3)$ = _____

(75) The minimum value of $f(x) = 4(x - 3)^2 + 1$ is ____

(76) If $x + 6 \equiv 2 \pmod 7$, $0 \leq x \leq 6$, then x = _____

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

(78) The sum of the first 3 hexagonal numbers is _____

(79) The range of the function $y = \sqrt{3 - x}$ is $y \geq$ ____

*(80) The compound interest on $2000 for 4 years at 8% compounded annually is _____ dollars (integer)

2015-16 TMSCA High School Number Sense Test 6

Final _____ _____

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(1) $876 - 389 =$ _____

(2) $127 + 1941 =$ _____

(3) $1216 \div 4 =$ _____

(4) $2016 \times 7 =$ _____

(5) 0.8333... = _____ (proper fraction)

(6) $14^2 =$ _____

(7) $\frac{1}{8} =$ _____ % (decimal)

(8) $1 + 2 \times (5 - 20) \div 15 =$ _____

(9) $1\frac{5}{11} - \frac{3}{5} =$ _____

***(10)** $1947 + 1948 + 111 + 1967 =$ _____

(11) $11 \times 11 \times 11 =$ _____

(12) $21 \times 13 =$ _____

(13) $1941 \div 9 =$ _____ (mixed number)

(14) 12% of 12 = _____ (decimal)

(15) $1 + 2 + 3 + 4 + 5 + ... + 11 + 12 =$ _____

(16) $3\frac{2}{3} \times 6\frac{1}{3} =$ _____ (mixed number)

(17) The GCD of 57 and 95 is _____

(18) CLVI — XLIV = _____ (Arabic numeral)

(19) 2 gallons + 8 pints = _____ quarts

***(20)** $412 \times 1861 =$ _____

(21) $2^3 + 3^3 + 4^3 =$ _____

(22) $6^2 + 18^2 =$ _____

(23) The median of 1, 2, 1, 3, 8, and 5 is _____

(24) $15^3 =$ _____

(25) The reciprocal of — 1.3 is _____

(26) $3\frac{2}{5} + 5\frac{2}{3} =$ _____ (mixed number)

(27) If 6 As cost \$9.30 then 4 As cost \$ _____

(28) The sum of the first 4 composite numbers is _____

(29) 0.2111... = _____ (proper fraction)

***(30)** $3\frac{3}{4} \times 12515 \div 30 =$ _____

(31) 18% of $311\frac{1}{9} =$ _____

(32) If x = 8 and y = 4 then $4x^2 + 4xy + y^2 =$ _____

(33) The set T = {T,M,S,C,A} contains how many proper subsets? _____

(34) Given the seqeunce 1,3,6,10,m,21,28,36,n,55..., find m + n. _____

(35) 120514 ÷ 11 has a remainder of _____

(36) $48 \times 42 =$ _____

(37) $11 \times \frac{12}{13} =$ _____ (mixed number)

(38) The area of a square is 36 sq. cm. The perimeter of the same square is _____ cm

(39) 36 base 9 in base 10 is _____

*(40) $\sqrt{122015} =$ _____

(41) $23 \times 25 + 1 =$ _____

(42) The midpoint of the segment with endpoints (2, 5) and (x, y) is (— 4, 3). Find $x + y$. _____

(43) The sum of the roots of $2x^2 — 3x = 4$ is _____

(44) 35% of 40 = 20% _____

(45) $314_5 \times 4_5 =$ _____ 5

(46) The largest negative integral value of x such that $|x + 1| > 5$ is _____

(47) How many different types of polygonal faces are used to form the Platonic solids? _____

(48) Let $(3.4)^5 \div (3.4)^{— 2} = (3.4)^k$. Find k. _____

(49) The area of an isosceles right triangle with the hypotenuse length of $5\sqrt{2}$ inches is _____in^2

*(50) $8 \times 8^2 \times 8^3 =$ _____

(51) $3\frac{3}{4} \div 1\frac{3}{7} =$ _____ (mixed number)

(52) If $3^{-1} + x^{-1} = 6^{-1}$ then x = _____

(53) Find the 5^{th} term of the geometric sequence, 27, 18, 12, 8, ... _____

(54) The odds of rolling a composite number on a single die is _____ (proper fraction)

(55) ${}_5P_3 + {}_5P_2 =$ _____

(56) Let T = {t,m,s,c,a}, M = {m,e,n,t,a,l}, and N = {n,u,m,b,e,r,s}. $T \cup M \cup N$ has how many distinct elements? _____

(57) $113 \times 314 =$ _____

(58) $\frac{5!}{3!2!} =$ _____

(59) The sum of the terms in the 4th row of Pascal's triangle minus the sum of the terms in the 3rd row is _____

*(60) $489657 \div 777.77 =$ _____

(61) The Greatest Integer Function is written as $f(x) = [x]$. Find $[\pi + e + \phi]$. _____

(62) $9^{10} \div 11$ has a remainder of _____

(63) The volume of a right cylinder with a radius of 6" and a height of 9" is _____π cu. in

(64) $\cos^2(\frac{\pi}{6}) — \sin^2(\frac{\pi}{6}) =$ _____

(65) $F(x) = 2x^3 — 4$. $G(x) = 5 + 6x$. $F(G(—1)) =$ _____

(66) Change 0.1333... base 4 to a base 4 fraction. _____

(67) The sum of the positive integral divisors of 30 is __

(68) Find k if $\begin{vmatrix} — 1 & 3 \\ 2 & — 4 \end{vmatrix} = 5 + k$. k = _____

(69) If $\ln(5) = \ln(40) — k\ln(2)$, then k = _____

*(70) $(1 + 4 + 7 + 10 + 13 + 16 + 19)^2 =$ _____

(71) Round $2\sqrt{3}$ to the nearest tenth. _____

(72) The first four digits of the decimal for $\frac{11}{45}$ is 0.____

(73) If $f(x) = 5 — \frac{4x + 3}{2}$, then $f^{-1}(— 1) =$ _____

(74) Let $f(x) = x^3 + 2x^2 + 3x + 4$. Find $f''(5) =$ _____

(75) The minimum value of $f(x) = (x + 2)^2 + 2$ is _____

(76) $\int_1^3 (1 — 2x)\, dx =$ _____

(77) The range of the function $y = — x^4 + 4$ is $y \leq$ ____

(78) How many lines are determined by four points, no three of which are collinear? _____

(79) The dot product of the vectors (2,1) and (3,4) is ___

*(80) The simple interest on $1250 at 2.5% for 3.75 years is _____ dollars (integer)

2015-16 TMSCA High School Number Sense Test 13

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STOP -- WAIT FOR SIGNAL!

(1) $1947 - 2016 =$ _____

(2) $2016 + 1949 =$ _____

(3) $2016 \div 9 =$ _____

(4) $1967 \times 2 =$ _____

(5) $68\% =$ _____ **(proper fraction)**

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

(7) $32^2 =$ _____

(8) $3\frac{1}{5} + 1\frac{3}{4} =$ _____ **(mixed number)**

(9) $1 + 3 - 6 \times 10 \div (15 - 21) =$ _____

***(10)** $1836 + 1698 + 1912 + 1777 =$ _____

(11) $13^3 =$ _____

(12) $28 \times 15 =$ _____

(13) $2016 \div 6$ has a remainder of _____

(14) 24 is _____ % of 96

(15) $5\frac{1}{4} - 2\frac{2}{3} =$ _____ **(mixed number)**

(16) $235 \times 11 =$ _____

(17) 1 quart + 1 pint + 1 cup = _____ fluid ounces

(18) Which is smaller, $\frac{7}{12}$ or 0.6? _____

(19) $CM + XC - IX =$ _____ **(Arabic numeral)**

***(20)** $313 \times 2016 =$ _____

(21) $22^2 + 66^2 =$ _____

(22) Let $x = -2$. Find $2x^2 + 3x - 4$. _____

(23) The additive inverse of -1.5 is _____

(24) $1 - |3 - 6| - |10 - 15| - 21 =$ _____

(25) $(20 \times 16 + 13) \div 3$ has a remainder of _____

(26) $1 + 4 + 7 + 10 + ... + 28 + 31 =$ _____

(27) Let $\frac{4}{5} = \frac{2x}{3}$. Find x. _____

(28) Set A = {m,e,a,n}, B = {m,e,d,i,a,n}, and C = {m,o,d,e}. $(A \cup C) \cap B$ contains how many distinct elements? _____

(29) If 15 eggs cost $10.50 then 9 eggs cost $ _____

***(30)** $2.75 \times 31216 \div 11 =$ _____

(31) $244\frac{4}{9}\%$ of 18 = _____

(32) The LCM of 57 and 95 is _____

(33) 0.4333... = _____ **(proper fraction)**

(34) Truncate $\sqrt{2}$ to the tenths place. _____

(35) If $x = 21$ and $y = 6$ then $x^2 - 2xy + y^2 =$ _____

(36) The area of a circle is 64π cm^2. The circumference of the circle is kπ cm. Find k. _____

(37) If $2 - 3x = 8$, then $2x + 8$ = _____

(38) $2\frac{3}{5} \times 2\frac{2}{5}$ = _____ (mixed number)

(39) $14 \times \frac{17}{20}$ = _____

*(40) $\sqrt{3122016}$ = _____

(41) A regular icosahedron has _____ vertices

(42) Let $A^{-3} \times A^{-2} \div A^{k} = A^{-4}$. If $A > 1$, then k = _____

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

(44) Find the units digit of 13^{13}. _____

(45) $29 \times 33 + 4$ = _____

(46) If $4^{-1} - x^{-1} = 6^{-1}$ then x = _____

(47) $3\frac{3}{8} \div 2\frac{1}{4}$ = _____ (mixed number)

(48) The largest integral value of x such that $1 + |x - 2| \leq 3$ is _____

(49) $455_8 \div 7_8$ = _____ 8

*(50) $9^3 \times 27^2$ = _____

(51) The midpoint of the segment with endpoints (x, 3) and (5, y) is (2, 4). Find $x + y$. _____

(52) How many subsets containing only 2 or 3 elements does the set {s,q,u,a,r,e} have? _____

(53) The sum of the roots $(2x + 5)^2 - 1 = 0$ is _____

(54) $28^2 \div 14^2 \times 7^2$ = _____

(55) ${}_5C_2 + {}_5P_2$ = _____

(56) $\frac{7!\ 4!\ 3!}{6!\ 5!\ 2!}$ = _____ (decimal)

(57) $3 + 7 + 10 + 17 + 27 + \ldots + 115 + 186$ = _____

(58) The area of a right triangle with a leg length of 8" and a hypotenuse length of 17" is _____in^2

(59) The probability of selecting a deficient number from the set of positive digits is _____%

*(60) 31216×142.857 = _____

(61) The sum of the reciprocals of all of the positive divisors of 6 is _____

(62) 75% of 80 = 30% of _____

(63) Find k if $\begin{vmatrix} 1 & 12 \\ 5 & 22 \end{vmatrix} = 5k$. k = _____(decimal)

(64) If $\log_7(3x - 2) = 3$ then x = _____

(65) 317×245 = _____

(66) The first four digits of the decimal for $\frac{17}{45}$ is 0. ____

(67) Truncate $(5\sqrt{2} + 4\sqrt{3})$ to the nearest whole. ___

(68) $\sin^2(\frac{11\pi}{6}) \div \cos^2(\frac{11\pi}{6})$ = _____

(69) How many positive integers less than 40 are relatively prime to 40? _____

*(70) $(1 + 5 + 9 + 13 + \ldots + 49 + 53)^2$ = _____

(71) Change 0.22 base 3 to a base 9 decimal. _____ 9

(72) Let $g(x) = 3 + 2x + x^2$. Find g(g(— 3)) = _____

(73) If $f(x) = 2 + \frac{3}{4 - x}$, then $f^{-1}(5)$ = _____

(74) $f(x) = x^3 + 2x^2 - x - 2$. Find $f'(2)$ = _____

(75) The minimum value of $f(x) = 2(x - 1)^2 + 3$ is ____

(76) The range of the function $y = x^2 - x - 2$ is $y \geq$ _____

(77) $\int_{-1}^{1} (5x - 1)\, dx$ = _____

(78) The sum of the second triangular number, the second pentagonal number and the second hexagonal number is _____

(79) 11100101_2 = _____ 8

*(80) The simple interest on $3750 at 2.5% for 1.25 years is _____ dollars (integer)

2015-16 TMSCA High School State Meet

Final _____ _____

Contestant's Number _____ 2nd _____ _____

1st _____ _____

Score **Initials**

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(1) $319 + 2016 - 513 =$ _____

(2) $\frac{5}{8} - 0.625 =$ _____

(3) $3.14 \times 5 =$ _____ **(decimal)**

(4) $2016 \div 8 =$ _____

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

(6) $0.315 =$ _____ **%**

(7) $33^2 =$ _____

(8) **3192016 ÷ 9 has a remainder of** _____

(9) $1 - 1 + 2 \times 3 \div (5 - 8) + 13 =$ _____

***(10)** $32016 + 3201 + 320 + 2016 =$ _____

(11) $20.16 \times 75 =$ _____

(12) **The arithmetic mean of 24, 21, and _____ is 18**

(13) $5\frac{2}{3} - 2\frac{3}{5} =$ _____ **(mixed number)**

(14) **1 rod + 2 yards =** _____ **feet**

(15) **18% of 22 =** _____ **(decimal)**

(16) **CCCXIX =** _____ **(Arabic numeral)**

(17) $22 \times 16 + 16 \times 38 =$ _____

(18) $2\frac{3}{5} + 5\frac{2}{3} =$ _____ **(mixed number)**

(19) **If 11♦'s cost $13.31 then 5♦'s cost $** _____

***(20)** $319 \times 315 =$ _____

(21) $51^2 + 17^2 =$ _____

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

(23) **What number times five gives the same result as that number added to four?** _____

(24) $\sqrt[3]{2197} =$ _____

(25) **The sum of three consecutive integers is 108. The largest of the three is integers is** _____

(26) $\left(\frac{16}{25}\right)^{\frac{3}{2}} =$ _____

(27) $108\frac{1}{3}\%$ **of 12 =** _____

(28) $1\frac{3}{4} \times 2\frac{3}{5} =$ _____ **(mixed number)**

(29) **Set E = {e,v,i,l}, L = {l,u,c,k,y} and P = {p,r,i,m,e}. $(E \cup P) \cap L$ contains _____ distinct element(s).**

***(30)** $4\frac{2}{3} \times 32016 \div 7 =$ _____

(31) $111 \times 136 =$ _____

(32) **112 base 3 in base 10 is** _____

(33) **0.272727... =** _____ **(proper fraction)**

(34) $44 \times \frac{47}{50} =$ _____

(35) $(3 \times 19 + 20 \times 16) \div 6$ has a remainder of _____

(36) If a = 14 and b = 2, then $4a^2 + 4ab + b^2$ = _____

(37) $72 \times 0.58333...$ = _____

(38) The circumference of circle O is 3π inches. The area of circle O is $k\pi$ square inches. k = _____

(39) Which of the following is an evil number, 4, 6, or 8? _____

*(40) $\sqrt{6102913}$ = _____

(41) $888 \times \frac{8}{37}$ = _____

(42) If $3^{-2} + x^{-1} = 2^{-3}$ then x = _____

(43) 404^2 = _____

(44) $24 \times 36 + 36$ = _____

(45) Find the slope of the line perpendicular to the line thru the points (— 2, 3) and (5, 7). _____

(46) $2016_9 \div 3_9$ = _____ 9

(47) A regular octahedron has _____ edges

(48) The x-intercept of the line through the points (6, 3) and (— 2, — 5) is (x, y). Find x. _____

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

*(50) $81^2 + 64^2 + 49^2$ = _____

(51) $\left(\frac{1}{2}\right)^2 \div \left(\frac{1}{4}\right)^2 \times \left(\frac{1}{8}\right)^2$ = _____

(52) Let $a^3b^2 \times ab^{-1} \div \left(\frac{a}{b}\right)^2 = a^m b^n$. Find m + n. ___

(53) The area of an isosceles right triangle with a hypotenuse length of $12\sqrt{2}$ cm is _____ cm^2

(54) Let $\frac{7!}{5!} = \frac{(x-1)!}{(x-2)!}$. Find x. _____

(55) ${}_5P_2 - {}_5C_3$ = _____

(56) How many subsets containing only 4 elements does the set {a,u,s,t,i,n} have? _____

(57) The largest integral value of x such that $|2x + 5| \leq 3$ is _____

(58) 414×325 = _____

(59) $15 + 18 + 33 + 51 + 84 + 135 + 219 + 354$ = ___

*(60) $3192016 \div 765$ = _____

(61) The sum of the reciprocals of all of the positive divisors of 8 is _____

(62) Let $f(x) = x^2 - 5$ and $g(x) = 3x + 2$. g(f(—1)) = ___

(63) Find k if $\begin{vmatrix} k & -k \\ 3 & -4 \end{vmatrix} = 2$. k = _____

(64) $(314_7)(22_7) \div 6$ has a remainder of _____

(65) Round $(\sqrt{5} + 6\sqrt{7})$ to the nearest whole. _____

(66) $\sec^2\left(\frac{\pi}{3}\right) - 1$ = _____

(67) How many positive integers less than 63 are relatively prime to 63? _____

(68) Change 0.234 base 5 to a base 10 fraction. _____

(69) The first four digits of the decimal for $\frac{71}{330}$ is 0._____

*(70) $1^2 + 2^2 + 3^2 + 4^2 + ... 10^2 + 11^2$ = _____

(71) A number is randomly selected from the set of digits. What is the probability that the number is a perfect number? _____ (proper fraction)

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

(73) The Greatest Integer Function is written as $f(x) = [x]$. Find $\left[\frac{\sqrt{5}+1}{2} - 3.14\right]$. _____

(74) If $5x - 3 \equiv 2 \pmod 6$, $0 \leq x \leq 5$, then x = _____

(75) $y = \frac{x^3+1}{x^2-1}$ has a how many asymptotes? _____

(76) $9^{10} \div 11$ has a remainder of _____

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

(78) The sum of the first 5 triangular numbers is _____

(79) Given the sequence 1, 0, 2, 3, 6, 10, ..., 46, k, 122, ... find k. _____

*(80) The compound interest on $3000 for 2 years at 6% compounded annually is _____ dollars (integer)

The University Interscholastic League
Number Sense Test • HS District 1 • 2016

Final _____ _____

Contestant's Number _____ 2nd _____ _____

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(1) $356 + 817 =$ _____

(2) $815 - 324 =$ _____

(3) $325 \times 7 =$ _____

(4) $1947 \div 3 =$ _____

(5) 76% = _____ (proper fraction)

(6) 0.444 = _____ % (mixed number)

(7) $8 + 15 - 20 \times 16 \div (6 - 8) =$ _____

(8) $2\frac{5}{8} - \frac{5}{6} =$ _____

(9) $18^2 =$ _____

***(10)** $247 + 2126 - 1014 + 4756 =$ _____

(11) $11^3 =$ _____

(12) The arithmetic mean of 20, 16, and _____ is 17

(13) 81547 ÷ 9 has a remainder of _____

(14) 21% of 21 = _____ (decimal)

(15) Which is larger, $\frac{5}{6}$ or 0.83? _____

(16) $2\frac{2}{7} + 3\frac{1}{4} =$ _____ (mixed number)

(17) 1 quart + 2 pint + 3 cup = _____ fluid ounces

(18) If 12★'s cost $20.20 then 3★'s cost $ _____

(19) CDLIV = _____ (Arabic numeral)

***(20)** 42116 ÷ 595 = _____

(21) The multiplicative inverse of 1.333... is _____

(22) $25^2 + 75^2 =$ _____

(23) $3 - |2 - 4| + |1 - 6| =$ _____

(24) Let x = — 4. Find 3x — 2. _____

(25) The sum of three consecutive integers is 132. The largest of the three is integers is _____

(26) 0.2333... = _____ (proper fraction)

(27) Let $\frac{4x}{5} = \frac{2}{3}$. Find x. _____

(28) $2\frac{2}{5} \times 1\frac{3}{4} =$ _____ (mixed number)

(29) 24% of $433\frac{1}{3} =$ _____

***(30)** 32126 ÷ 15 = _____

(31) $235 \times 111 =$ _____

(32) If 6x — 4 = 2, then x — 8 = _____

(33) The set A = {A,U,S,T,I,N} contains how many proper subsets? _____

(34) $21 \times \frac{23}{25} =$ _____ (mixed number)

(35) Truncate $\sqrt{7}$ to the tenths place. _____

(36) 37×43 = _____

(37) 36 base 9 in base 10 is _____

(38) The area of a square is 196 cm^2. The perimeter of the square is _____ cm

(39) $(25 + 35 \times 45) \div 6$ has a remainder of _____

*(40) $\sqrt{32126}$ = _____

(41) $27 \times 33 + 9$ = _____

(42) The leg opposite the 30° angle in a right triangle is 30 cm. The hypotenuse is _____ cm

(43) $28^2 + 78^2$ = _____

(44) Find the slope of the line through the points (— 2, — 3) and (5, — 8). _____

(45) The product of the roots of $(2x - 3)^3 = 0$ is _____

(46) How many triangles meet at each vertex of a Platonic icosahedron? _____

(47) $1110_4 \div 3_4$ = _____ 4

(48) The sum of the integral values of x such that $3 + |x - 2| \leq 5$ is _____

(49) $4\frac{3}{5} \div 3\frac{2}{3}$ = _____ (mixed number)

*(50) $6 \times 7^2 \times 8^3$ = _____

(51) The midpoint of the segment with endpoints (— 3, — 2) and (— 8, 5) is (x, y). $x + y$ = _____

(52) Let $a^4b^3 \times (ab)^{-2} \div a^{-1} = a^m b^n$. $m + n$ = _____

(53) Let $\frac{6!}{4!} = \frac{(x+1)!}{x!}$. Find x. _____

(54) The odds of selecting a vowel from the letters in the word "fraction" is _____

(55) ${}_6C_4 \times {}_5C_3$ = _____

(56) The sum of the coefficients of the x^3y term and the xy^3 term of $(x + y)^4$ is _____

(57) $5 + 9 + 14 + 23 + 37 + ... + 157 + 254$ = _____

(58) 321×326 = _____

(59) $\left(\frac{1}{6}\right)^2 \div \left(\frac{1}{12}\right)^2 \times \left(\frac{1}{24}\right)^2$ = _____

*(60) $8151947 \div 326$ = _____

(61) The sum of the reciprocals of all of the positive divisors of 10 is _____

(62) Let $f(x) = 3x^2 + 1$ and $g(x) = 2x - 1$. Find $f(g(-1))$ = _____

(63) The Greatest Integer Function is written as $f(x) = [x]$. Find $\left[\pi + \frac{\sqrt{5}+1}{2}\right]$. _____

(64) If $\log_5(4x - 3) = 2$ then x^3 = _____

(65) $9^{11} \div 13$ has a remainder of _____

(66) Change 0.5333... base 6 to a base 10 fraction. _____

(67) The sum of the positive integral divisors of 42 is___

(68) $\left(2\sin\left(\frac{5\pi}{6}\right)\cos\left(\frac{5\pi}{6}\right)\right)^2$ = _____

(69) How many lines are determined by five points, no three of which are collinear? _____

*(70) $(3 + 10 + 17 + 24 + ... + 52 + 59)^2$ = _____

(71) The first four digits of the decimal for $\frac{23}{333}$ is 0.___

(72) The product of the 4th triangular number and the 3rd pentagonal number is _____.

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

(74) If $f(x) = \frac{2x+3}{5}$, then $f^{-1}(4)$ = _____

(75) $(2 - 3i)(4 - 5i) = (a + bi)$. Find $(a + b)$. _____

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

(77) The smallest element of the domain of $y^2 = 9 - x^2$ is _____

(78) Round $7\sqrt{7}$ to the nearest tenth. _____

(79) The range of the function $y = |2x| - 3$ is $y \geq$ ____

*(80) The simple interest on $4,500.00 at 4.5% for 4.5 years is _____ dollars (integer)

The University Interscholastic League
Number Sense Test ● HS District 2 ● 2016

Final _____ _____

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(1) $1865 - 1492 =$ _____

(2) $9.05 \times 8 =$ _____ **(decimal)**

(3) $357 + 1944 =$ _____

(4) $1948 \div 11 =$ _____ **(mixed number)**

(5) $64\% =$ _____ **(proper fraction)**

(6) $1\frac{1}{16} =$ _____ **(decimal)**

(7) $26^2 =$ _____

(8) $6102723 \div 9$ **has a remainder of** _____

(9) $2\frac{4}{9} - \frac{2}{3} =$ _____

***(10)** $572 - 2016 + 1812 - 897 =$ _____

(11) $4\frac{2}{3} + 3\frac{4}{9} =$ _____ **(mixed number)**

(12) $72 \times 25 =$ _____

(13) $1965 \div 3$ **has a remainder of** _____

(14) **3 yards + 2 feet − 8 inches =** _____ **inches**

(15) $1 + 2 + 3 + 4 + 5 + ... + 24 + 25 =$ _____

(16) **MXCVI =** _____ **(Arabic numeral)**

(17) **The GCD of 24, 54, and 72 is** _____

(18) **15% of \$14.00 = \$** _____

(19) **If 9♦'s cost \$15.45 then 12♦'s cost \$** _____

***(20)** $796854 \div 395 =$ _____

(21) $2^5 + 3^3 + 5^2 =$ _____

(22) **The additive inverse of** $-\frac{3}{8}$ **is** _____

(23) **The sum of the prime numbers greater than 10 and less than 20 is** _____

(24) $2 - |3 - 5| + |8 - 1| - 3 =$ _____

(25) $27 \times 33 =$ _____

(26) $\sqrt[3]{1728} =$ _____

(27) $109\frac{1}{11}\%$ **of 66 =** _____

(28) **The number of proper divisors of 12 is** _____

(29) **Set A = {a,c,u,t,e}, O = {o,b,t,u,s,e}, and R = {r,i,g,h,t}. O ∩ (A ∪ R) contains how many distinct elements?** _____

***(30)** $4\frac{7}{8} \times 3198 \div 13 =$ _____

(31) **If x = 39 and y = 13 then** $x^2 - 2xy + y^2 =$ _____

(32) **The LCM of 54 and 24 is** _____

(33) **0.181818... =** _____ **(proper fraction)**

(34) $4\frac{3}{5} \times 4\frac{2}{5} =$ _____ **(mixed number)**

(35) 35% of 30 minus 25 is _____

(36) $(60 \times 38 - 16) \div 7$ has a remainder of _____

(37) 135 base 6 in base 10 is _____

(38) $54 \times 35 =$ _____

(39) $37 \times 43 + 9 =$ _____

*(40) $\sqrt{61027} =$ _____

(41) 65% of 65 — 45% of 45 is _____

(42) Let $A^k \times A^{-2} \div A^{-3} = A^5$. If $A > 1$, then k = _____

(43) $22 \times 26 + 4 =$ _____

(44) The sum of the roots of $3x^2 - 2x = 5$ minus the product of the roots of $3x^2 - 2x = 5$ is _____

(45) The perimeter of a right triangle with a base of 7" and a hypotenuse of 25" is _____ inches

(46) $2016_8 \times 7_8 =$ _____ 8

(47) How many pentagons meet at each vertex of a Platonic dodecahedron? _____

(48) How many subsets containing 3 or 4 elements does the set {n,u,m,b,e,r} have? _____

(49) $1\frac{3}{7} \div 4\frac{2}{3} =$ _____

*(50) $24^2 \times 6^3 =$ _____

(51) The midpoint of the segment with endpoints (6, 1) and (— 5, 4) is (x, y). Find x + y. _____

(52) $7 + 12 + 19 + 31 + 50 + 81 + 131 + 212 =$ _____

(53) ${}_6C_4 \times {}_5P_3 =$ _____

(54) If $\frac{7!}{5!} = \frac{(x+2)!}{(x+1)!}$, then x = _____

(55) The probability of selecting an abundant number from the set of positive digits is _____

(56) $(-2 + 5i)(7 + 3i) = (a + bi)$. Find a + b. _____

(57) $314 \times 319 =$ _____

(58) If $3^{-1} + x^{-1} + 2^{-1} = 1$ then x = _____

(59) The number of positive integral divisors of 64 is___

*(60) $123581 \div 321 =$ _____

(61) The sum of the reciprocals of all of the positive divisors of 15 is _____

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

(63) If $\begin{vmatrix} 1 & 15 \\ 6 & -28 \end{vmatrix} = 6k$, then k = _____(mixed number)

(64) $\cos(\frac{5\pi}{6})\cos(\frac{5\pi}{6}) - \sin(\frac{5\pi}{6})\sin(\frac{5\pi}{6}) =$ _____

(65) If $2\log_4(x - 5) = 3$ then $x > 0$ is _____

(66) Change 0.1222... base 3 to a base 3 fraction. _____

(67) The volume of a rectangular pyramid with a base width of 2.4", a base length of 2.5", and a height 7" is _____ in^3

(68) $F(x) = x^3 - 4x^2 + x + 6$. $F(F(-1)) =$ _____

(69) The first four digits of the decimal for $\frac{23}{450}$ is 0.___

*(70) $1^2 + 2^2 + 3^2 + 4^2 + ... 11^2 + 12^2 =$ _____

(71) The 3rd hexagonal number plus the 3rd pentagonal number plus the 3rd triangular number is _____

(72) Let $f(x) = x^3 - 4x^2 + x + 6$. Find $f''(-2)$. _____

(73) $12^{10} \div 8$ has a remainder of _____

(74) If $6x - 4 \equiv 2 \pmod 8$, $2 \leq x \leq 7$, then x = _____

(75) If $f(x) = \sqrt[3]{2x - 1}$, then $f^{-1}(4) =$ _____

(76) Truncate $(\frac{\sqrt{5}+1}{2} \times \pi)$ to the nearest whole. ____

(77) $\int_0^2 (3x - 5)\,dx =$ _____

(78) The range of the function $y = e^{(-x)}$ is $y >$ _____

(79) The dot product of the vectors (2, — 1) and (— 3, 4) is _____

*(80) The interest on $2000 for 4 years at 6% compounded semiannually is ____ dollars (integer)

The University Interscholastic League
Number Sense Test • HS Regional • 2016

Final _____ _____

Contestant's Number _____ 2nd _____ _____

1st _____ _____

Score **Initials**

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STOP -- WAIT FOR SIGNAL!

(1) $6102 - 524 - 423 =$ _____

(2) $234 \times 5 =$ _____

(3) $1947 \div 3 =$ _____

(4) $0.1875 =$ _____ (proper fraction)

(5) $55\% =$ _____(proper fraction)

(6) $31^2 =$ _____

(7) $5 + 2 - 3 \times 5 \div (2 - 4) + 2^0 + 1 \times 6 =$ _____

(8) $13^3 =$ _____

(9) 1111967 ÷ 9 has a remainder of _____

***(10)** $246 - 1357 + 2134 - 711 =$ _____

(11) $4\frac{1}{4} + 3\frac{1}{3} =$ _____ (mixed number)

(12) $135 \times 12 =$ _____

(13) 42325 ÷ 8 has a remainder of _____

(14) 125% of 88 = _____

(15) $5\frac{2}{5} - 3\frac{2}{3} =$ _____ (mixed number)

(16) If 8 ❑'s cost $6.40 then 5 ❑'s cost $ _____

(17) $37 \times 14 + 14 \times 33 =$ _____

(18) CXXV × XLIV = _____ (Arabic numeral)

(19) 4 gallons — 2 quarts — 2 pints = _____ cups

***(20)** $815 \times 1947 =$ _____

(21) $2^5 + 4^3 + 8^2 =$ _____

(22) What number divided by four gives the same result as that number minus twelve? _____

(23) Let x = — 1. Find $3x^2 + 6x - 9$. _____

(24) The sum of three consecutive even integers is 144. The smallest of the three integers is _____

(25) $4\frac{1}{2} \times 2\frac{1}{10} =$ _____ (mixed number)

(26) $23 \times \frac{26}{29} =$ _____ (mixed number)

(27) What is 27% of $444\frac{4}{9}$ = _____

(28) 0.02555... = _____ (proper fraction)

(29) F = {f,o,r,t,y}, S = {s,i,x,t,y}, and E = {e,i,g,h,t,y}. $(F \cup S) \cap E$ has how many distinct elements? _____

***(30)** $4\frac{2}{3} \times 1423 \div 14 =$ _____

(31) $15^2 + 45^2 =$ _____

(32) If $7x - 5 = 3$, then $7x + 1 =$ _____

(33) 213 base 4 in base 10 is _____

(34) If a = 22 and b = 14, then $4a^2 - 4ab + b^2 =$ _____

(35) $\left(\frac{9}{16}\right)^{\frac{3}{2}}$ = _____

(36) Given the set {1,5,12,22,m,51,70,n,117, 145,... }. Find m + n. _____

(37) 36×53 = _____

(38) $4\frac{5}{8} \times 4\frac{3}{8}$ = _____ (mixed number)

(39) $(22 + 44 \times 66) \div 8$ has a remainder of _____

*(40) $\sqrt{523524}$ = _____

(41) $31 \times 39 + 16$ = _____

(42) Let $39^4 \times 39^{-2} \div 39^k = 39^3$. Find k. _____

(43) The sum of the roots of $9x^2 - 6x = -1$ is _____

(44) The area of a right triangle with a base of 40 cm and a hypotenuse of 41 cm is _____ cm^2

(45) The midpoint of the segment with end points (— 1, 3) and (6, — 10) is (x, y). Find x + y. _____

(46) If $3^{-2} + x^{-1} = 6^{-1}$ then x = _____

(47) Which of the following is an odious number, 3, 5, or 7? _____

(48) The sum of the integral values of x such that $|x - 2| - 4 \leq 6$ is _____

(49) The sum of the number of faces, the number of sides, and the number of vertices of a Platonic icosahedron is _____

*(50) $4^2 \times 3^4 \times 2^5$= _____

(51) $(2 + 3i) \div 5i = (a + bi)$. Find (a + b). _____

(52) Find the 5^{th} term of the geometric sequence, 81, — 27, 9, — 3, ... _____

(53) ${}_7C_5 \times {}_5P_3$= _____

(54) If $\frac{5!4!}{6!} = \frac{(x+1)!}{x!}$, then x = _____

(55) $8 + 15 + 23 + 38 + 61 + ... + 160 + 259$ = _____

(56) The sum of the coefficients of the x^3y^2 term and the xy^4 term of $(x + y)^5$ is _____

(57) 423×425 = _____

(58) Find the units digit of 18^7. _____

(59) The odds of selecting a pentagonal number from the set of digits is _____ (proper fraction)

*(60) 4232016 ÷ 425 = _____

(61) The sum of the reciprocals of all of the positive divisors of 35 is _____

(62) $7^{10} \div 13$ has a remainder of _____

(63) The Greatest Integer Function is written as f(x) = [x]. Find $\left[\frac{\sqrt{5}+1}{2} - 3.14\right]$. _____

(64) If $\log_8(4x + 3) = 2$ then x = _____

(65) $524_6 + 423_6 + 201_6$ = _____ 6

(66) Change $0.4232323..._5$ to a base 10 fraction. _____

(67) How many positive integers less than 20 are relatively prime to 20? _____

(68) $1 - \cos^2(\frac{5\pi}{3})$ = _____

(69) The first four digits of the decimal for $\frac{7}{11}$ is 0.___

*(70) $2^2 + 4^2 + 6^2 + 8^2 + ... 14^2 + 16^2$ = _____

(71) Truncate $5\sqrt{6}$ to the nearest tenth. _____

(72) The largest element of the range of $y^2 = 16 - x^2$ is _____

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

(74) $\int_{-1}^{1} (3x - 4)\,dx$ = _____

(75) If $3x - 2 \equiv 4 \pmod 8$, $0 \leq x \leq 7$, then x = _____

(76) The 1^{st} triangular number times the 2^{nd} hexagonal number times the 3^{rd} pentagonal number is _____

(77) The domain of the function $\sqrt{\text{Ln}(e^x)}$ is x ≥ _____

(78) How many subsets containing only 4 elements does the set {r,e,g,i,o,n} have? _____

(79) $44^2 \div 22^2 \times 11^2$ = _____

*(80) The interest on $5000 for 2.5 years at a simple interest rate of 1.5% is _____ dollars (integer)

The University Interscholastic League
Number Sense Test • HS State • 2016

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STOP -- WAIT FOR SIGNAL!

(1) $5232 + 425 + 2016 =$ _____

(2) $525 - 201 - 6 =$ _____

(3) $345 \times 6 =$ _____

(4) $6102 \div 4 =$ _____

(5) $3\frac{5}{8} =$ _____ **(decimal)**

(6) $4\frac{2}{3} + 2\frac{3}{4} =$ _____ **(mixed number)**

(7) $29^2 =$ _____

(8) $(5 + 2) \times 5 - 20 \div 16 =$ _____

(9) $1.0625 - \frac{9}{16} =$ _____

***(10)** $1492 - 1776 + 1963 - 1044 =$ _____

(11) The arithmetic mean of 17, 23, and _____ is 26.

(12) $5\frac{3}{4} - 2\frac{1}{6} =$ _____ **(mixed number)**

(13) $523525 \div 9$ has a remainder of _____

(14) 20 inches + 1 foot + 6 yards = _____ inches

(15) $41\frac{2}{3}\%$ of 36 is _____

(16) If 6 TDs cost $7.00 then 21 TDs cost $ _____

(17) $44 \times 22 + 26 \times 22 =$ _____

(18) $14^3 =$ _____

(19) $1 + 3 + 5 + 7 + 9 + ... + 31 + 33 =$ _____

***(20)** $620 \times 1975 =$ _____

(21) The multiplicative inverse of -2.2 is _____

(22) $0.23444... =$ _____ **(proper fraction)**

(23) Let G = {g,e,r,m,a,i,n}, P = {p,r,i,m,e} and N = {n,u,m,b,e,r}. The number of distinct elements of $(G \cap P) \cap N$ is _____.

(24) $(20 \times 16 + 52) \div 5$ has a remainder of _____

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

(26) $5 + |2 - 3| - 5 + |2 - 5| =$ _____

(27) $54 \times 56 =$ _____

(28) 67 base 8 in base 9 is _____ 9

(29) Given the set {1,6,15,28,45,m,91,n,153,... }. Find $m + n$. _____

***(30)** $3\frac{5}{16} \times 1875 \div 43.75 =$ _____

(31) Round $2\sqrt{5}$ to the tenths place. _____

(32) If a = 14 and b = 6, then $a^2 + 6ab + 9b^2 =$ _____

(33) $1833\frac{1}{3}\%$ of 36 = _____

(34) The perimeter of a square is 60 cm. The area of the square is _____ cm^2

(35) The sum of the first 4 hexagonal numbers is _____

(36) How many natural numbers less than 10 are considered to be evil numbers? _____

(37) $523_6 + 525_6 =$ _____ 6

(38) $4\frac{5}{8} \div 4\frac{3}{8} =$ _____ (mixed number)

(39) The sum of the prime factors of 210 is _____

*(40) 6102325 ÷ 525 = _____

(41) 25% of 60 — 60% of 25 is _____

(42) If $(9^{-1})(x^{-1}) = 10^{-1}$ then x = _____

(43) $37^2 + 67^2 =$ _____

(44) $(1 - 3i)(6 + 10i) = (a + bi)$. Find $a + b$. _____

(45) The sum of the solutions of $|x + 2| - 4 = 0$ is ____

(46) Find the units digit of 8^8. _____

(47) The sum of the number of faces, vertices, and edges of a Platonic octahedron is _____

(48) $32 \times 35 + 9 =$ _____

(49) The least value of x such that $|x + 4| \leq 2$ is _____

*(50) $75^2 + 54^2 + 33^2 =$ _____

(51) The product of the coefficient of the x^2y term of $(x + y)^3$ and the xy^3 term of $(x + y)^4$ is _____

(52) $\frac{8!}{5!} - \frac{7!}{4!} =$ _____

(53) $361 \times 215 =$ _____

(54) ${}_5C_4 - {}_5C_3 + {}_5C_2 - {}_5C_1 =$ _____

(55) The probability of selecting a perfect number from the set of natural numbers less than 101 is _____%

(56) Let $a^5b^3 \times a^{-1}b^2 \div \left(\frac{a}{b}\right)^3 = a^m b^n$. Find $m + n$. _____

(57) The sum of the reciprocals of all of the positive integral divisors of 21 is _____

(58) The first 4 digits of the decimal for $\frac{39}{110}$ is 0._____

(59) $6 + 10 + 16 + 26 + ... + 288 + 466 =$ _____

*(60) $\sqrt{523524525} =$ _____

(61) 120 has how many positive integral divisors? _____

(62) If $\log_4(4x + 4) = 4$ then x = _____

(63) Change 0.6444... base 8 to a base 10 fraction. _____

(64) $46^2 \div 23^2 \times 11.5^2 =$ _____

(65) Let $f(x) = 5x^2 - 2x - 5$. Find $f(f(-1))$. _____

(66) $\cos^2(\frac{5\pi}{6}) \div \sin^2(\frac{5\pi}{6}) =$ _____

(67) Find k if $\begin{vmatrix} -1 & -5 \\ 12 & 22 \end{vmatrix} = 35 - k$. _____

(68) The total surface area of a rectangular prism with a base width of 5", a base length of 12", and a height of 13" is _____ in^2

(69) $19^{12} \div 5$ has a remainder of _____

*(70) $1^2 + 3^2 + 5^2 + 7^2 + 9^2 + ... 17^2 + 19^2 =$ _____

(71) If $6 + 9x \equiv 5 \pmod 7$, $0 \leq x \leq 6$, then x = _____

(72) $y = \frac{x^3 - 2x^2 + 5}{x^2}$ has how many asymptotes? _____

(73) $(523_8)(25_8) \div 7$ has a remainder of _____

(74) If $f(x) = \frac{3x - 5}{4 - 2x}$, then $f^{-1}(-1) =$ _____

(75) Find k given the geometric sequence $\{k, 3k, 20 - k, ...\}$. _____

(76) $\int_{-1}^{1} (5 + 2x)\, dx =$ _____

(77) The range of the function $y = (x + 2)^{-\frac{1}{2}}$ is $y >$ ___

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

(79) The 3rd hexagonal number plus the 4th pentagonal number plus the 5th triangular number is _____

*(80) $4000 compounded quarterly at an annual rate of 4% for 4 years is _____ dollars (integer)

University Interscholastic League - Number Sense Answer Key HS ● SAC ● Fall 2015

***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) 1,434

(2) 92

(3) 924

(4) 403

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

(6) 3.8

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

(8) 16

(9) 256

***(10) 2,337 — 2,581**

(11) $4\frac{1}{6}$

(12) 1,600

(13) 3

(14) 5.7, $\frac{57}{10}$, $5\frac{7}{10}$

(15) $\frac{4}{9}$

(16) $1\frac{1}{6}$

(17) 7

(18) 258

(19) 84

***(20) 176 — 194**

(21) 90

(22) 10

(23) $1.17

(24) 110

(25) 17

(26) 9

(27) 35

(28) — 11

(29) 7

***(30) 21,854 — 24,153**

(31) 24

(32) 5

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

(34) 4

(35) 1

(36) 1,591

(37) $11\frac{1}{7}$

(38) 15

(39) 441

***(40) 287 — 316**

(41) — 14

(42) — 2

(43) 196

(44) 8

(45) 323

(46) 12

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

(48) 9

(49) — 2

***(50) 284,502 — 314,448**

(51) 61

(52) 5

(53) — 10

(54) .25, $\frac{1}{4}$

(55) — 28

(56) 15

(57) 8

(58) 32,012

(59) 40

***(60) 465 — 513**

(61) 42

(62) — 14

(63) — 2.6, $-\frac{13}{5}$, $-2\frac{3}{5}$

(64) 62

(65) 64

(66) .5

(67) 1

(68) 2

(69) 1

***(70) 2,980 — 3,292**

(71) 18

(72) 1777

(73) 7

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

(75) 9.5, $\frac{19}{2}$, $9\frac{1}{2}$

(76) — 1

(77) 2

(78) 4.2

(79) 5

***(80) 1,459 — 1,611**

University Interscholastic League - Number Sense Answer Key HS ● Invitation A ● 2016

***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) 727

(2) — 267

(3) 580

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

(5) $\frac{9}{25}$

(6) 196

(7) 404

(8) — 15

(9) 2.125

***(10) 5,161 — 5,703**

(11) $3\frac{11}{12}$

(12) 1,625

(13) $38\frac{1}{3}$

(14) 6.6, $\frac{33}{5}$, $6\frac{3}{5}$

(15) .63, $\frac{63}{100}$

(16) 1,606

(17) 7

(18) 54

(19) $1\frac{34}{35}$

***(20) 164,419 — 181,725**

(21) 20

(22) — $\frac{4}{9}$

(23) 160

(24) 13

(25) 1,599

(26) — 2

(27) $1.20

(28) $\frac{14}{45}$

(29) 2

***(30) 2,378 — 2,628**

(31) 1

(32) — 3

(33) $1\frac{1}{2}$

(34) 100

(35) 9

(36) 55

(37) $13\frac{1}{8}$

(38) 4

(39) 30

***(40) 107 — 117**

(41) 36.5, $\frac{73}{2}$, $36\frac{1}{2}$

(42) 24

(43) 1.2, $\frac{6}{5}$, $1\frac{1}{5}$

(44) 2

(45) — 3

(46) — 4

(47) 400

(48) 34

(49) 2

***(50) 59,098 — 65,318**

(51) 6

(52) 3

(53) 13

(54) 30

(55) 0

(56) 36

(57) 46

(58) 29,393

(59) $\frac{5}{9}$

***(60) 11,553 — 12,768**

(61) 10

(62) 11

(63) — 1

(64) 3,375

(65) 780

(66) 1

(67) $\frac{8}{15}$

(68) 1

(69) $\frac{27}{64}$

***(70) 11,917 — 13,171**

(71) 15

(72) $\frac{12}{22}$ (not reducible)

(73) 7

(74) 4242

(75) 14

(76) 0

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

(78) 2

(79) 2

***(80) 2,427 — 2,682**

University Interscholastic League - Number Sense Answer Key HS ● Invitation B ● 2016

***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) 296

(2) 528

(3) 672

(4) 1,386

(5) 60

(6) 253

(7) .125, $\frac{1}{8}$

(8) — 1

(9) $1\frac{1}{3}$

***(10) 2,535 — 2,801**

(11) 529

(12) 2.24

(13) 210

(14) 391

(15) 1,728

(16) $5\frac{19}{20}$

(17) 20

(18) 8,064

(19) 0

***(20) 75 — 82**

(21) 59

(22) 3

(23) — .8, $-\frac{4}{5}$

(24) 343

(25) 11

(26) $12.30

(27) $9\frac{1}{17}$

(28) $4\frac{2}{5}$

(29) 10

***(30) 1,735 — 1,917**

(31) $\frac{17}{33}$

(32) 1,440

(33) 0

(34) 57

(35) 625

(36) — 40.5, $-\frac{81}{2}$, $-40\frac{1}{2}$

(37) 82

(38) 1,679

(39) 12.25, $\frac{49}{4}$, $12\frac{1}{4}$

***(40) 200 — 220**

(41) 625

(42) 90

(43) 200

(44) 5

(45) — 1

(46) 84

(47) .140625, $\frac{9}{64}$

(48) 10

(49) 2202

***(50) 723,946 — 800,150**

(51) 9

(52) 10

(53) 444

(54) 20

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

(56) — 15

(57) 10

(58) 20

(59) 85,094

***(60) 1,001 — 1,105**

(61) 2

(62) 8

(63) — 47

(64) 3

(65) 0

(66) $\frac{9}{20}$

(67) 50

(68) 4

(69) 260

***(70) 11,495 — 12,705**

(71) 2792

(72) 1

(73) — 7

(74) 48

(75) 1

(76) 3

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

(78) 22

(79) 0

***(80) 685 — 757**

2015-16 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) 487

(2) 2,068

(3) 304

(4) 14,112

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

(6) 196

(7) 12.5

(8) — 1

(9) $\frac{47}{55}$

***(10) 5,675 — 6,271**

(11) 1,331

(12) 273

(13) $215\frac{2}{3}$

(14) 1.44

(15) 78

(16) $23\frac{2}{9}$

(17) 19

(18) 112

(19) 12

***(20) 728,396 — 805,068**

(21) 99

(22) 360

(23) 2.5, $\frac{5}{2}$, $2\frac{1}{2}$

(24) 3,375

(25) — $\frac{10}{13}$

(26) $9\frac{1}{15}$

(27) $6.20

(28) 27

(29) $\frac{19}{90}$

***(30) 1,487 — 1,642**

(31) 56

(32) 400

(33) 31

(34) 60

(35) 9

(36) 2,016

(37) $10\frac{2}{13}$

(38) 24

(39) 33

***(40) 332 — 366**

(41) 576

(42) — 9

(43) 1.5, $\frac{3}{2}$, $1\frac{1}{2}$

(44) 70

(45) 2321

(46) — 7

(47) 3

(48) 7

(49) 12.5, $\frac{25}{2}$, $12\frac{1}{2}$

***(50) 249,037 — 275,251**

(51) $2\frac{5}{8}$

(52) — 6

(53) $\frac{16}{3}$, $5\frac{1}{3}$

(54) $\frac{1}{2}$

(55) 80

(56) 11

(57) 35,482

(58) 10

(59) 4

***(60) 599 — 661**

(61) 7

(62) 1

(63) 324

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

(65) — 6

(66) $\frac{1}{2}$

(67) 72

(68) — 7

(69) 3

***(70) 4,655 — 5,145**

(71) 3.5

(72) 2444

(73) 2.25, $\frac{9}{4}$, $2\frac{1}{4}$

(74) 34

(75) 2

(76) — 6

(77) 4

(78) 6

(79) 10

***(80) 112 — 123**

2015-16 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) — 69

(2) 3,965

(3) 224

(4) 3,934

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

(6) .0625

(7) 1,024

(8) $4\frac{19}{20}$

(9) 14

***(10) 6,862 — 7,584**

(11) 2,197

(12) 420

(13) 0

(14) 25

(15) $2\frac{7}{12}$

(16) 2,585

(17) 56

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

(19) 981

***(20) 599,458 — 662,558**

(21) 4,840

(22) — 2

(23) 1.5, $\frac{3}{2}$, $1\frac{1}{2}$

(24) — 28

(25) 0

(26) 176

(27) 1.2, $\frac{6}{5}$, $1\frac{1}{5}$

(28) 5

(29) $6.30

***(30) 7,414 — 8,194**

(31) 44

(32) 285

(33) $\frac{13}{30}$

(34) 1.4

(35) 225

(36) 16

(37) 4

(38) $6\frac{6}{25}$

(39) $11\frac{9}{10}$

***(40) 1,679 — 1,855**

(41) 12

(42) — 1

(43) 2,500

(44) 3

(45) 961

(46) 12

(47) $1\frac{1}{2}$

(48) 4

(49) 53

***(50) 504,869 — 558,013**

(51) 4

(52) 35

(53) — 5

(54) 196

(55) 30

(56) 4.2

(57) 480

(58) 60

(59) $88\frac{8}{9}$

***(60) 4,236,453 — 4,682,395**

(61) 2

(62) 200

(63) — 7.6

(64) 115

(65) 77,665

(66) 3777

(67) 13

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

(69) 16

***(70) 135,740 — 150,028**

(71) .8

(72) 51

(73) 3

(74) 19

(75) 3

(76) — 2.25, $-\frac{9}{4}$, $-2\frac{1}{4}$

(77) — 2

(78) 14

(79) 345

***(80) 112 — 123**

2015-16 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) 1,822

(2) 0

(3) 15.7

(4) 252

(5) $\frac{2}{9}$

(6) 31.5, $\frac{63}{2}$, $31\frac{1}{2}$

(7) 1,089

(8) 4

(9) 11

***(10) 35,676 — 39,430**

(11) 1,512

(12) 9

(13) $3\frac{1}{15}$

(14) 22.5, $\frac{45}{2}$, $22\frac{1}{2}$

(15) 3.96

(16) 319

(17) 960

(18) $8\frac{4}{15}$

(19) $6.05

***(20) 95,461 — 105,509**

(21) 2,890

(22) — 3

(23) 1

(24) 13

(25) 37

(26) .512, $\frac{64}{125}$

(27) 13

(28) $4\frac{11}{20}$

(29) 1

***(30) 20,277 — 22,411**

(31) 15,096

(32) 14

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

(34) $41\frac{9}{25}$

(35) 5

(36) 900

(37) 42

(38) 2.25, $\frac{9}{4}$, $2\frac{1}{4}$

(39) 6

***(40) 2,347 — 2,593**

(41) 192

(42) 72

(43) 163,216

(44) 900

(45) — 1.75, — $\frac{7}{4}$, — $1\frac{3}{4}$

(46) 605

(47) 12

(48) 3

(49) 22

***(50) 12,406 — 13,710**

(51) .0625, $\frac{1}{16}$

(52) 5

(53) 72

(54) 43

(55) 10

(56) 15

(57) — 1

(58) 134,550

(58) 909

***(60) 3,964 — 4,381**

(61) 1.875, $\frac{15}{8}$, $1\frac{7}{8}$

(62) — 10

(63) — 2

(64) 2

(65) 18

(66) 3

(67) 36

(68) $\frac{69}{125}$

(69) 2151

***(70) 481 — 531**

(71) $\frac{1}{10}$

(72) — 8

(73) — 2

(74) 1

(75) 2

(76) 1

(77) — .5, — $\frac{1}{2}$

(78) 35

(79) 75

***(80) 353 — 389**

University Interscholastic League - Number Sense Answer Key HS ● District 1 ● 2016

***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) 1,173

(2) 491

(3) 2,275

(4) 649

(5) $\frac{19}{25}$

(6) $44\frac{2}{5}$

(7) 183

(8) $\frac{43}{24}$, $1\frac{19}{24}$

(9) 324

***(10) 5,810 — 6,420**

(11) 1,331

(12) 15

(13) 7

(14) 4.41

(15) $\frac{5}{6}$

(16) $5\frac{15}{28}$

(17) 88

(18) $5.05

(19) 454

***(20) 68 — 74**

(21) .75, $\frac{3}{4}$

(22) 6,250

(23) 6

(24) — 14

(25) 45

(26) $\frac{7}{30}$

(27) $\frac{5}{6}$

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

(29) 104

***(30) 2,035 — 2,248**

(31) 26,085

(32) — 7

(33) 63

(34) $19\frac{8}{25}$

(35) 2.6, $\frac{13}{5}$, $2\frac{3}{5}$

(36) 1,591

(37) 33

(38) 56

(39) 4

***(40) 171 — 188**

(41) 900

(42) 60

(43) 6,868

(44) — $\frac{5}{7}$

(45) $\frac{27}{8}$, $3\frac{3}{8}$

(46) 5

(47) 130

(48) 10

(49) $1\frac{14}{55}$

***(50) 143,002 — 158,054**

(51) — 4

(52) 4

(53) 29

(54) .6, $\frac{3}{5}$

(55) 150

(56) 8

(57) 656

(58) 104,646

(59) $\frac{1}{144}$

***(60) 23,756 — 26,256**

(61) 1.8, $\frac{9}{5}$, $1\frac{4}{5}$

(62) 28

(63) 4

(64) 343

(65) 3

(66) $\frac{14}{15}$

(67) 96

(68) .75, $\frac{3}{4}$

(69) 10

***(70) 73,949 — 81,733**

(71) 0690

(72) 120

(73) — 18

(74) 8.5, $\frac{17}{2}$, $8\frac{1}{2}$

(75) — 29

(76) 4

(77) — 3

(78) 18.5, $\frac{37}{2}$, $18\frac{1}{2}$

(79) — 3

***(80) 866 — 956**

University Interscholastic League - Number Sense Answer Key HS ● District 2 ● 2016

***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) 373

(2) 72.4

(3) 2,301

(4) $177\frac{1}{11}$

(5) $\frac{16}{25}$

(6) 1.0625

(7) 676

(8) 3

(9) $\frac{16}{9}, 1\frac{7}{9}$

***(10) — 555 — — 502**

(11) $8\frac{1}{9}$

(12) 1,800

(13) 0

(14) 124

(15) 325

(16) 1,096

(17) 6

(18) $2.10

(19) $20.60

***(20) 1,917 — 2,118**

(21) 84

(22) .375, $\frac{3}{8}$

(23) 60

(24) 4

(25) 891

(26) 12

(27) 72

(28) 5

(29) 3

***(30) 1,140 — 1,259**

(31) 676

(32) 216

(33) $\frac{2}{11}$

(34) $20\frac{6}{25}$

(35) $-14.5, -\frac{29}{2}, -14\frac{1}{2}$

(36) 3

(37) 59

(38) 1,890

(39) 1,600

***(40) 235 — 259**

(41) 22

(42) 4

(43) 576

(44) $\frac{7}{3}, 2\frac{1}{3}$

(45) 56

(46) 16142

(47) 3

(48) 35

(49) $\frac{15}{49}$

***(50) 118,196 — 130,636**

(51) 3

(52) 543

(53) 900

(54) 40

(55) 0

(56) 0

(57) 100,166

(58) 6

(59) 7

***(60) 366 — 404**

(61) 1.6, $\frac{8}{5}, 1\frac{3}{5}$

(62) 5

(63) $-19\frac{2}{3}$

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

(65) 13

(66) $\frac{2}{10}$ (not reducible)

(67) 14

(68) 6

(69) 0511

***(70) 618 — 682**

(71) 33

(72) — 20

(73) 0

(74) 5

(75) 32.5, $\frac{65}{2}, 32\frac{1}{2}$

(76) 5

(77) — 4

(78) 0

(79) — 10

***(80) 507 — 560**

University Interscholastic League - Number Sense Answer Key HS ● Regional ● 2016

***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) 5,155

(2) 1,170

(3) 649

(4) $\frac{3}{16}$

(5) $\frac{11}{20}$

(6) 961

(7) 21.5, $\frac{43}{2}$, $21\frac{1}{2}$

(8) 2,197

(9) 8

***(10) 297 — 327**

(11) $7\frac{7}{12}$

(12) 1,620

(13) 5

(14) 110

(15) $1\frac{11}{15}$

(16) $4.00

(17) 980

(18) 5,500

(19) 52

***(20) 1,507,465 — 1,666,145**

(21) 160

(22) 16

(23) — 12

(24) 46

(25) $9\frac{9}{20}$

(26) $20\frac{18}{29}$

(27) 120

(28) $\frac{23}{900}$

(29) 3

***(30) 451 — 498**

(31) 2,250

(32) 9

(33) 39

(34) 900

(35) $\frac{27}{64}$

(36) 127

(37) 1,908

(38) $20\frac{15}{64}$

(39) 6

***(40) 688 — 759**

(41) 1,225

(42) — 1

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

(44) 180

(45) — 1

(46) 18

(47) 7

(48) 42

(49) 62

***(50) 39,399 — 43,545**

(51) .2, $\frac{1}{5}$

(52) 1

(53) 1,260

(54) 3

(55) 663

(56) 15

(57) 179,775

(58) 2

(59) $\frac{1}{4}$

***(60) 9,460 — 10,455**

(61) $\frac{48}{35}$, $1\frac{13}{35}$

(62) 4

(63) — 2

(64) 15.25, $\frac{61}{4}$, $15\frac{1}{4}$

(65) 1552

(66) $\frac{109}{120}$

(67) 8

(68) .75, $\frac{3}{4}$

(69) 6363

***(70) 776 — 856**

(71) 12.2, $\frac{61}{5}$, $12\frac{1}{5}$

(72) 4

(73) — $\frac{11}{3}$, — $3\frac{2}{3}$

(74) — 8

(75) 2

(76) 72

(77) 0

(78) 15

(79) 484

***(80) 179 — 196**

University Interscholastic League - Number Sense Answer Key HS ● State ● 2016

***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) 7,673

(2) 318

(3) 2,070

(4) 1525.5, $\frac{3051}{2}$, $1525\frac{1}{2}$

(5) 3.625

(6) $7\frac{5}{12}$

(7) 841

(8) 33.75, $\frac{135}{4}$, $33\frac{3}{4}$

(9) .5, $\frac{1}{2}$

***(10) 604 — 666**

(11) 38

(12) $3\frac{7}{12}$

(13) 4

(14) 248

(15) 15

(16) $24.50

(17) 1,540

(18) 2,744

(19) 289

***(20) 1,163,275 — 1,285,725**

(21) — $\frac{5}{11}$

(22) $\frac{211}{900}$

(23) 3

(24) 2

(25) $42\frac{5}{36}$

(26) 4

(27) 3,024

(28) 61

(29) 186

***(30) 135 — 149**

(31) 4.5, $\frac{9}{2}$, $4\frac{1}{2}$

(32) 1,024

(33) 660

(34) 225

(35) 50

(36) 4

(37) 1452

(38) $1\frac{2}{35}$

(39) 17

***(40) 11,043 — 12,204**

(41) 0

(42) $\frac{10}{9}$, $1\frac{1}{9}$

(43) 5,858

(44) 28

(45) — 4

(46) 6

(47) 26

(48) 1,129

(49) — 6

***(50) 9,149 — 10,111**

(51) 12

(52) 126

(53) 77,615

(54) 0

(55) 2

(56) 9

(57) $\frac{32}{21}$, $1\frac{11}{21}$

(58) 3545

(59) 1,210

***(60) 21,737 — 24,024**

(61) 16

(62) 63

(63) $\frac{23}{28}$

(64) 529

(65) 11

(66) 3

(67) — 3

(68) 562

(69) 1

***(70) 1,264 — 1,396**

(71) 3

(72) 2

(73) 0

(74) 1

(75) 2

(76) 10

(77) 0

(78) 4

(79) 52

***(80) 4,456 — 4,924**