The University Interscholastic League
Number Sense Test ● HS SAC ● 2016

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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) $917 + 719 =$ _____

(2) $3.14 - .87 =$ _____

(3) $234 \times 5 =$ _____

(4) $123 \div 9 =$ _____ **(mixed number)**

(5) $37.5\% =$ _____ **(proper fraction)**

(6) $1\frac{3}{8} + 1\frac{3}{4} =$ _____ **(mixed number)**

(7) $13^2 =$ _____

(8) $1 + 3 \times 6 - 9 \div 12 =$ _____

(9) **15% of 22 is** _____

***(10)** $1836 + 1845 + 1861 + 1888 =$ _____

(11) $1996 \times 2 + 8 =$ _____

(12) $\frac{3}{4} - \frac{3}{8} - \frac{3}{16} =$ _____

(13) $13^3 =$ _____

(14) **If 4 ☐'s cost $4.44 then 6 ☐'s cost $** _____

(15) $25 \times 36 =$ _____

(16) **The GCD of 60 and 105 is** _____

(17) $17 \times 23 + 27 \times 17 =$ _____

(18) **92016 ÷ 6 has a remainder of** _____

(19) **3 pecks =** _____ **quarts**

***(20)** $389 \times 74 =$ _____

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

(22) **The additive inverse of — 1.2 is** _____

(23) **Let P = {p,r,i,m,e} and F = {f,a,c,t,o,r}. The number of distinct elements of (P ∩ F) is** _____.

(24) **(9 × 20 + 16) ÷ 4 has a remainder of** _____

(25) $1\frac{2}{3} \times 3\frac{1}{2} =$ _____ **(mixed number)**

(26) $9 - |1 + 7| - 20 + |1 - 6| =$ _____

(27) **If 2x + 3 = 5, then x + 4 =** _____

(28) **23 base 4 is** _____ **in base 10**

(29) **Given the set {2,1,3,4,7,p,18,29,q,76,... }. p + q =** __

***(30)** $14 \times 16 \times 22 =$ _____

(31) **A compact car travels 25 miles to the gallon. How many miles can it travel on 16 gallons?** _____

(32) **0.313131... =** _____ **(proper fraction)**

(33) $44\frac{4}{9}\%$ **of 18 =** _____

(34) The perimeter of a rectangle with a length of 6 dm and an area of 54 dm^2 is _____ dm

(35) Let $\frac{3}{8} = \frac{5}{x}$. Find $\frac{1}{x}$ = _____

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

(37) If a = 5 and b = 6, then $a^2 + 2ab + b^2$ = _____

(38) The number of prime divisors of 85 is _____

(39) 2x — y = 3 and x + y = — 2. x = _____

*(40) 1724225 ÷ 2016 = _____

(41) Let $(a^2b^3) \times (a^{-4}b) \div (ab^{-4}) = a^mb^n$. Find m. _____

(42) The sides of a triangle are 3", 3", and $3\sqrt{2}$ ". The smallest angle of the triangle is _____ degrees.

(43) $24^2 + 38^2$ = _____

(44) Let $(3i)(i^3) = a + bi$. Find a + b. _____

(45) The sum of the roots of $5x^2 — 2x — 5 = 0$ is _____

(46) The fourth triangular number is _____

(47) Find the measure of a central angle of a regular hexagon. _____ degrees

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

(49) 30% of 40 — 50% of 60 is _____

*(50) $\sqrt{9172016}$ = _____

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

(52) 3! — 4! = _____

(53) 123 × 322 = _____

(54) ${}_5P_3$ = _____

(55) The probability of rolling a 3 or a 4 on a single die is _____%

(56) The shortest distance from point (4,3) to (0,6) is __

(57) $234_7 + 56_7$ = _____ 7

(58) $24^2 — 16^2$ = _____

(59) 6 + 10 + 14 + 18 + ... + 42 + 46 = _____

*(60) 13 × 27 + 14 × 26 = _____

(61) If $2^{(x+1)} = 32$ then x — 1 = _____

(62) If ln 576 = k(ln 24) then k = _____

(63) Change 0.34 base 5 to a base 10 fraction. _____

(64) Find the magnitude of vector b = (6, 8). _____

(65) Let f(x) = 3x — 2. Find f(f(— 1)). _____

(66) $\cos(\frac{2\pi}{3})$ = _____

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

(68) Round $\sqrt{5}$ to the nearest tenth. _____

(69) $8^5 \div 3$ has a remainder of _____

*(70) $24^2 \times 12^3 \div 6^4$ = _____

(71) If $2x — 5 \equiv 3 \pmod 7$, $0 \leq x \leq 6$, then x = _____

(72) 23 × 25 + 1 = _____

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

(74) The minimum value of $y = 2(x — 3)^2 + 1$ is _____

(75) The first four digits of the decimal for $\frac{8}{33}$ is 0._____

(76) $\lim_{x \to 5} \frac{x^2 — 25}{x — 5}$ = _____

(77) Find the slope of the line tangent to the graph of $f(x) = 2x^2 — 12x + 19$ at (1, 9). _____

(78) $\int_0^2 (x — 1)\,dx$ = _____

(79) The sum of the radii of the circumscribed circle and inscribed circle of a 3, 4, 5, right triangle is _____ units.

*(80) $3\frac{5}{16} \times 1875 \div 43.75$ = _____

The University Interscholastic League
Number Sense Test • HS A • 2017

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(1) $5017 - 1167 =$ _____

(2) $8.15 + 194.7 =$ _____ **(decimal)**

(3) $804 \times 5 =$ _____

(4) $4422 \div 6 =$ _____

(5) $\frac{5}{8} =$ _____ **% (mixed number)**

(6) $64 \times 15 =$ _____

(7) $24 \div 12 + 8 \times 4 - 1 =$ _____

(8) 1112017 ÷ 3 has a remainder of _____

(9) 25% of 22 is _____

***(10)** $17 + 717 + 1717 + 71717 =$ _____

(11) $1996 \times 3 + 12 =$ _____

(12) $14 \times 18 + 14 \times 32 =$ _____

(13) $15^2 =$ _____

(14) Which is greater, $\frac{7}{9}$ or $\frac{11}{13}$? _____

(15) The arithmetic mean of 23, 31, 18, and 36 is _____

(16) The LCM of 32 and 40 is _____

(17) $(7) + (-5) - (3) - (-1) =$ _____

(18) DLXIV = _____ **(Arabic Numeral)**

(19) The number of prime divisors of 80 is _____

***(20)** $18 \times 19 + 1918 =$ _____

(21) $1\frac{2}{3} + 3\frac{1}{2} =$ _____ **(mixed number)**

(22) If 8 QT's cost $12.60 then 6 QT's cost $ _____

(23) $1 - |1 + 2| - 3 + |5 - 8| - 13 =$ _____

(24) $(15 \times 29 + 43) \div 7$ has a remainder of _____

(25) $5^4 =$ _____

(26) Let P = 5, Q = 3, and R = 2. Find PQ^R. _____

(27) Let E = {e,i,n}, Z = {z,w,e,i}, and D = {d,r,e,i}. The number of distinct elements of $(D \cup E \cup Z)$ is ____.

(28) $112\frac{1}{2}\%$ of 24 = _____

(29) $\sqrt[3]{3375} =$ _____

***(30)** $2017 \times 2016 =$ _____

(31) A belt costs $12.00. The total cost if the tax rate is 8.5% is $ _____

(32) $4\frac{3}{5} - 1\frac{7}{10} =$ _____ **(mixed number)**

(33) 35 base 10 is _____ **in base 5**

(34) Given the set {1,9,25,49, ... ,k,361,... }. k = _____

(35) 6 is to 10 as x is to 15. Find x. _____

(36) A right triangle with an height of 12 cm and an area of 30 cm^2 has a base of _____ cm

(37) If $a = -5$ and $b = 4$, then $a^2 - 2ab + b^2$ = _____

(38) The multiplicative inverse of 2.8 is _____

(39) $3x + 4y = 5$ and $x + 2y = -3$. x = _____

*(40) $116117 \div 348$ = _____

(41) The product of the roots of $5x^2 - 2x - 5 = 0$ is ___

(42) The sum of the integral values of x such that $1 + |x - 2| \leq 3$ is _____

(43) $33^2 + 27^2$ = _____

(44) Let $(2i)^2(i^3) = a\sqrt{b}$. Find $a + b$. _____

(45) Let $(a^2b^2) \times (a^3b^{-3}) \div (a^{-1}b) = a^mb^n$. Find $m + n$. _____

(46) The fifth pentagonal number is _____

(47) The number of triangles from a given vertex in a regular hexagon is _____

(48) $5! \div 4! \times 3!$ = _____

(49) 25% of 32 — 75% of 64 is _____

*(50) $\sqrt{1062017}$ = _____

(51) The coefficient of the xy^2 term of $(2x + y)^3$ is ____

(52) $\log_9(27) \div \log_9(3)$ = _____

(53) 0.2434343... = _____ (proper fraction)

(54) ${}_7C_3$ = _____

(55) Three coins are flipped. The odds of getting one tail and two heads is _____ (proper fraction)

(56) $234_7 - 56_7$ = _____ 7

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

(58) $18^2 - 12^2$ = _____

(59) The length of the major axis of $9x^2 + 4y^2 = 36$ is _____

*(60) $28 \times 29 \times 30 \times 31$ = _____

(61) If $4^{(x-1)} = 2^{(x+3)}$ then x = _____

(62) Let $\begin{bmatrix} 2 & -1 \\ 1 & 0 \end{bmatrix} + \begin{bmatrix} -4 & 2 \\ -2 & 1 \end{bmatrix} = \begin{bmatrix} a & c \\ b & d \end{bmatrix}$. Find abcd. _____

(63) The remainder of $(2x^2 - 5x - 1) \div (x + 3)$ is ____

(64) The Cartesian coordinate $(1, \sqrt{3})$ written in polar coordinate form is (r, θ). Find r. _____

(65) Let $f(x) = 1 - 3x - 2x^2$. Find $f(f(\frac{1}{2}))$. _____

(66) $2\sin(\frac{3\pi}{4})\cos(\frac{3\pi}{4})$ = _____

(67) Find k if $\begin{vmatrix} -2 & 1 \\ -1 & 1 \end{vmatrix} = k - 1$. _____

(68) The lateral surface area of a cube with edge length 3 inches is _____ sq. inches

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

*(70) $34^4 \times 17^2 \div 17^4$ = _____

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

(72) $32 \times 35 + 9$ = _____

(73) $f(x) = x^3 - 3x^2 - 5x + 7$. Find $f''(-1)$ = _____

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

(75) The first four digits of the decimal for $\frac{23}{33}$ base 4 is 0._____ in base 4.

(76) The graph of $y = \frac{5x-1}{25x^2+1}$ has _____ asymptote(s)

(77) $14^7 \div 6$ has a remaider of _____

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

(79) The sum of the radii of the circumscribed circle and inscribed circle of a 5, 12, 13, right triangle is _____ units.

*(80) $4\frac{2}{3} \times 1423 \div 14$ = _____

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Number Sense Test • HS B • 2017

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(1) $1492 + 1865 =$ _____

(2) $23.5 \times 0.7 =$ _____ **(decimal)**

(3) $2824 \div 4 =$ _____ **(mixed number)**

(4) $112 - 35 - 8 =$ _____

(5) $1\frac{3}{5} =$ _____ **%**

(6) $21^2 =$ _____

(7) $1.333... \times 36 =$ _____

(8) $45 \times 54 - 24 \times 45 =$ _____

(9) **108 is** _____ **% of 27**

***(10)** $213 + 4711 + 18294 - 7 =$ _____

(11) $1996 \times 5 + 20$ _____

(12) $(11 - 7) \times 5 \div (3 + 2) =$ _____

(13) $275 \times 11 =$ _____

(14) **22017 ÷ 9 has a remainder of** _____

(15) **The sum of the positive divisors of 50 is** _____

(16) **The GCD of 18, 24, and 36 is** _____

(17) $\frac{3}{5} - \frac{1}{10} + \frac{2}{15} =$ _____

(18) **12 ft × 6 ft × 4 ft =** _____ **cubic yards**

(19) **DLXV + CCXIX =** _____ **(Arabic Numeral)**

***(20)** $275 \times 31 - 2017 =$ _____

(21) $1\frac{1}{5} + 1\frac{3}{7} =$ _____ **(mixed number)**

(22) $4^4 =$ _____

(23) **If** $x^{-1} = 2^{-2} + 3^0$ **then x =** _____

(24) **131 base 5 is** _____ **in base 10**

(25) $1\frac{1}{7} - 1\frac{3}{5} =$ _____

(26) **The sum of the solutions of** $|x + 2| = 3$ **is** _____

(27) $8\frac{1}{3}\%$ **of 72 =** _____

(28) $(20 \times 17 - 19) \div 8$ **has a remainder of** _____

(29) $(\{p,l,u,s\} \cap \{m,i,n,u,s\}) \cup \{t,i,m,e,s\}$ **has** _____ **distinct elements.**

***(30)** **7102111 ÷ 1967 =** _____

(31) **Let** $\frac{6}{x} = \frac{4}{5}$**. Find x =** _____

(32) **0.2444... =** _____ **(proper fraction)**

(33) **Given: {1,8,27,64,...,2197,k,3375,... }. Find k.** _____

(34) **How long would it take to travel 450 miles at 75 miles per hour?** _____ **hours**

(35) Let $2x + y = 1$ and $x + 2y = 3$. $y =$ _____

(36) 48 base 10 is _____ in base 6

(37) If $a = 3$ and $4a^2 + 4ab + b^2 = 25$, then $b =$ _____

(38) How many positive natural numbers less than 12 are relatively prime to 12? _____

(39) The length of the diagonals of a square is $16\sqrt{2}$ cm. The perimeter of the square is _____ cm

*(40) $28 \times 25 \times 14 =$ _____

(41) $36^2 - 24^2 =$ _____

(42) The sides of a triangle are 6", 3", and $3\sqrt{3}$ ". The smallest angle of the triangle is _____ degrees.

(43) Let P, Q, & R be the roots of $x^3 - 6x^2 + 11x = 6$. Find $PQ + PR + QR$. _____

(44) If $i^{(11)} = a\sqrt{b}$. Find $a + b$. _____

(45) $1 + 3 + 5 + 7 + ... + 21 + 23 =$ _____

(46) The sum of the integral values of x such that $|x + 1| - 2 \leq 3$ is _____

(47) The area of the ellipse $9x^2 + 4y^2 = 36$ is $k\pi$. Find k. _____

(48) The sum of the reciprocals of all of the positive integral divisors of 9 is _____

(49) If $\log_5(x) = \log_5(15) - \log_5(10)$ then $x =$ _____

*(50) $\sqrt{2017102} =$ _____

(51) The coefficient of the x^2y term of $(x - y)^3$ is _____

(52) ${}_4P_2 \div {}_4C_2 =$ _____

(53) Y varies directly with X and Y = 6 when X = 9. Find X when Y = 10. _____

(54) $215 \times 213 =$ _____

(55) Round $\sqrt{3} + \sqrt{6}$ to the tenths place. _____

(56) The number of distinct diagonals of a regular pentagon is _____

(57) $235_7 \times 6_7 =$ _____ $_7$

(58) The first four digits of the decimal for $\frac{4}{111}$ is 0.___

(59) The probability of selecting a factor of 12 from the set of digits is _____%

*(60) $55 \times 45 \times 35 \div 25 =$ _____

(61) If $3^{(x+1)} = 81$ then $9^{(x-1)} =$ _____

(62) $75^2 - 50^2 =$ _____

(63) Change $0.232323..._5$ to a base 10 fraction. _____

(64) Vector a = (— 4, — 9) and vector b = (— 1, 2). Find the dot product ab. _____

(65) $F(x) = 4x - 1$. $G(x) = x + 4$. $G(F(2)) =$ _____

(66) $2\cos^2(30°) - 1 =$ _____

(67) $\begin{bmatrix} 3 & 1 \\ 0 & 2 \end{bmatrix} \times \begin{bmatrix} 2 & 1 \\ 2 & 1 \end{bmatrix} = \begin{bmatrix} a & c \\ b & d \end{bmatrix}$. $ab + cd =$ _____

(68) The volume of a cube with a face area of 16 cm^2 is _____ cm^3

(69) $12^6 \div 5$ has a remainder of _____

*(70) $4^4 \times 16^4 \div 16^2 =$ _____

(71) $12 + 67 \pmod{36} \equiv x$, where $0 \leq x \leq 9$. $x =$ _____

(72) $22 \times 26 + 4 =$ _____

(73) The sum of the radii of the circumscribed circle and inscribed circle of a 9, 40, 41, right triangle is _____ units.

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

(75) 0.141414... base 6 = _____ $_6$ (proper fraction)

(76) $\lim_{x \to \infty} \frac{2x - 3}{1 - x} =$ _____

(77) The range of $y = \sqrt{3x - 1}$ is $y \geq$ _____

(78) How many triangles can be formed using any three vertices of a regular octagon? _____

(79) $444 \times \frac{4}{37} =$ _____

*(80) $4\frac{2}{3} \times 32016 \div 21 =$ _____

2016-17 TMSCA High School Number Sense Test 6

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(1) $123 - 590 =$ _____

(2) $12.16 \div 0.4 =$ _____ **(decimal)**

(3) $3121 \times 6 =$ _____

(4) $\frac{5}{12} + \frac{7}{18} =$ _____

(5) $24 \times 52 + 52 \times 26 =$ _____

(6) $0.075 =$ _____ **(proper fraction)**

(7) $17^2 =$ _____

(8) 18 is _____% of 90

(9) $1 + 2 \times (6 - 24) \div 120 =$ _____

***(10)** $1203 + 2016 + 312 + 16 =$ _____

(11) $1996 \times 8 + 32 =$ _____

(12) The LCM of 42 and 48 is _____

(13) $17 \times 82 =$ _____

(14) $11^3 =$ _____

(15) If 1 cm = 0.39" then 3 meters = _____"

(16) $1\frac{1}{3} - \frac{5}{6} =$ _____

(17) If 4 pens cost $1.70 then 14 pens cost $ _____

(18) 120316 ÷ 11 has a remainder of _____

(19) What number times 9 and added to 48 gives the same result? _____

***(20)** $29 \times 28 + 2928 =$ _____

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

(22) Let P = — 4, Q = — 1, and R = 2. Find $P^Q R$. _____

(23) $2 - |1 + 3| + 4 - |7 - 11| =$ _____

(24) 44 base 8 is _____ in base 10

(25) 6.25% of 64 = _____

(26) 0.6999... = _____ **(proper fraction)**

(27) How many positive integers less than or equal to 15 are relatively prime to 15? _____

(28) $(20 \times 16 - 3 \times 12) \div 9$ has a remainder of _____

(29) Given the set {2,5,8,11,...29,k,35,... }. k = _____

***(30)** $312 \times 2016 =$ _____

(31) Find the simple interest on $600 at 6% for 6 months. $_____

(32) If $k^{-1} \times 2^{-3} = 1$ then k = _____

(33) $2\frac{1}{4} \div 1\frac{1}{8} =$ _____

(34) Let $3x - y = 4$ and $2x + y = 1$. y = _____

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

(36) 6" by 18" = _____ square feet

(37) (24)(16) — (12)(18) = _____

(38) The altitude to the hypotenuse of a right triangle with side lengths 3", 4", and 5" is _____ inches

(39) Let P, Q, & R be the roots of $x^3 - 3x^2 + 5x = 7$. Find (PQR)(P + Q + R). _____

***(40)** $\sqrt{80808}$ = _____

(41) The second hexagonal number is _____

(42) $42^2 - 28^2$ = _____

(43) Let $(3 + i)(3 - i) = a + bi$. Find a + b. _____

(44) The number of triangles from a given vertex in a regular pentagon _____

(45) Let $(a^2b) \div (a^4b^2) \times (ab^4) = a^m b^n$. m + n = _____

(46) 40% of 45 + 50% of 55 is _____

(47) Find the measure of a central angle of a regular hexagon. _____ degrees

(48) The sum of the integral values of x such that $|x + 3| - 1 \leq 5$ is _____

(49) If $\frac{5!}{6!} = \frac{x!}{(x-1)!}$, then x = _____

***(50)** 22 × 27 × 50 = _____

(51) The sum of the coefficients of the expansion $(x + y)^4$ is _____

(52) $\log_4(8) \times \log_4(2)$ = _____

(53) $123_8 + 456_8$ = _____ 8

(54) The length of the minor axis of $8x^2 + 12y^2 = 96$ is $p\sqrt{q}$. Find p + q. _____

(55) The probability of selecting a positive multiple of 4 from the set of base 10 digits is _____%

(56) Truncate $7\sqrt{7}$ to a whole number. _____

(57) 311 × 224 = _____

(58) $11 \times \frac{12}{13}$ = _____ (mixed number)

(59) 5 + 2.5 + 1.25 + 0.625 + 0.3125 + ... = _____

***(60)** 15 × 25 × 35 ÷ 45 = _____

(61) If $6^{(x-1)} = 7776$ then $6^{(x-2)}$ = _____

(62) The Greatest Integer Function is written as f(x) = [x]. Find $\left[\pi\sqrt{10}\right]$. _____

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

(64) The total surface area of a 3" by 4" by 5" rectangular prism is _____ sq. inch

(65) $\tan(\frac{7\pi}{4})$ = _____

(66) The Cartesian coordinate (5, 12) written in polar coordinate form is (r, θ). Find r. _____

(67) The remainder of $(4x^2 - 4x + 1) \div (x - 2)$ is ___

(68) If $f(x) = 2x^2 + x - 1$ then f(f(1)) = _____

(69) $0.212121..._3$ = _____ 3 (proper fraction)

***(70)** $32^4 \times 16^2 \div 16^4$ = _____

(71) If 54(mod 16) ≡ x, where $0 \leq x \leq 9$, then x = ____

(72) 25 × 28 + 9 = _____

(73) The sum of the radii of the circumscribed circle and inscribed circle of a 7, 24, 25, right triangle is _____ units.

(74) The domain of $y = \sqrt{3x - 1}$ is $x \geq$ _____

(75) The first four digits of the decimal for $\frac{12}{44}$ base 5 is 0._____ in base 5.

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

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

(78) The graph of $x^2 - y^2 = 1$ has an asymptote $y = mx$. If $m < 0$ then m = _____

(79) How many triangles can be formed using any three vertices of a regular pentagon? _____

***(80)** $2\frac{1}{4} \times 92015 \div 9$ = _____

2016-17 TMSCA High School Number Sense Test 13

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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) $225 + 304 - 17 =$ _____

(2) $201 \times 7 =$ _____

(3) $22.5 \div 0.03 =$ _____

(4) $16\frac{2}{3}\% =$ _____ **(proper fraction)**

(5) $\frac{7}{8} =$ _____ **(decimal)**

(6) $304 \times 25 =$ _____

(7) $2\frac{2}{5} - 3\frac{1}{15} =$ _____

(8) 2252017 ÷ 8 has a remainder of _____

(9) $12^3 =$ _____

***(10)** $1947 + 1965 + 1967 + 2017 =$ _____

(11) $1997 \times 4 + 12 =$ _____

(12) $19^2 =$ _____

(13) $(2 + 2) \times 5 - 3^0 \div 4 =$ _____

(14) $70 \div 48 - 46 \div 48 =$ _____

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

(16) 16 quarts = _____ pecks

(17) $24 + 36 + 48 + 52 + 64 + 76 =$ _____

(18) If 1 cm = 0.39" then 5 meters = _____"

(19) The sum of the positive prime divisors of 60 is ____

***(20)** $225 \times 304 + 2017 =$ _____

(21) Let U = {u,n,o}, D = {d,o,s}, T={t,r,e,s} and C = {c,u,a,t,r,o}. The number of distinct elements of $(U \cup T) \cap (D \cup C)$ is _____

(22) $\sqrt{1089} =$ _____

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

(24) $2 - |2 - 5| + 3 + |4 - 1| - 7 =$ _____

(25) The multiplicative inverse of — 1.1 is _____

(26) If 10 mops cost $24.00 then 6 mops cost $_____

(27) Let P = 3, Q = — 2, and R = 5. Find PQ — R. _____

(28) $(2^4)(3^2) + 5 =$ _____

(29) $2\frac{3}{4}\%$ of 56 is _____ **(decimal)**

***(30)** $14 \times 16 \times 22 =$ _____

(31) b = 3, $a^2 + 6ab + 9b^2 = 36$, and $a > -6$. a = ____

(32) Given the set {1,3,6,10,...,55,k,78,... }, find k. _____

(33) The area of a circle with a circumference of 2.2π ft is $A\pi$ sq. ft. Find A. _____

(34) $(225 \times 20 + 17) \div 6$ has a remainder of _____

(35) 0.3444... = _____ (proper fraction)

(36) $x + 2y = 3$ and $x + y = -5$. $x =$ _____

(37) 135 base 7 is _____ in base 10

(38) The number of positive integral divisors of 48 is___

(39) If P is 10% greater than Q and Q is 20% greater than R, then P is what % greater than R. _____ %

***(40)** $225304 \div 71.02 =$ _____

(41) Round ($\sqrt{2} \times \sqrt{3}$) to a whole number. _____

(42) If log(2) = .3 and log(3) = .5, then log(12) = _____

(43) $73 \times 33 =$ _____

(44) $1 + 4 + 5 + 9 + 14 + ... + 60 + 97 =$ _____

(45) The sum of the integral values of x such that $4|x + 3| \leq 2$ is _____

(46) ${}_9C_6 \div {}_9C_3 =$ _____

(47) $225_8 \times 11_8 =$ _____ 8

(48) The sum of the reciprocals of all of the positive integral divisors of 18 is _____

(49) $48^2 - 32^2 =$ _____

***(50)** $33 \times 38 \times 50 =$ _____

(51) The number of distinct diagonals of a regular hexagon is _____

(52) $222 \times \frac{2}{37} =$ _____

(53) $4545 \div 101 = 5 \times$ _____

(54) Let $(3 + 2i)^2 = a + bi$. Find $a + b$. _____

(55) The odds of picking a multiple of 3 from the set of positive digits is _____ (proper fraction)

(56) Points (x, 1), (0, 7), & (3, 10) are collinear. x = ____

(57) Let $(a^{-2}b^{-3}) \times (a^{-4}b^5) \div (ab^0) = a^m b^n$. Find $m + n$. _____

(58) The length of the minor axis of $9x^2 + 4y^2 = 36$ is _____

(59) The fourth hexagonal number is _____

***(60)** $\sqrt{3042017} =$ _____

(61) The volume of a sphere with a surface area of 9π in^2 is $k\pi$ in^3. k = _____

(62) The Greatest Integer Function is written as $f(x) = [x]$. Find $\left[3 \times \frac{\sqrt{5}+1}{2}\right]$. _____

(63) $\begin{bmatrix} 2 & 1 \\ 1 & 0 \end{bmatrix} - \begin{bmatrix} -4 & 2 \\ -2 & 1 \end{bmatrix} = \begin{bmatrix} a & c \\ b & d \end{bmatrix}$. $ad - cb =$ _____

(64) The polar coordinate (4, 30°) written in rectangular coordinate form is (x, y). Find y. _____

(65) Let vector a = (5, 12). Find $\|a\|$. _____

(66) $f(x) = 1 - 3x$ and $g(x) = 3 + x$. $g(f(2)) =$ _____

(67) Change $0.1333..._5$ to a base 5 fraction. _____ 5

(68) $\sec^2(\frac{\pi}{4}) - \tan^2(\frac{\pi}{4}) =$ _____

(69) $2345_6 \div 5_6$ has a remainder of _____ 6

***(70)** $36^2 \times 18^3 \div 9^4 =$ _____

(71) The range of $y = x^2 - 2x - 3$ is $y \geq$ _____

(72) $y = \frac{4x+7}{3x^2-5}$ has a horizontal asymptote at y = ____

(73) The critical value of $f(x) = \frac{1}{2}x + \cos x$, where $\frac{\pi}{2} < x < \pi$, is $k\pi$. Find k. _____

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

(75) The first four digits of the decimal for $\frac{7}{45}$ is 0. ____

(76) $23 \times 28 + 25 =$ _____

(77) The sum of the radii of the circumscribed circle and inscribed circle of a 11, 60, 61, right triangle is _____ units.

(78) $f(x) = x^5 - x^4 - 2x^2 + x + 7$. Find $f''(1) =$ _____

(79) $234 \times 531 =$ _____

***(80)** $3\frac{5}{9} \times 2017 \div 1.6 =$ _____

2016-17 TMSCA UIL District Warm-Up

Final _____ _____

Contestant's Number _____ 2nd _____ _____

1st _____ _____

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STOP -- WAIT FOR SIGNAL!

(1) $319 + 323 + 2017 =$ _____

(2) $20.17 - 19.23 =$ _____ **(decimal)**

(3) $19 \times 23 =$ _____

(4) $323 \div 3 =$ _____ **(mixed number)**

(5) **75% of 72 is** _____

(6) $1 + 4 \times 6 \div 8 - 9 =$ _____

(7) $23^2 =$ _____

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

(9) **76% =** _____ **(proper fraction)**

***(10)** $1751 + 1854 + 1957 + 2060 =$ _____

(11) $1988 \times 6 + 72 =$ _____

(12) $84 \div 26 - 32 \div 26 =$ _____

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

(14) **12 rods =** _____ **feet**

(15) $47 \times 38 =$ _____

(16) **The LCM of 32, 44, and 16 is** _____

(17) **If 16 X's cost $8.24 then 6 X's cost $**_____

(18) **319232017 ÷ 11 has a remainder of** _____

(19) $\frac{2}{3} + \frac{5}{9} - \frac{7}{18} =$ _____

***(20)** $323 \times 319 =$ _____

(21) $4^6 \div 2^3 =$ _____

(22) **The negative reciprocal of 2.5 is** _____

(23) **Let N = {n,u,m,b,e,r} and T = {t,h,e,o,r,y}. The number of distinct elements of (N ∪ T) is _____.**

(24) **(19 × 23 + 17) ÷ 3 has a remainder of** _____

(25) $3\frac{1}{2} \div 1\frac{2}{3} =$ _____ **(mixed number)**

(26) $62\frac{1}{2}$**% of 72 =** _____

(27) $\sqrt[3]{3.375}$ = _____ **(decimal)**

(28) **323 base 5 is** _____ **in base 10**

(29) **The number of prime divisors of 319 is** _____

***(30)** $323319 \div 2017 =$ _____

(31) $2^0 + |1 - 7| - 19 - |2 + 3| =$ _____

(32) **0.4121212... =** _____ **(proper fraction)**

(33) **If a = 23 and b = 19, then** $a^2 - 2ab + b^2 =$ _____

(34) **The perimeter of a right triangle with a height of 12" and an area of 30 sq. inches is** _____ **inches**

(35) 15 miles per hour = _____ ft/sec

(36) If $3x + 2 = 3$, then $1 - 6x$ = _____

(37) A pickup travels at a rate of 75 mph for 330 minutes. How far did it travel? _____ miles

(38) Let N = {0,2,6,12,20,...,72,x,y,132,... }. $x + y$ = ____

(39) If $3x - y = 9$ and $3x + 2y = 3$, then y = _____

*(40) $10(\pi)^3$ = _____

(41) 20% of 80 plus 70% of 30 is 50% of _____

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

(43) 101^2 = _____

(44) $\frac{7}{11} + \frac{4}{7}$ = _____ (mixed number)

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

(46) The sixth hexagonal number is _____

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

(48) The sum of the reciprocals of all of the positive integral divisors of 33 is _____

(49) The side opposite the 60° angle in a right triangle is $4\sqrt{3}$ cm. The hypotenuse is _____ cm

*(50) $\sqrt{19710223}$ = _____

(51) $3 + 8 + 13 + 18 + ... + 58 + 63$ = _____

(52) $532_6 - 235_6$ = _____ 6

(53) If $\log_k (1728) = 3$, then k = _____

(54) The coefficient of the x^2y^3 term of $(x - y)^5$ is ____

(55) The odds of rolling a 1 or a 6 on a single die is ____

(56) The midpoint of the segment with endpoints of (— 4,2) and (2,8) is (x,y). Find $x + y$. _____

(57) tan (315°) = _____

(58) 357×642 = _____

(59) $\frac{4!}{5!2!}$ = _____

*(60) $22 \times 27 + 15 \times 44$ = _____

(61) Truncate $\sqrt{7}$ to the nearest thousandth. _____

(62) $\begin{vmatrix} -2 & 6 \\ -4 & 5 \end{vmatrix}$ = _____

(63) $3^{19} \div 7$ has a remainder of _____

(64) $\cos^2(\frac{\pi}{4}) - \sin^2(\frac{\pi}{4})$ = _____

(65) $\ln(e^3)$ = _____

(66) $18^2 - 17^2 + 16^2 - 15^2$ = _____

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

(68) If $5^{(x+1)} = 78{,}125$ then If $5^{(x)}$ = _____

(69) 0.2131313... base 7 = _____ base 7 (fraction)

*(70) $33^2 \times 22^3 \div 11^4$ = _____

(71) The first four digits of the decimal for $\frac{5}{25}$ base 8 is 0._____ base 8

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

(73) $\lim_{x \to 3} \frac{x^2 - 6x + 9}{x - 3}$ = _____

(74) $14 \times \frac{14}{17} - 3$ = _____ (mixed number)

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

(76) The horizontal asymptote of $y = \frac{3 + x}{x^2 - 5}$ is y = ____

(77) If $f(x) = \frac{3 + x}{5} - 7$, then $f^{-1}(2)$ = _____

(78) $(314_6)(22_6) \div 5$ has a remainder of _____

(79) $\frac{1}{18} + \frac{1}{54} + \frac{1}{108} + \frac{1}{180}$ = _____

*(80) $\sqrt[3]{33333333}$ = _____

The University Interscholastic League
Number Sense Test ● HS District ● 2017

Final _____ _____

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(1) $320 + 2017 =$ _____

(2) $20.17 - 3.25 =$ _____ **(decimal)**

(3) $235 \times 8 =$ _____

(4) $2517 \div 9 =$ _____ **(mixed number)**

(5) $32\% =$ _____ **(proper fraction)**

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

(7) $16^2 =$ _____

(8) $1 + 2 \times (3 - 4) \div (5 - 6) =$ _____

(9) $3202517 \div 3$ has a remainder of _____

***(10)** $1347 + 1118 + 294 + 776 =$ _____

(11) $1996 \times 7 + 28 =$ _____

(12) $94 \div 22 - 28 \div 22 =$ _____

(13) If 8 pens cost $17.60 then 10 pens cost $ _____

(14) Which is greater, $\frac{11}{15}$ or $\frac{14}{17}$? _____

(15) If 1 cm = 0.39" then 10 meters = _____"

(16) The GCD of 48, 32, and 24 is _____

(17) $26 + 54 + 72 + 18 + 36 + 64 =$ _____

(18) $\frac{11}{15} + \frac{15}{11} =$ _____ **(mixed number)**

(19) CXLV — DL = _____ **(Arabic Numeral)**

***(20)** $17 \times 25 + 2517 =$ _____

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

(22) Let P = 3, Q = — 2, and R = 4. Find $(RQ)^P$. _____

(23) Let M = {m,i,x,e,d} and N = {n,u,m,b,e,r}. The number of distinct elements of $(M \cup N)$ is _____

(24) $(20 \times 25 + 20) \div 17$ has a remainder of _____

(25) The multiplicative inverse of 3.2 is _____

(26) $3\frac{2}{5} - \frac{1}{8} =$ _____

(27) $4\frac{2}{3}\%$ of 2400 = _____

(28) How many positive integers less than or equal to 20 are relatively prime to 20? _____

(29) Given the set {3,7,10,17,p,q,71,115,...}. $p + q =$ ___

***(30)** $325 \times 2017 =$ _____

(31) If a = 4 and $a^2 + 4ab + 4b^2 = 576$, and $b > 0$ then b = _____

(32) 0.3777... = _____ **(proper fraction)**

(33) A car running at an average speed of 60 mph for 3 hours and 20 minutes would travel _____ miles

(34) 320 base 5 is _____ in base 10

(35) Let $\frac{5}{6} = \frac{7}{x}$. Find x = _____

(36) $2\frac{2}{5} - 1.8$ = _____

(37) If $x + y = 2$ and $2x - y = 4$, then xy = _____

(38) $\frac{1}{3} - \frac{5}{6} + \frac{7}{9}$ = _____

(39) $2 - |1 - 3| - 4 + |7 - 11| - 18$ = _____

*(40) $\sqrt{7152023}$ = _____

(41) The roots of $x^3 - 4x^2 + x + 6 = 0$ are 2, — 1, and k. Find k. _____

(42) The sides of a triangle are 8", 4", and $4\sqrt{3}$ ". The smallest angle of the triangle is _____ degrees

(43) $46^2 - 54^2$ = _____

(44) Let $(3i)^2(i) = a\sqrt{b}$. Find a + b. _____

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

(46) The fifth pentagonal number is _____

(47) The number of triangles from a given vertex in a regular nonagon _____

(48) $523_6 \times 11_6$ = _____ 6

(49) $\frac{6!}{3!} = \frac{4!}{x}$. x = _____

*(50) $21 \times 33 \times 45$ = _____

(51) $888 \times \frac{4}{37}$ = _____

(52) If (x, y) is the midpoint of the segment with endpoints (— 2, 5) to (1, — 7), then x + y = _____

(53) 320×325 = _____

(54) $7\frac{3}{7} \times 7\frac{4}{7}$ = _____

(55) The sum of the lengths of the minor axis and the major axis of $4x^2 + 9y^2 = 36$ is _____

(56) Round $5\sqrt{6}$ to the nearest tenth. _____

(57) Let $a^5 \times b^{-2} \div a^{-7} \times b \times a^0 \div b^2 = a^m b^n$. Find m + n. _____

(58) The first four digits of the decimal for $\frac{113}{333}$ is 0.___

(59) ${}_5C_2 \div {}_5C_4$ = _____

*(60) $[(\sqrt{5} + 1) \div 2] \times 621$ = _____

(61) If $9^{(2x-1)} = 3^{(x+2)}$ then x = _____

(62) Change $0.343434..._7$ to a base 10 fraction. _____

(63) The remainder of $(x^3 - 4x^2 + 6) \div (x + 5)$ is ____

(64) $\sin(\frac{\pi}{3}) \times \cos(\frac{\pi}{6}) + \tan(\frac{3\pi}{4})$ = _____

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

(66) Vector a = (— 2, 5) and vector b = (1, — 7). Find the dot product ab. _____

(67) Find k if $\begin{vmatrix} -7 & 1 \\ -0 & 2 \end{vmatrix} = 2k + 5$. _____

(68) The Greatest Integer Function is written as $f(x) = [x]$. Find $\left[(\sqrt{5} + 1) \div 2 \times \sqrt{3}\right]$. _____

(69) $32017_8 \div 7_8$ has a remainder of _____ 8

*(70) $64^2 \times 32^3 \div 16^4$ = _____

(71) If $3x \equiv 17 \pmod 5$, where $0 \leq x \leq 5$, then x = ___

(72) $43 \times 47 + 4$ = _____

(73) The sum of the critical values of $f(x) = x^3 - 3x + 1$ is _____

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

(75) $\int_{-1}^{1} (8x + 1)\,dx$ = _____

(76) $\lim_{x \to \infty} \frac{3x^2 - 2x + 1}{x^2 + 4}$ = _____

(77) $34^5 \div 6$ has a remaider of _____

(78) $84^2 + 32^2$ = _____

(79) The sum of the radii of the circumscribed circle and inscribed circle of a right triangle with side lengths of 250 cm, 88 cm, and 234 cm is _____ cm

*(80) $3\frac{1}{4} \times 2017 \div 26$ = _____

The University Interscholastic League
Number Sense Test • HS Regional • 2017

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2nd _____ _____
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(1) $2017 - 910 =$ _____

(2) $1997 + 1408 =$ _____

(3) $910 \div 8 =$ _____ **(mixed number)**

(4) $13.6 \times 0.5 =$ _____

(5) $\frac{7}{25} =$ _____%

(6) $\frac{3}{5} - 1\frac{1}{2} =$ _____

(7) **15% of 48 is** _____

(8) $2 + 5 \times 9 - 14 \div (20 - 27) =$ _____

(9) $132 \times 14 =$ _____

***(10)** $7102 + 910 + 109 + 2017 =$ _____

(11) $1991 \times 8 + 72 =$ _____

(12) $27^2 =$ _____

(13) $15^3 =$ _____

(14) **If 32 Ems cost $43.84 then 4 Ems cost $** _____

(15) **The arithmetic mean of 27, 16, 9, and 40 is** _____

(16) **If 1 cm = 0.39" then 20 decimeters =** _____"

(17) $\frac{4}{7} - \frac{3}{14} + \frac{5}{28} =$ _____

(18) **The sum of the positive prime divisors of 70 is** ____

(19) **CMXVII — MXX =** _____ **(Arabic Numeral)**

***(20)** $17 \times 23 + 1723 =$ _____

(21) $1 - |5 - 12| - 22 - |3 - 5| =$ _____

(22) $\sqrt{1936} =$ _____

(23) **4 yards — 5 feet + 9 inches =** _____ **inches**

(24) **$(9 \times 10 + 20) \div 17$ has a remainder of** _____

(25) $3\frac{1}{4} \times 2\frac{3}{5} =$ _____ **(mixed number)**

(26) **The sum of the solutions of $|2x + 3| = 5$ is** _____

(27) **$(\{p,l,u,s\} \cup \{m,i,n,u,s\}) \cap \{t,i,m,e,s\}$ has** _____ **distinct elements**

(28) $(3^4) + (2^4) - 1 =$ _____

(29) **8 is to 12 as 12 is to x. Find x.** _____

***(30)** $23 \times 27 \times 58 =$ _____

(31) **Find the simple interest on $600 at 12% for 24 months. $** _____

(32) $11\frac{2}{9}\%$ **of 81 =** _____ **(decimal)**

(33) **If** $x^{-1} = 4^{-2} + 2^{-3}$ **then x =** _____

(34) **$a = 4$, $a^2 + 10ab + 25b^2 = 81$, and $b > 0$. b =** ____

(35) **123 base 10 is** _____ **in base 4**

(36) The perimeter of a rectangle with a width of 4 yds and an area of 18 yds^2 is _____ yds

(37) $22 \times 16 + 56 \times 32$ = _____

(38) How many positive natural numbers less than or equal to 30 are relatively prime to 30? _____

(39) If $5x - 3y = 2$ and $x - y = 1$ then x = _____

*(40) $\sqrt{9201017}$ = _____

(41) $27^2 - 18^2$ = _____

(42) The sides of a triangle are 10", 5", and $5\sqrt{3}$ ". The smallest angle of the triangle is _____ degrees

(43) Let $3(i)^4(i)^5 = a\sqrt{b}$. Find a + b. _____

(44) Let P, Q, & R be the roots of $x^3 + 3x^2 - 11x = 18$. Find (P + Q + R)(PQR). _____

(45) Find the measure of a central angle of a regular decagon. _____ degrees

(46) Let $(a^{-5}b^3) \times (a^4b^{-2}) \div (a^{-1}b^{-1}) = a^mb^n$. Find m + n. _____

(47) $217_8 + 721_8 - 172_8$ = _____ 8

(48) The sum of the reciprocals of all of the positive integral divisors of 26 is _____

(49) If $\frac{5!4!}{6!} = \frac{(x-1)!}{(x-2)!}$, then x = _____

*(50) $12 \times 24 \times 36 \times 48$ = _____

(51) The number of distinct diagonals of a regular nonagon is _____

(52) $\log_3(81) \div \log_3(27)$ = _____

(53) 579×123 = _____

(54) If (x, y) is the midpoint of the segment with endpoints of (2, 8) and (6, 1), then x + y = _____

(55) Four pennies are flipped. The odds of three heads and one tail being face up is ____ (proper fraction)

(56) Truncate $3\sqrt{5}$ to the nearest tenth. _____

(57) Y varies indirectly with X and Y = 10 when X = 2. Find Y when X = 6. _____

(58) The length of the minor axis of $16x^2 + 25y^2 = 400$ is _____

(59) The first four digits of the decimal for $\frac{15}{330}$ is 0. ___

*(60) $6\frac{3}{4} \times 60006 \div 18$ = _____

(61) If $7^{(x)} = 16{,}807$ then $7^{(x+1)}$ = _____

(62) $\begin{bmatrix} 2 & 1 \\ 1 & 0 \end{bmatrix}\begin{bmatrix} 4 & 2 \\ 2 & 1 \end{bmatrix} = \begin{bmatrix} a & c \\ b & d \end{bmatrix}$. a + b + c + d = ____

(63) Change $0.4212121..._6$ to a base 10 fraction. _____

(64) The Cartesian coordinate $(-1, \sqrt{3})$ in polar coordinate form is (r, θ). Find $\theta \in$ QII. _____°

(65) F(x) = 9x — 10. G(x) = 20x + 17. G(— F(1)) =_____

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

(67) Let vector a = (11, 60). Find $\|a\|$. _____

(68) The edge of a cube with a lateral surface area of 9 sq. inches is _____ inches

(69) $2357_8 \div 7_8$ has a remainder of _____ 8

*(70) $8^4 \times 32^3 \div 16^2$ = _____

(71) The domain of $y = \sqrt[4]{3 - 2x}$ is $x \leq$ _____

(72) $112 \times 118 + 9$ = _____

(73) Let $f(x) = \frac{x^2}{6} + \frac{x}{3} + 1$. Find $f'(-2)$. _____

(74) The first four digits of the decimal for $\frac{3}{4}$ base 7 is 0._____ in base 7.

(75) If $f(x) = 9 - \frac{10 + 20x}{17}$, then $f^{-1}(5)$ = _____

(76) The range of $y = \sqrt[4]{3 - 2x}$ is $y \geq$ _____

(77) $11^{12} \div 13$ has a remainder of _____

(78) The Greatest Integer Function is written as $f(x) = [x]$. Find $\left[3\pi \times \frac{\sqrt{5} - 1}{2}\right]$. _____

(79) How many triangles can be formed using any three vertices of a regular dodecagon? _____

*(80) $\sqrt[3]{2222222}$ = _____

The University Interscholastic League
Number Sense Test • HS State • 2017

Final _____ _____

Contestant's Number _____ 2nd _____ _____

1st _____ _____

Score **Initials**

Read directions carefully before beginning test

DO NOT UNFOLD THIS SHEET UNTIL TOLD TO BEGIN

Directions: Do not turn this page until the person conducting this test gives the signal to begin. This is a ten-minute test. There are 80 problems. Solve accurately and quickly as many as you can in the order in which they appear. ALL PROBLEMS ARE TO BE SOLVED MENTALLY. Make no calculations with paper and pencil. Write only the answer in the space provided at the end of each problem. Problems marked with a (*) require approximate integral answers; any answer to a starred problem that is within five percent of the exact answer will be scored correct; all other problems require exact answers.

The person conducting this contest should explain these directions to the contestants.

STOP -- WAIT FOR SIGNAL!

(1) $421 + 2017 =$ _____

(2) $2017 - 421 =$ _____

(3) $7112 \div 4 =$ _____

(4) $21.17 \times 0.4 =$ _____ **(decimal)**

(5) $18.75\% =$ _____ **(proper fraction)**

(6) $1\frac{2}{3} - \frac{8}{9} =$ _____

(7) $(32 - 16) \div 8 + 4 \times 2 - 1 =$ _____

(8) 28 is _____% of 80

(9) 42117 ÷ 6 has a remainder of _____

***(10)** $7 + 71 + 711 + 7112 + 71124 =$ _____

(11) $1992 \times 12 + 96 =$ _____

(12) $75 \div 17 - 41 \div 17 =$ _____

(13) If 6 goobs cost $28.50 then 9 goobs cost $ _____

(14) $7.5 \times 5.2 =$ _____

(15) $\frac{11}{15} + \frac{15}{11} =$ _____ **(mixed number)**

(16) The LCM of 34 and 85 is _____

(17) 4 yards — 2 feet — 1 inch = _____ inches

(18) $34^2 =$ _____

(19) The sum of what number and 15 gives the same result as the positive difference between that number and 33? _____

***(20)** $421 \times 17 + 2017 =$ _____

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

(22) $\sqrt{3969} =$ _____

(23) Let F = {f,o,r,m,u,l,a} and S = {s,o,l,v,e,r}. The number of distinct elements of $(F \cap S)$ is _____

(24) $(421 \times 20 - 17) \div 8$ has a remainder of _____

(25) $6\frac{7}{8} - 4\frac{5}{6} =$ _____ **(mixed number)**

(26) 0.6888... = _____ **(proper fraction)**

(27) A right triangle with a base of 25 cm and an area of 150 cm^2 has a height of _____ cm

(28) How many positive integers less than or equal to 27 are relatively prime to 27? _____

(29) Given the set {8,3,11,14,p,39,q,...}. $p + q =$ _____

***(30)** $56 \times 28 \times 14 =$ _____

(31) A truck gets 14 miles per gallon. How many gallons will it take to travel 77 miles? _____ gal

(32) 79 base 10 is _____ in base 8

(33) 0.24666... = _____ **(proper fraction)**

(34) $3x - 2y = 4$ and $2x + y = 5$. $x =$ _____

(35) 6 is to 15 as 9 is to _____

(36) $b = 4$, $16a^2 - 8ab + b^2 = 64$, and $a > 0$. $a =$ _____

(37) $666\frac{2}{3}\%$ of $333\frac{1}{3} =$ _____

(38) $\frac{2}{5} + \frac{3}{10} - \frac{4}{15} =$ _____

(39) Let $P = -2$, $Q = 3$ and $R = 45$. Find $(Q^P)R$. _____

*(40) $42123 \div 532 =$ _____

(41) Round $(\sqrt{8} \times \sqrt{6})$ to a whole number. _____

(42) The circle $x^2 + y^2 - 4x - 14y + 4 = 0$ has (h, k) as its center and r as its radius. $h + k + r =$ _____

(43) $34^2 - 46^2 =$ _____

(44) Let P, Q, and R be the roots of $x^3 - 7x = 6$. Find $(P + Q + R) + (PQR)$. _____

(45) The 12^{th} triangular number is _____

(46) 65% of 60 — 55% of 50 is _____

(47) $7! \div 5! - 4! \div 2! =$ _____

(48) The sum of the integral values of x such that $|x - 1| + 3 < 5$ is _____

(49) $444_5 \times 11_5 =$ _____ 5

*(50) $12 \times 24 \times 36 \times 48 =$ _____

(51) $777 \times \frac{7}{37} =$ _____

(52) $2\log_4(8) \div 2\log_3(3) =$ _____

(53) $314 \times 262 =$ _____

(54) The length of the major axis of $5x^2 + 9y^2 = 45$ is _____

(55) Four pennies are flipped. The odds of getting all heads or all tails is _____ (proper fraction)

(56) The first four digits of the decimal for $\frac{5}{18}$ is 0._____

(57) Let $(a^4b^{-2}) \div (a^{-1}b^3) \div (a^5b^5) = a^mb^n$. Find $m + n$. _____

(58) $9\frac{2}{3} \times 6\frac{1}{3} =$ _____ (mixed number)

(59) ${}_6P_3 \div {}_6C_3 =$ _____

*(60) $7\frac{1}{9} \times 71916 \div 16 =$ _____

(61) If $3^{(2x-1)} = 243$ then $3^x =$ _____

(62) The Greatest Integer Function is written as $f(x) = [x]$. Find $\left[\sqrt{8} \times \sqrt{6}\right]$. _____

(63) The remainder of $(4x^2 + 2x - 1) \div (x - 3)$ is ____

(64) Change $0.3454545..._6$ to a base 10 fraction. _____

(65) $f(x) = 5 - 2x$ and $g(x) = 2 + 5x$. $f(g(-1)) =$ _____

(66) $11235_8 \div 7_8$ has a remainder of _____ 8

(67) Find k if $\begin{vmatrix} -4 & 2 \\ k & 1 \end{vmatrix} = 8 + 2k$. _____

(68) The total surface area of a cube with a lateral surface area of 64 sq. inches is _____ sq. inches

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

*(70) $24^4 \times 12^2 \div 12^4 =$ _____

(71) If $f(x) = \frac{7}{5x - 3} + 2$, then $f^{-1}(-1) =$ _____

(72) $53 \times 57 + 9 =$ _____

(73) Let $y = \frac{x + 3}{x - 5}$. The two asymptotes intersect at (x, y). Find $x + y$. _____

(74) $f(x) = x^4 - x^3 - 7x^2 + x + 6$. Find $f''(2) =$ _____

(75) $\int_{-1}^{2} (6x - 5)\,dx =$ _____

(76) $10^{12} \div 14$ has a remainder of _____

(77) Find the slope of the line tangent to the graph of $f(x) = 3x^2 - 5x + 1$ at $x = 2$. _____

(78) If $68 \pmod{14} \equiv x$, where $0 \leq x \leq 14$, then $x =$ ___

(79) $\lim_{x \to +\infty} \frac{x^2}{1 - x^2} =$ _____

*(80) $\sqrt[3]{1234567} =$ _____

University Interscholastic League - Number Sense Answer Key HS ● SAC ● Fall 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) 1,636

(2) 2.27, $\frac{227}{100}$, $2\frac{27}{100}$

(3) 1,170

(4) $13\frac{2}{3}$

(5) $\frac{3}{8}$

(6) $3\frac{1}{8}$

(7) 169

(8) 18.25, $\frac{73}{4}$, $18\frac{1}{4}$

(9) 3.3, $\frac{33}{10}$, $3\frac{3}{10}$

***(10) 7,059 — 7,801**

(11) 4,000

(12) .1875, $\frac{3}{16}$

(13) 2,197

(14) $6.66

(15) 900

(16) 15

(17) 850

(18) 0

(19) 24

***(20) 27,347 — 30,225**

(21) 31

(22) 1.2, $\frac{6}{5}$, $1\frac{1}{5}$

(23) 1

(24) 0

(25) $5\frac{5}{6}$

(26) — 14

(27) 5

(28) 11

(29) 58

***(30) 4,682 — 5,174**

(31) 400

(32) $\frac{31}{99}$

(33) 8

(34) 30

(35) .075, $\frac{3}{40}$

(36) 12

(37) 121

(38) 2

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

***(40) 813 — 898**

(41) — 3

(42) 45

(43) 2,020

(44) 3

(45) .4, $\frac{2}{5}$

(46) 10

(47) 60

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

(49) — 18

***(50) 2,878 — 3,179**

(51) 6

(52) — 18

(53) 39,606

(54) 60

(55) $\frac{100}{3}$, $33\frac{1}{3}$

(56) 5

(57) 323

(58) 320

(59) 286

***(60) 680 — 750**

(61) 3

(62) 2

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

(64) 10

(65) — 17

(66) — .5, — $\frac{1}{2}$

(67) — 43

(68) 2.2, $\frac{11}{5}$, $2\frac{1}{5}$

(69) 2

***(70) 730 — 806**

(71) 4

(72) 576

(73) 64

(74) 1

(75) 2424

(76) 10

(77) — 8

(78) 0

(79) 3.5, $\frac{7}{2}$, $3\frac{1}{2}$

***(80) 135 — 149**

University Interscholastic League - Number Sense Answer Key HS ● Invitation A ● 2017

***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) 3,850

(2) 202.85

(3) 4,020

(4) 737

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

(6) 960

(7) 33

(8) 1

(9) 5.5, $\frac{11}{2}$, $5\frac{1}{2}$

***(10) 70,460 — 77,876**

(11) 6,000

(12) 700

(13) 225

(14) $\frac{11}{13}$

(15) 27

(16) 160

(17) 0

(18) 564

(19) 2

***(20) 2,147 — 2,373**

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

(22) $9.45

(23) — 15

(24) 2

(25) 625

(26) 45

(27) 7

(28) 27

(29) 15

***(30) 3,862,959 — 4,269,585**

(31) $13.02

(32) $2\frac{9}{10}$

(33) 120

(34) 289

(35) 9

(36) 5

(37) 81

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

(39) 11

***(40) 317 — 350**

(41) — 1

(42) 10

(43) 1,818

(44) 3

(45) 4

(46) 35

(47) 10

(48) 30

(49) — 40

***(50) 980 — 1,082**

(51) 6

(52) 3

(53) $\frac{241}{990}$

(54) 35

(55) $\frac{3}{5}$

(56) 145

(57) 1.8, $\frac{9}{5}$, $1\frac{4}{5}$

(58) 180

(59) 6

***(60) 717,402 — 792,918**

(61) 5

(62) 2

(63) 32

(64) 2

(65) 2

(66) — 1

(67) 0

(68) 36

(69) 11

***(70) 4,393 — 4,855**

(71) — 6

(72) 1,129

(73) — 12

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

(75) 2323

(76) 1

(77) 2

(78) 3

(79) 8.5, $\frac{17}{2}$, $8\frac{1}{2}$

***(80) 451 — 498**

University Interscholastic League - Number Sense Answer Key HS ● Invitation B ● 2017

***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) 3,357

(2) 16.45

(3) 706

(4) 69

(5) 160

(6) 441

(7) 48

(8) 1,350

(9) 400

***(10) 22,051 — 24,371**

(11) 10,000

(12) 4

(13) 3,025

(14) 3

(15) 93

(16) 6

(17) $\frac{19}{30}$

(18) $\frac{32}{3}$, $10\frac{2}{3}$

(19) 784

***(20) 6,183 — 6,833**

(21) $2\frac{22}{35}$

(22) 256

(23) .8, $\frac{4}{5}$

(24) 41

(25) — $\frac{16}{35}$

(26) — 4

(27) 6

(28) 1

(29) 6

***(30) 3,431 — 3,791**

(31) 7.5, $\frac{15}{2}$, $7\frac{1}{2}$

(32) $\frac{11}{45}$

(33) 2,744

(34) 6

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

(36) 120

(37) — 1

(38) 4

(39) 64

***(40) 9,310 — 10,290**

(41) 720

(42) 30

(43) 11

(44) — 2

(45) 144

(46) — 11

(47) 6

(48) $\frac{13}{9}$, $1\frac{4}{9}$

(49) 1.5, $\frac{3}{2}$, $1\frac{1}{2}$

***(50) 1,350 — 1,491**

(51) — 3

(52) 2

(53) 15

(54) 45,795

(55) 4.2, $\frac{21}{5}$, $4\frac{1}{5}$

(56) 5

(57) 2112

(58) 0360

(59) 50

***(60) 3,292 — 3,638**

(61) 81

(62) 3,125

(63) $\frac{13}{24}$

(64) — 14

(65) 11

(66) .5, $\frac{1}{2}$

(67) 40

(68) 64

(69) 4

***(70) 62,260 — 68,812**

(71) 7

(72) 576

(73) 24.5, $\frac{49}{2}$, $24\frac{1}{2}$

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

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

(76) — 2

(77) 0

(78) 56

(79) 48

***(80) 6,759 — 7,470**

2016-17 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) — 467

(2) 30.4

(3) 18,726

(4) $\frac{29}{36}$

(5) 2,600

(6) $\frac{3}{40}$

(7) 289

(8) 20

(9) .7, $\frac{7}{10}$

***(10) 3,370 — 3,724**

(11) 16,000

(12) 336

(13) 1,394

(14) 1,331

(15) 117

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

(17) $5.95

(18) 9

(19) 6

***(20) 3,553 — 3,927**

(21) 30

(22) — .5, — $\frac{1}{2}$

(23) — 2

(24) 36

(25) 4

(26) $\frac{7}{10}$

(27) 8

(28) 5

(29) 32

***(30) 597,543 — 660,441**

(31) $18.00

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

(33) 2

(34) — 1

(35) 9

(36) .75, $\frac{3}{4}$

(37) 168

(38) 2.4, $\frac{12}{5}$, $2\frac{2}{5}$

(39) 21

***(40) 271 — 298**

(41) 6

(42) 980

(43) 10

(44) 6

(45) 2

(46) 45.5, $\frac{91}{2}$, $45\frac{1}{2}$

(47) 60

(48) — 39

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

***(50) 28,215 — 31,185**

(51) 16

(52) .75, $\frac{3}{4}$

(53) 601

(54) 6

(55) 20

(56) 18

(57) 69,664

(58) $10\frac{2}{13}$

(59) 10

***(60) 278 — 306**

(61) 1,296

(62) 9

(63) — 9.4, — $\frac{47}{5}$, — $9\frac{2}{5}$

(64) 94

(65) — 1

(66) 13

(67) 9

(68) 9

(69) $\frac{21}{22}$

***(70) 3,892 — 4,300**

(71) 6

(72) 709

(73) 15.5, $\frac{31}{2}$, $15\frac{1}{2}$

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

(75) 1212

(76) — 4.5, — $\frac{9}{2}$, — $4\frac{1}{2}$

(77) 2

(78) — 1

(79) 10

***(80) 21,854 — 24,153**

2016-17 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) 512

(2) 1,407

(3) 750

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

(5) .875

(6) 7,600

(7) $-\frac{2}{3}$

(8) 1

(9) 1,728

***(10) 7,502 — 8,290**

(11) 8,000

(12) 361

(13) 19.75, $\frac{79}{4}$, $19\frac{3}{4}$

(14) .5, $\frac{1}{2}$

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

(16) 2

(17) 300

(18) 195

(19) 10

***(20) 66,897 — 73,937**

(21) 5

(22) 33

(23) 30

(24) — 2

(25) $-\frac{10}{11}$

(26) $14.40

(27) — 11

(28) 149

(29) 1.54

***(30) 4,682 — 5,174**

(31) — 3

(32) 66

(33) 1.21, $\frac{121}{100}$, $1\frac{21}{100}$

(34) 5

(35) $\frac{31}{90}$

(36) — 13

(37) 75

(38) 10

(39) 32

***(40) 3,014 — 3,331**

(41) 2

(42) 1.1, $\frac{11}{10}$, $1\frac{1}{10}$

(43) 2,409

(44) 250

(45) — 3

(46) 1

(47) 2475

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

(49) 1,280

***(50) 59,565 — 65,835**

(51) 9

(52) 12

(53) 9

(54) 17

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

(56) — 6

(57) — 5

(58) 4

(59) 28

***(60) 1,657 — 1,831**

(61) 4.5, $\frac{9}{2}$, $4\frac{1}{2}$

(62) 4

(63) — 3

(64) 2

(65) 13

(66) — 2

(67) $\frac{12}{40}$ (not reducible)

(68) 1

(69) 4

***(70) 1,095 — 1,209**

(71) — 4

(72) 0

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

(74) 2.5, $\frac{5}{2}$, $2\frac{1}{2}$

(75) 1555

(76) 669

(77) 35.5, $\frac{71}{2}$, $35\frac{1}{2}$

(78) 4

(79) 124,254

***(80) 4,259 — 4,706**

2016-17 TMSCA UIL District Warm-Up 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) 2,659

(2) .94

(3) 437

(4) $107\frac{2}{3}$

(5) 54

(6) — 5

(7) 529

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

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

***(10) 7,241 — 8,003**

(11) 12,000

(12) 2

(13) 446

(14) 198

(15) 1,786

(16) 352

(17) $3.09

(18) 5

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

***(20) 97,886 — 108,188**

(21) 512

(22) — .4, — $\frac{2}{5}$

(23) 10

(24) 1

(25) $2\frac{1}{10}$

(26) 45

(27) 1.5

(28) 88

(29) 2

***(30) 153 — 168**

(31) — 17

(32) $\frac{68}{165}$

(33) 16

(34) 30

(35) 22

(36) — 1

(37) 412.5, $\frac{825}{2}$, $412\frac{1}{2}$

(38) 200

(39) — 2

***(40) 295 — 325**

(41) 74

(42) 2

(43) 10,201

(44) $1\frac{16}{77}$

(45) 7

(46) 66

(47) 17

(48) $\frac{16}{11}$, $1\frac{5}{11}$

(49) 8

***(50) 4,218 — 4,661**

(51) 429

(52) 253

(53) 12

(54) — 10

(55) .5, $\frac{1}{2}$

(56) 4

(57) — 1

(58) 229,194

(59) .1, $\frac{1}{10}$

***(60) 1,192 — 1,316**

(61) 2.645, $\frac{717}{271}$, $2\frac{175}{271}$

(62) 14

(63) 3

(64) 0

(65) 3

(66) 66

(67) — 3

(68) 15,625

(69) $\frac{104}{330}$ (not reducible)

***(70) 753 — 831**

(71) 1717

(72) — 17

(73) 0

(74) $8\frac{9}{17}$

(75) 10

(76) 0

(77) 42

(78) 2

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

***(80) 306 — 337**

University Interscholastic League - Number Sense Answer Key HS ● District ● 2017

***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) 2,337

(2) 16.92

(3) 1,880

(4) $279\frac{2}{3}$

(5) $\frac{8}{25}$

(6) $4\frac{1}{10}$

(7) 256

(8) 3

(9) 2

***(10) 3,359 — 3,711**

(11) 14,000

(12) 3

(13) $22.00

(14) $\frac{14}{17}$

(15) 390

(16) 8

(17) 270

(18) $2\frac{16}{165}$

(19) — 405

***(20) 2,795 — 3,089**

(21) 59

(22) — 512

(23) 9

(24) 10

(25) .3125, $\frac{5}{16}$

(26) 3.275, $\frac{131}{40}$, $3\frac{11}{40}$

(27) 112

(28) 8

(29) 71

***(30) 622,749 — 688,301**

(31) 10

(32) $\frac{17}{45}$

(33) 200

(34) 85

(35) 8.4, $\frac{42}{5}$, $8\frac{2}{5}$

(36) .6, $\frac{3}{5}$

(37) 0

(38) $\frac{5}{18}$

(39) — 18

***(40) 2,541 — 2,808**

(41) 3

(42) 30

(43) — 800

(44) — 10

(45) 45

(46) 35

(47) 28

(48) 10153

(49) .2, $\frac{1}{5}$

***(50) 29,626 — 32,744**

(51) 96

(52) — 1.5, $-\frac{3}{2}$, $-1\frac{1}{2}$

(53) 104,000

(54) $56\frac{12}{49}$

(55) 10

(56) 12.2, $\frac{61}{5}$, $12\frac{1}{5}$

(57) 9

(58) 3393

(59) 2

***(60) 955 — 1,055**

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

(62) $\frac{25}{48}$

(63) — 219

(64) — .25, $-\frac{1}{4}$

(65) 6

(66) — 37

(67) — 9.5, $-\frac{19}{2}$, $-9\frac{1}{2}$

(68) 2

(69) 6

***(70) 1,946 — 2,150**

(71) 4

(72) 2,025

(73) 0

(74) — 20

(75) 2

(76) 3

(77) 4

(78) 8,080

(79) 161

***(80) 240 — 264**

University Interscholastic League - Number Sense Answer Key HS ● Regional ● 2017

***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) 1,107

(2) 3,405

(3) $113\frac{3}{4}$

(4) 6.8, $\frac{34}{5}$, $6\frac{4}{5}$

(5) 28

(6) — .9, — $\frac{9}{10}$

(7) 7.2, $\frac{36}{5}$, $7\frac{1}{5}$

(8) 49

(9) 1,848

***(10) 9,632 — 10,644**

(11) 16,000

(12) 729

(13) 3,375

(14) $5.48

(15) 23

(16) 78

(17) $\frac{15}{28}$

(18) 14

(19) — 103

***(20) 2,009 — 2,219**

(21) — 30

(22) 44

(23) 93

(24) 8

(25) $8\frac{9}{20}$

(26) — 3

(27) 3

(28) 96

(29) 18

***(30) 34,218 — 37,818**

(31) $144.00

(32) 9.09

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

(34) 1

(35) 1323

(36) 17

(37) 2,144

(38) 8

(39) — .5, — $\frac{1}{2}$

***(40) 2,882 — 3,184**

(41) 405

(42) 30

(43) 2

(44) — 54

(45) 36

(46) 2

(47) 746

(48) $\frac{21}{13}$, $1\frac{8}{13}$

(49) 5

***(50) 472,781 — 522,547**

(51) 27

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

(53) 71,217

(54) 8.5, $\frac{17}{2}$, $8\frac{1}{2}$

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

(56) 6.7, $\frac{67}{10}$, $6\frac{7}{10}$

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

(58) 8

(59) 0454

***(60) 21,378 — 23,627**

(61) 117,649

(62) 21

(63) $\frac{51}{70}$

(64) 120

(65) 37

(66) .5, $\frac{1}{2}$

(67) 61

(68) 1.5, $\frac{3}{2}$, $1\frac{1}{2}$

(69) 3

***(70) 498,074 — 550,502**

(71) 1.5, $\frac{3}{2}$, $1\frac{1}{2}$

(72) 13,225

(73) — $\frac{1}{3}$

(74) 5151

(75) 2.9, $\frac{29}{10}$, $2\frac{9}{10}$

(76) 0

(77) 1

(78) 5

(79) 220

***(80) 124 — 137**

University Interscholastic League - Number Sense Answer Key HS ● State ● 2017

***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) 2,438

(2) 1,596

(3) 1,778

(4) 8.468

(5) $\frac{3}{16}$

(6) $\frac{7}{9}$

(7) 9

(8) 35

(9) 3

***(10) 75,074 — 82,976**

(11) 24,000

(12) 2

(13) $42.75

(14) 39

(15) $2\frac{16}{165}$

(16) 170

(17) 119

(18) 1,156

(19) 9

***(20) 8,716 — 9,632**

(21) 42

(22) 63

(23) 3

(24) 3

(25) $2\frac{1}{24}$

(26) $\frac{31}{45}$

(27) 12

(28) 18

(29) 89

***(30) 20,855 — 23,049**

(31) 5.5, $\frac{11}{2}$, $5\frac{1}{2}$

(32) 117

(33) $\frac{37}{150}$

(34) 2

(35) 22.5, $\frac{45}{2}$, $22\frac{1}{2}$

(36) 3

(37) $2{,}222\frac{2}{9}$, $\frac{20000}{9}$

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

(39) 5

***(40) 76 — 83**

(41) 7

(42) 16

(43) — 960

(44) 6

(45) 78

(46) 11.5, $\frac{23}{2}$, $11\frac{1}{2}$

(47) 30

(48) 3

(49) 10434

***(50) 472,781 — 522,547**

(51) 147

(52) 1.5, $\frac{3}{2}$, $1\frac{1}{2}$

(53) 82,268

(54) 6

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

(56) 2777

(57) — 10

(58) $61\frac{2}{9}$

(59) 6

***(60) 30,365 — 33,560**

(61) 27

(62) 6

(63) 41

(64) $\frac{67}{105}$

(65) 11

(66) 5

(67) — 3

(68) 96

(69) 1

***(70) 2,189 — 2,419**

(71) $\frac{2}{15}$

(72) 3,030

(73) 6

(74) 22

(75) — 6

(76) 8

(77) 7

(78) 12

(79) — 1

***(80) 102 — 112**