The University Interscholastic League
Number Sense Test • HS SAC • 2004

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) $4002 - 2004 =$ _____

(2) $148 \times 25 =$ _____

(3) $2004 \div 6 =$ _____

(4) $\frac{2}{3} + \frac{5}{6} =$ _____ **(improper fraction)**

(5) $6 + 36 \div 9 \times 3 =$ _____

(6) **Which is larger,** $\frac{4}{13}$ **or** $\frac{3}{14}$ **?** _____

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

(8) $374 \div 11 =$ _____

(9) $2004 + 4 \times 2004 =$ _____

***(10)** $432 + 567 + 981 =$ _____

(11) **The GCD of 28 and 52 is** _____

(12) **The additive inverse of 1.1 is** _____

(13) $19^2 =$ _____

(14) $3\frac{4}{5}\% =$ _____ **(proper fraction)**

(15) **The mean of 2004 and 4002 is** _____

(16) $2 + 5 + 8 + \ldots + 20 =$ _____

(17) $\frac{1}{3} + \frac{1}{9} + \frac{1}{27} =$ _____ **(proper fraction)**

(18) $34 \times 43 =$ _____

(19) **MDCLXVI =** _____ **(Arabic Numeral)**

***(20)** $1234 \times 567 =$ _____

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

(22) $1\frac{4}{5} - 3\frac{2}{5} =$ _____ **(mixed number)**

(23) **24680 ÷ 9 has a remainder of** _____

(24) $24 \times 24 =$ _____

(25) **If 8 pencils cost 96¢ then 1 dozen cost $** _____

(26) $71 \times 74 =$ _____

(27) $123_4 =$ _____ $_{10}$

(28) **16 ounces is what part of a gallon?** _____

(29) **The largest prime number less than 35 is** _____

***(30)** $97531 \div 246 =$ _____

(31) $28 \times 75 =$ _____

(32) $1 - 2 \times 3 + 4 \div 5 =$ _____

(33) If $f(x) = x^2 + 4x + 4$ then $f(-4)$ is _____

(34) $(125 \div 64)^{\frac{1}{3}} =$ _____

(35) $111 \times 53 =$ _____

(36) .020202... = _____ (fraction)

(37) 77 base 10 equals _____ base 7

(38) Set A = {a,b,c,d}. How many proper subsets does set A have? _____

(39) $77^2 - 76^2 =$ _____

*(40) $\sqrt{765432} =$ _____

(41) $1111_2 =$ _____$_4$

(42) GCD(15,28) times LCM(15,28) equals _____

(43) $\frac{1}{14} =$ _____% (mixed number)

(44) If $4^x = 32$ then x = _____

(45) If $15 + 4x = 3$ then $3x - 4 =$ _____

(46) 30 miles per hour = _____ ft/sec

(47) ${}_6P_2 =$ _____

(48) The 10th term of 2, 5, 10, 17, 26, ... is _____

(49) The sum of the positive integral divisors of 28 is _____

*(50) $42 \times 38 + 41 \times 39 =$ _____

(51) A rectangle has _____ distinct diagonals.

(52) $22^2 + 20^2 - 2^2 =$ _____

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

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

(55) Find the slope of the line containing the points (6,4) and (4, 8). _____

(56) $\tan(-45°) =$ _____

(57) $303^2 =$ _____

(58) A die is rolled. What is the probability that a multiple of 2 is shown? _____

(59) ${}_5C_2 =$ _____

*(60) $857142 \div 428571 \times 7777 =$ _____

(61) $\frac{4}{7} - \frac{35}{64} =$ _____

(62) If $f(x) = x^2 - 6$, find $f[f(2)]$. _____

(63) $19^2 + 19 =$ _____

(64) $2 \sin 120° \cos 30° =$ _____

(65) $234_5 + 432_5 =$ _____$_5$

(66) How many 4-digit whole numbers less than 4444 are there? _____

(67) Find x, $0 \leq x \leq 5$, if $3x \cong 17 \pmod 5$. ____

(68) $\frac{3}{4} + \frac{9}{16} + \frac{27}{64} + ... =$ _____

(69) $44 \times 25 \times 11 =$ _____

*(70) $17^4 =$ _____

(71) $121 \times 212 =$ _____

(72) $56^2 - 55^2 + 54^2 - 53^2 =$ _____

(73) sin(Arccos 1) = _____

(74) If $f(x) = x^3 - 3x + 3$, then $f'(-3) =$ _____

(75) The remainder when $x^3 - 3x + 3$ is divided by $x + 3$ is _____

(76) The 11th triangular number is _____

(77) $(2, \frac{\pi}{3})$ are polar coordinates for (x,y). x = ___

(78) If $f(x) = 2x + 2$, then $f^{-1}(-2) =$ _____

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

*(80) $28 \times 56 \times 14 \div 42 =$ _____

The University Interscholastic League
Number Sense Test • HS Invitational A • 2005

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(1) $2005 \div 5 =$ _____

(2) $11 \times 38 =$ _____

(3) $200.5 - 20.05 =$ _____ (decimal)

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

(5) $\frac{1}{40} =$ _____ % (decimal)

(6) $2005 \times 5 + 2005 =$ _____

(7) $44\% =$ _____ (proper fraction)

(8) $24 \times 5 \div 6 - 31 =$ _____

(9) $16^2 =$ _____

*(10) $(48 + 53) \times 151 =$ _____

(11) 30 minus 30% of 30 is _____

(12) $1\frac{1}{8}\% =$ _____ (decimal)

(13) $75 \times 24 =$ _____

(14) $7 + 14 + 21 + 28 + 35 + 42 =$ _____

(15) The reciprocal of $1\frac{3}{8}$ is _____

(16) $CDI \times V =$ _____ (Arabic Numeral)

(17) The LCM of 28 and 52 is _____

(18) $3\frac{1}{5} \div 16 =$ _____

(19) $14 \times 38 - 14 \times 52 =$ _____

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

(21) How many odd natural numbers are between 17 and 83? _____

(22) If $3x + 4 = x - 5$ then $x =$ _____

(23) $\sqrt{(44)(11)} =$ _____

(24) $(1.728)^{\frac{1}{3}} =$ _____ (decimal)

(25) $15 \times 48 =$ _____

(26) $1575 \div 35 =$ _____

(27) $5\frac{2}{5} \times 5\frac{2}{5} =$ _____ (mixed number)

(28) The number of positive integral divisors of $2^3 \times 3^4 \times 4^5$ is _____

(29) $43 \times 42 =$ _____

*(30) $47985 \div 246 =$ _____

(31) $1011_2 =$ _____ $_4$

(32) One gallon equals _____ cubic inches

(33) $(9^2 - 7 \times 5) \div 4$ has a remainder of _____

(34) 48 inches is divided into two lengths such that the smaller length is 16 less than the larger length. The larger length is _____ in.

(35) $54^2 - 53^2 =$ _____

(36) .151515... = _____(proper fraction)

(37) $4^3 + 4 =$ _____base 8

(38) If 4 diskettes costs 39 cents then 2 dozen diskettes cost $_____

(39) $12^2 + 2(12)(13) + 13^2 =$ _____

*(40) $28 \times 30 \times 32 =$ _____

(41) The number of proper subsets of the set {M, A, T, H} is _____

(42) Find the slope of the line containing the points $(-3, 4)$ and $(5, -4)$. _____

(43) $96 \times 97 =$ _____

(44) $1 + 2 + 3 + ... + 21 =$ _____

(45) If $9^x = 108$, the $3^{2x+1} =$ _____

(46) 30 ft/min. = _____ ft/sec.

(47) (303)(303) = _____

(48) $57 \times 53 + 4 =$ _____

(49) $\frac{3}{14} =$ _____ %

*(50) $833 \times 612 =$ _____

(51) $\frac{4}{7} + \frac{8}{49} + \frac{16}{343} + ... =$ _____

(52) The number of terms in the expansion of $(3x + 4y)^5$ is _____

(53) $\cos(-300°) =$ _____

(54) $(3 + 4i) \div 5i = a + bi$ and b = _____

(55) The points (2 , 1), (x , 2), and (8 , 4) are collinear. x = _____

(56) For $x^2 - 2x - 3k = 0$ to have one Real solution, k has to have a value of _____

(57) 12% of $466\frac{2}{3}$ is _____

(58) $\frac{3}{8} - \frac{14}{41} =$ _____

(59) $212 \times 131 =$ _____

*(60) $123456 \div 111 =$ _____

(61) $(32)^2 - (30^2 - 2^2) =$ _____

(62) The product of the coefficients of $(a - b)^2$ is _____

(63) .555... base 7 is equivalent to _____ base 10

(64) The graph of $y = 1 - 2\cos(3x + 4)$ has an amplitude of _____

(65) Change .44 base 5 to a base 10 decimal. ____

(66) In how many ways can you group 6 distinct objects in groups of 3? _____

(67) $29^2 + 29 =$ _____

(68) $33_4 \times 2_4 - 11_4 =$ _____4

(69) If $\log_4 X = 3$ then $\sqrt{X} =$ _____

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

(71) $65^2 - 64^2 + 63^2 - 62^2 =$ _____

(72) $1\frac{2}{3} \div 4\frac{5}{6} =$ _____

(73) $\lim_{x \to 0} \frac{x^2 - 3x}{x} =$ _____

(74) Let $3x - 2 \equiv 4 \pmod 7$, where $0 \leq x \leq 6$. Find x. _____

(75) Arcsin(sin 1) = _____

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

(77) $2^3 \times 3^4 \times 5^5 =$ _____

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

(79) $\log_2(\log_{10} 100) =$ _____

*(80) $6250 \div 8333 \times 8888 =$ _____

The University Interscholastic League
Number Sense Test • HS Invitational B • 2005

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(1) $2005 \times 5 =$ _____

(2) $44 + 66 - 88 =$ _____

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

(4) $275 \div 11 =$ _____

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

(6) $2005 - 5002 =$ _____

(7) $22^2 =$ _____

(8) $32\% =$ _____ (proper fraction)

(9) $12 \div 3 \times 4 - 56 =$ _____

*(10) $2005 - 205 + 5002 - 502 =$ _____

(11) $18 \times 36 - 18 \times 54 =$ _____

(12) Which is smaller, $\frac{9}{11}$ or .8 ? _____

(13) 40% of 50 minus 60 is _____

(14) $12\frac{1}{2}\%$ of 24 is _____

(15) The median of 2, 3, 5, 7, 3, 5, 3, & 7 is _____

(16) MMCCXXII = _____ (Arabic Numeral)

(17) 3 cubic yards = _____ cubic feet

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

(19) $8 - 16 + 24 - 32 + 40 - 48 =$ _____

*(20) $456789 \div 123 =$ _____

(21) 34 is what percent less than 51? _____%

(22) $15 \times 15 \times 15 =$ _____

(23) If $f(x) = x^2 - 8x + 16$ then $f(5.7) =$ _____

(24) 36 in/sec. = _____ in/min.

(25) The LCM of 12, 18 and 20 is _____

(26) $4 + 8 + 12 + 16 + \ldots + 44 =$ _____

(27) 234 base 5 equals _____ base 10

(28) If $2x + 1 = x + 2$ then $2x - 1 = x -$ _____

(29) $11^2 - 22^2 =$ _____

*(30) $\sqrt{1025} \times \sqrt{63} =$ _____

(31) How many positive integers divide 48? _____

(32) $14\frac{1}{7} \times 7\frac{1}{7} =$ _____ (mixed number)

(33) $(8^2 \times 6 - 4) \div 3$ has a remainder of _____

(34) $\frac{3}{11}$ of a gallon equals _____ cubic inches

(35) $1 \times 2 + 3 \div 4 - 5 =$ _____

(36) $3^4 + 3^2 + 3^0 =$ _____ base 9

(37) $88^2 - 87^2 =$ _____

(38) $5^3 - 3^3 =$ _____

(39) The perimeter of a square whose diagonal is $\sqrt{2}$ feet is _____ feet

*(40) $29 \times 111 + 31 \times 109 =$ _____

(41) The next term of 1, 4, 10, 19, 31, ... is _____

(42) $10! \div 7! =$ _____

(43) $(\sqrt{27})^3 = a\sqrt{3}$ and $a =$ _____

(44) $53 \times 57 =$ _____

(45) $1^3 + 2^3 + 3^3 + 4^3 + 5^3 =$ _____

(46) $\frac{2}{7} =$ _____ %

(47) The slope of the line $3x - 4y = 5$ is _____

(48) The modulus of $(24 + 7i)^2$ is _____

(49) $33 \times 23 =$ _____

*(50) $(0.666...)(246{,}531) =$ _____

(51) $62 \times 68 + 9 =$ _____

(52) The area of a 45°- 45° right triangle with a hypotenuse of $14\sqrt{2}$ cm is _____ sq. cm

(53) $(5 + 4i)(3 + 2i) = a + bi$ and $a =$ _____

(54) If $\sqrt{5x} = 3$ then $x =$ _____ (decimal)

(55) 12% of $833\frac{1}{3}$ is _____

(56) The y-intercept of $y = x^3 - 3x^2 - 2x - 1$ is (a,b). Find b _____

(57) $36^2 + 57^2 =$ _____

(58) $\tan(-225°) =$ _____

(59) A die is rolled. What are the odds that a composite number is shown? _____

*(60) $23 \times 34 + 43 \times 32 =$ _____

(61) $39^2 + 39 =$ _____

(62) The sum of the measures of the interior angles of a regular pentagon is _____°

(63) $\frac{8}{3} - \frac{41}{14} =$ _____

(64) 16 is _____ % of 128

(65) $44_5 \times 2_5 + 33_5 =$ _____ 5

(66) .666... base 8 is equivalent to _____ base 10

(67) $(30)^2 - (28^2 - 2^2) =$ _____

(68) $\cos(\text{Sin}^{-1}\ \frac{\sqrt{3}}{2}) =$ _____

(69) $122 \times 311 =$ _____

*(70) $1^3 + 2^3 + 3^3 + 4^3 + ... + 13^3 =$ _____

(71) $44^2 - 43^2 + 42^2 - 41^2 =$ _____

(72) $1 + 1 + 2 + 3 + 5 + 8 + 13 + ... + 55 =$ ____

(73) The graph of $y = 1 - 2\cos(3x + 4)$ reaches a maximum range value of _____

(74) 6253718 ÷ 11 has a remainder of _____

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

(76) If $f(x) = x^2 - 9$, find $f[f(-3)]$. _____

(77) $2^5 \times 3^4 \times 5^2 =$ _____

(78) $\int_0^4 (3 - x)\,dx =$ _____

(79) If $f'(x) = 3$ and $f(2) = 5$ then $f(4) =$ _____

*(80) $375.1 \times 83.33 \times 1.595 =$ _____

2004-05 TMSCA High School Number Sense Test 13

Contestant's Number _____

	Score	Initials
Final	_____	_____
2nd	_____	_____
1st	_____	_____

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(1) 24680 — 13579 = _____

(2) 25×241 = _____

(3) 203×14 = _____

(4) $\frac{3}{16} - \frac{1}{4}$ = _____ (decimal)

(5) $605 \div 9$ = _____ (mixed number)

(6) Which is smaller, $\frac{3}{5}$ or .58 ? _____

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

(8) $2005 - 5 \times 2005$ = _____

(9) 31^2 = _____

*(10) $(2005 - 5002) \times 25$ = _____

(11) The multiplicative inverse of 1.2 is _____

(12) 383×11 = _____

(13) $48 \div 1\frac{3}{5}$ = _____

(14) 7^3 = _____

(15) 5 square feet = _____ square inches

(16) The mode of 1, 2, 2, 3, 3, 1, 1, and 4 is ___

(17) $\frac{1}{4} - \frac{1}{16} - \frac{1}{64}$ = _____ (proper fraction)

(18) The GCD of 38 and 57 is _____

(19) $11 + 22 - 33 - 44 + 55 + 66$ = _____

*(20) $4321 \times \sqrt{5678}$ = _____

(21) How many even integers are between 8 and 45? _____

(22) .4323232... = _____ (fraction)

(23) $(34 \times 27 + 13) \div 6$ has a remainder of ____

(24) 120 less 20% of 120 is _____

(25) If $f(x) = x^2 - 12x + 36$ then f(3) is _____

(26) 64×61 = _____

(27) $(8\frac{3}{8})^2$ = _____ (mixed number)

(28) 20 ounces = _____ quarts

(29) $8\frac{1}{3}$% of 72 is _____

*(30) 248×351 = _____

(31) If $(x) + (x+1) + (x+2) = 165$ then $x + 1$ = _____

(32) $1073 \div 37$ = _____

(33) $57^2 - 55^2$ = _____

(34) $66 \times 44 =$ _____

(35) $\sqrt{72 \times 32} =$ _____

(36) How many positive integral divisors does 48 have? _____

(37) 88 base 10 equals _____ base 8

(38) If three notebooks cost seventy-nine cents then a dozen notebooks cost $_____

(39) $3^3 - 6^3 =$ _____

*(40) $37 \times 40 \times 43 =$ _____

(41) $23634 \div 101 =$ _____

(42) If $3^x = 12$ then $3^{x+2} =$ _____

(43) $(\frac{7}{8} + \frac{8}{7}) \times \frac{1}{2} =$ _____ (mixed number)

(44) $\frac{5}{14} =$ _____ % (mixed number)

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

(46) The vertex of $y = 3x^2 + 2x - 1$ is (h,k) and $h =$ _____

(47) The 11th term of 0, 3, 8, 15, 24,... is _____

(48) $71 \times 79 + 16 =$ _____

(49) The modulus of $(40 + 9i)^2$ is _____

*(50) $33^4 =$ _____

(51) 9% of $466\frac{2}{3}$ is _____

(52) The line containing the points (7,4) and (6,3) has a y-intercept of (x,y). $y =$ _____

(53) $\log_4 (\frac{16}{3}) + \log_4 (3) =$ _____

(54) The sum of the coefficients in the expansion of $(2x - y)^4$ is _____

(55) $(45 + 4)^2 + (45^2 - 4^2) =$ _____

(56) $\cot(-225°) =$ _____

(57) $i^6 =$ _____

(58) $\frac{5}{6} - \frac{34}{43} =$ _____

(59) ${}_5P_3 =$ _____

*(60) $87487 \div 77877 \times 888 =$ _____

(61) $24^2 + 24 =$ _____

(62) If a regular polygon has 9 distinct diagonals, then it has _____ sides.

(63) The determinant of $\begin{vmatrix} 5 & a \\ 4 & 3 \end{vmatrix}$ is 19. Find a. ____

(64) $521 \times 521 =$ _____

(65) $\text{Arccos}(\cos \frac{2\pi}{3}) =$ _____ degrees

(66) $1 + \frac{1}{6} + \frac{1}{36} + \frac{1}{216} \ldots =$ _____

(67) How many 3-digit whole numbers greater than 333 are there? _____

(68) $11_4 \times 22_4 + 33_4 =$ _____ 4

(69) $131 \times 121 =$ _____

*(70) $410 \times 26 + 409 \times 24 =$ _____

(71) $45^2 - 46^2 + 47^2 - 48^2 =$ _____

(72) 77889900 ÷ 8 has a remainder of _____

(73) Change .43 base 5 to a base 10 decimal. ____

(74) $17 \times \frac{17}{19} - 17 =$ _____ (mixed number)

(75) $\lim_{x \to 3} \frac{x^3 - 27}{x - 3} =$ _____

(76) The odds of losing is 4 to 7. What is the probability of not losing? _____

(77) $(\sqrt{3}, 1)$ are rectangular coordinates for the polar coordinates (r, θ). Find θ. _____°

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

(79) $2^4 \times 3^3 \times 5^2 =$ _____

*(80) $285714 \times 41 =$ _____

2004-05 TMSCA High School State Meet

Contestant's Number _____

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(1) $123 + 456 - 789 =$ _____

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

(3) $\frac{5}{16} \div \frac{1}{4} =$ _____ (decimal)

(4) $11 \times 171 =$ _____

(5) $134 \div 50 =$ _____ (decimal)

(6) $.0625 =$ _____ (proper fraction)

(7) $20.05 - 2.005 =$ _____ (decimal)

(8) $26^2 =$ _____

(9) $2005 + 2005 + 2005 =$ _____

*(10) $790 - 3210 - 4680 + 7500 =$ _____

(11) $234 \times 16 =$ _____

(12) The GCD of $3^2 \times 4^3$ and $3^3 \times 4^2$ is _____

(13) 72 is 18% of _____

(14) 35 is what percent more than 25? _____%

(15) 5 square yards = _____ square feet

(16) $\frac{1}{27} - \frac{1}{9} - \frac{1}{3} =$ _____ (proper fraction)

(17) $76 \times 75 =$ _____

(18) MCDXLVI = _____

(19) $16 - 32 + 48 + 64 - 80 + 96 =$ _____

*(20) $2005 + 241 \times 261 =$ _____

(21) $57 \times 63 =$ _____

(22) $90 \div .090909... =$ _____

(23) $(2^2 + 3^3 + 4^4) \div 5$ has a remainder of _____

(24) $22 \times 18 - 40 \times 18 =$ _____

(25) 321 base 4 equals _____ base 10

(26) $\sqrt{(68)(17)} =$ _____

(27) $6 + 12 + 18 + 24 + ... + 66 =$ _____

(28) 75 is $8\frac{1}{3}$% of _____

(29) $87^2 - 83^2 =$ _____

*(30) $11^4 =$ _____

(31) If $\frac{x-3}{2} + \frac{x+2}{3} = \frac{x}{6}$ then x = _____

(32) $81 \times 73 =$ _____

(33) $\frac{9}{14} =$ _____ % (mixed number)

(34) $22 \times \frac{22}{25} =$ _____ (mixed number)

(35) The product of the prime factors of 51 is ___

(36) The smaller of two integers whose sum is -22 and whose product is 72 is _____

(37) 55 base 10 equals _____ base 5

(38) 57.75 cubic inches equals _____ quart(s)

(39) $1331 + 121 + 11 + 1 =$ _____ base 11

*(40) $42 \times 45 \times 48 =$ _____

(41) $808 \times 808 =$ _____

(42) The 11th term of the arithmetic sequence $11, 4, -3, -10, \ldots$ is _____

(43) ${}_7P_4 =$ _____

(44) The product of the coefficients of $(2a - 3b)^2$ is _____

(45) $108 \times 112 =$ _____

(46) 12% of $233\frac{1}{3}$ is _____

(47) $(\sqrt{32})^5 = a\sqrt{2}$ and $a =$ _____

(48) 31 students take number sense tests, 28 take math tests, and 17 take both tests. How many students are taking tests? _____

(49) $(20 + 9i)(20 - 9i) =$ _____

*(50) $\sqrt{476} \times \sqrt{480} \times \sqrt{484} =$ _____

(51) $(71)^2 - (36^2 - 35^2) =$ _____

(52) The line perpendicular to $3x - 4y = 5$ has a slope of _____

(53) $34^2 + 34 =$ _____

(54) The number of the positive integral divisors of $2^3 \times 3^2 \times 5$ is _____

(55) If $x + y = 3$ and $x - y = -3$ then $x^2 - y^2 =$ _____

(56) $(\log_3 4^5)(\log_4 3^2) =$ _____

(57) $\cos 120° + \sin 210° =$ _____

(58) $2 + \frac{2}{5} + \frac{2}{25} + \frac{2}{125} \ldots =$ _____

(59) ${}_7C_4 =$ _____

*(60) $4285.71 \times 76.5 =$ _____

(61) .444... base 5 is equivalent to _____ base 10

(62) The sum of the coefficients in the expansion of $(2x - 3y)^5$ is _____

(63) The maximum value of $2\cos 3x - 4$ is ____

(64) $\frac{3}{8} - \frac{29}{81} =$ _____

(65) $79^2 - 78^2 + 77^2 - 76^2 =$ _____

(66) How many 4-digit whole numbers less than or equal to 4444 are there? _____

(67) $5^7 \div 6$ has a remainder of _____

(68) $20_3 \times 21_3 + 22_3 =$ _____$_3$

(69) $518 \times 518 =$ _____

*(70) $(2\pi + 3e)^3 =$ _____

(71) $131 \times 311 =$ _____

(72) $2\frac{3}{4} \div 1\frac{5}{6} =$ _____

(73) 501736158 ÷ 11 has a remainder of _____

(74) $f(x) = 2x^3 - 4$, find $f[f(-1)]$. _____

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

(76) The probability of drawing a red 3 followed by a black 3 from a standard 52 card deck without replacement is _____

(77) $f(x) = \sin 4x$, $f'(60°) =$ _____

(78) $\int_1^3 x^2 \, dx =$ _____

(79) $2^4 \times 3^4 \times 5^4 =$ _____

*(80) $(359 + 258) \times 8333 =$ _____

The University Interscholastic League
Number Sense Test • HS District 1 • 2005

Final _____ _____
2nd _____ _____
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Score Initials

Contestant's Number _____

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STOP -- WAIT FOR SIGNAL!

(1) $5002 - 2005 =$ _____

(2) $52 \times 11 =$ _____

(3) $\frac{2}{3} \div \frac{3}{7} =$ _____ (mixed number)

(4) $404 \times 14 =$ _____

(5) $8 + 24 \div 4 - 2 \times 12 =$ _____

(6) Which is smaller, $\frac{11}{12}$ or $\frac{12}{13}$? _____

(7) $66\% =$ _____ (proper fraction)

(8) $23^2 =$ _____

(9) $2.005 + 200.5 =$ _____ (decimal)

*(10) $1234 - 567 + 89 =$ _____

(11) The additive inverse of $\frac{2}{3}$ is _____

(12) $14 + 28 + 42 + 56 + 70 + 84 =$ _____

(13) $MMV \div V =$ _____ (Arabic Numeral)

(14) The LCM of 51 and 34 is _____

(15) 28 is what percent less than 35? _____%

(16) $32 \times 23 =$ _____

(17) $\frac{1}{4} + \frac{1}{16} + \frac{1}{64} =$ _____ (proper fraction)

(18) 12 square feet = _____ square yards

(19) $17 \times 34 - 51 \times 17 =$ _____

*(20) $987 \times 654 \div 321 =$ _____

(21) The number of positive integral divisors of 80 is _____

(22) If $3x + 2 = 2x + 1$ then $4x + 3 =$ _____

(23) $13 \times 13 \times 13 =$ _____

(24) $(12 \times 34 - 56) \div 7$ has a remainder of ____

(25) 123 base 10 equals _____ base 4

(26) $67^2 - 66^2 =$ _____

(27) $2475 \div 45 =$ _____

(28) If $f(x) = x^2 - 10x + 25$ then $f(23) =$ _____

(29) If a dozen folders cost $1.56 then 7 folders will cost $ _____

*(30) $12^4 =$ _____

(31) $66 \div 75 =$ _____

(32) $123_4 =$ _____

(33) $\frac{11}{14}$ = _____% (mixed number)

(34) $\sqrt{96 \times 24}$ = _____

(35) 125 + 75 + 15 + 1 = _____ 5

(36) Set A = {o, p, q, r, s}. How many improper subsets does set A have? _____

(37) .1232323... = _____ (fraction)

(38) The larger of two integers whose product is 76 and whose sum is − 23 is _____

(39) $12\frac{1}{6} \times 6\frac{1}{6}$ = _____ (mixed number)

*(40) 66 × 68 × 70 = _____

(41) 707^2 = _____

(42) If $6^{2x} = 36$ then 6^{3x} = _____

(43) $(\sqrt{32})^3 = a\sqrt{2}$ and a = _____

(44) 10 + 15 + 20 + 25 + ... + 105 = _____

(45) ${}_8P_3$ = _____

(46) 6% of $833\frac{1}{3}$ is _____

(47) The 8th term of 2, 9, 28, 65, 126, ... is _____

(48) The slope of the line 7 − 3y = 5x is _____

(49) 88 × 82 + 9 = _____

*(50) 72 × 68 + 71 × 69 = _____

(51) A pentagon has _____ distinct diagonals.

(52) The number of terms in the expansion of $(x + 2y)^3(x - y)^2$ is _____

(53) $(0 + 4i)^3 = a + bi$ and b = _____

(54) $(55 + 3)^2 + 55^2 - 3^2$ = _____

(55) $79^2 + 79$ = _____

(56) sec (− 60°) = _____

(57) $\frac{7}{11} - \frac{55}{89}$ = _____

(58) If $\log_{16}(k) = .75$, then k = _____

(59) ${}_8C_3$ = _____

*(60) 334455 ÷ 251 = _____

(61) How many 3-digit whole numbers less than 333 are there? _____

(62) $77^2 - 76^2 + 75^2 - 74^2$ = _____

(63) .777... base 9 is equivalent to _____ base 10

(64) $(13_5 + 12_5) \times 11_5$ = _____ 5

(65) $\sin(\cos^{-1} \frac{\sqrt{3}}{2})$ = _____

(66) 301 × 113 = _____

(67) $(524)^2$ = _____

(68) The determinant of $\begin{vmatrix} a & 1 \\ 2 & 3 \end{vmatrix}$ is 4a. Find a. ____

(69) The minimum value of 4 − 2cos 3x is _____

*(70) $(\pi)^4(e)^4$ = _____

(71) 1.75 ÷ 2.25 = _____

(72) 87125643 ÷ 11 has a remainder of _____

(73) $\lim_{x \to 2} \frac{x^3 - 8}{x^2 - 4}$ = _____

(74) If $f(x) = x^4 - 4x^2 + 4$, then $f'(-4)$ = _____

(75) The remainder when $x^4 - 4x^2 + 4$ is divided by x + 4 is _____

(76) $\frac{1}{15} + \frac{1}{21} + \frac{1}{28}$ = _____

(77) $(\sqrt{3}, 1)$ are rectangular coordinates for the polar coordinates (r, θ). Find r. _____

(78) $\int_0^2 \frac{3x}{4}\, dx$ = _____

(79) $2^3 \times 3^2 \times 4^2 \times 5^3$ = _____

*(80) 44.4 × 33.3 × 22.2 = _____

The University Interscholastic League
Number Sense Test • HS District 2 • 2005

Final _____ _____
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Score Initials

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(1) $2005 + 5002 =$ _____

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

(3) $16 \times 302 =$ _____

(4) $286 \div 11 =$ _____

(5) $\frac{3}{40} =$ _____ % (decimal)

(6) Which is larger, $\frac{11}{15}$ or 70% ? _____

(7) $200.5 - 20.05 =$ _____ (decimal)

(8) $33 \times 33 =$ _____

(9) $\frac{5}{9} + \frac{2}{27} =$ _____

*(10) $7531 - 2468 + 90 =$ _____

(11) The LCM of 28 and 42 is _____

(12) 98 is 14% of _____

(13) 216 square inches = _____ square feet

(14) The median of 1, 1, 2, 3, 5, 8, 13, & 21 is ____

(15) $84 \times 75 =$ _____

(16) MCXI + DLV = _____ (Arabic Numeral)

(17) $78 - 65 + 52 - 39 - 26 - 13 =$ _____

(18) $64 \div 3\frac{1}{5} =$ _____

(19) 40% of 40 minus 40 is _____

*(20) $\sqrt{97531} =$ _____

(21) The number of positive integral divisors of $2^4 \times 5$ is _____

(22) $88 \times .090909... =$ _____

(23) 124680 ÷ 8 has a remainder of _____

(24) 480 in/min. = _____ in/sec.

(25) $\sqrt[3]{0.729} =$ _____

(26) $81 \times 84 =$ _____

(27) $8 + 16 + 24 + 32 + ... + 88 =$ _____

(28) $\frac{3}{8}$ of a quart equals _____ ounces

(29) $97^2 - 96^2 =$ _____

*(30) $986421 \div 357 =$ _____

(31) $5 + 4 \div 3 - 2 \times 1 =$ _____

(32) If $\frac{x+3}{4} - \frac{x+2}{3} = \frac{x}{12}$ then x = _____

(33) $77 \times 88 =$ _____

(34) $\frac{7}{11}$ of a gallon equals _____ cubic inches

(35) 8 feet is divided into three lengths such that the ratio of the lengths is 1:2:3. The largest length is _____ ft.

(36) If $f(x) = 4x^2 - 12x + 9$ then $f(14) =$ _____

(37) The distinct prime factors of 75 total _____

(38) $\frac{13}{14} =$ _____% (mixed number)

(39) $4^3 - 5^3 =$ _____

*(40) $38 \times 108 + 42 \times 112 =$ _____

(41) $(4 + 5i)(4 - 5i) =$ _____

(42) The 8th term of 0, 7, 26, 63, 124, ... is _____

(43) The slope of the line perpendicular to the line $3x + 4y = 5$ is _____

(44) $\frac{1}{5} + \frac{2}{5} + \frac{3}{5} + \frac{4}{5} + ... + 2 =$ _____

(45) 45 miles per hour = _____ ft/sec

(46) 6% of $466\frac{2}{3}$ is _____

(47) $36963 \div 111 =$ _____

(48) The modulus of $(11 + 60i)^2$ is _____

(49) $93 \times 103 =$ _____

*(50) $\sqrt{574} \times \sqrt{577} \times \sqrt{580} =$ _____

(51) A die is rolled. What is the probability that a factor of 12 is shown? _____

(52) $3 + 1\frac{1}{2} + \frac{3}{4} + \frac{3}{8} + ... =$ _____

(53) $(0 - 3i)^5 = a + bi$ and $b =$ _____

(54) The x-intercept of $y = x^3 - 3x^2 + 3x - 1$ is (a,b). Find a. _____

(55) $\csc(-150°) =$ _____

(56) $69^2 + 69 =$ _____

(57) $({}_5C_2)({}_5P_2) =$ _____

(58) The slope of a line passing through (4,5) and (x, 9) is $\frac{1}{2}$. Find x. _____

(59) $122 \times 133 =$ _____

*(60) $443322 \div 751 =$ _____

(61) $8.8 \times 7.5 \times 1.1 =$ _____(decimal)

(62) Find x, $0 \leq x \leq 7$, if $4x \equiv 27 \pmod 7$. ____

(63) $83^2 - 82^2 + 81^2 - 80^2 =$ _____

(64) If $\log_2 k = 6$ then $\sqrt{k} =$ _____

(65) $11_4 \times 21_4 - 3_4 =$ _____$_4$

(66) 24 is _____% of 960.

(67) The determinant of $\begin{vmatrix} 2a & a \\ 2 & -1 \end{vmatrix}$ is 44. Find a. ____

(68) The product of the coefficients of $(4a - 3b)^2$ is _____

(69) $6^8 \div 7$ has a remainder of _____

*(70) $(\pi)^e (e)^\pi =$ _____

(71) The 12th triangular number is _____

(72) If $f(x) = 3x - 3$, then $f^{-1}(-3) =$ _____

(73) $3.125 \times 1.6 =$ _____

(74) $\log_4(\log_{10}100) =$ _____

(75) 6253718 ÷ 12 has a remainder of _____

(76) The probability of losing is 4 to 7. What are the odds of winning? _____

(77) $14 \times \frac{14}{17} - 14 =$ _____ (mixed number)

(78) $\int_0^3 \frac{4x}{3}\,dx =$ _____

(79) $1 + 3 + 4 + 7 + 11 + 18 + ... + 123 =$ ____

*(80) $142.857 \times 428.571 =$ _____

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Number Sense Test • HS Regional • 2005

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Score Initials

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(1) $975 + 318 - 642 =$ _____

(2) $66 \times 11 =$ _____

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

(4) $418 \times 25 =$ _____

(5) 38% = _____ **(proper fraction)**

(6) $33^2 =$ _____

(7) $\frac{4}{5} \div \frac{15}{16} =$ _____

(8) $1234 \div 9 =$ _____ **(mixed number)**

(9) $2.005 - 20.05 =$ _____ **(decimal)**

***(10)** $753 + 2468 - 901 + 2005 =$ _____

(11) $345 \times 12 =$ _____

(12) $13 + 26 + 39 + 52 + 65 + 78 =$ _____

(13) 1728 cubic inches = _____ cubic feet

(14) The negative reciprocal of $3\frac{1}{5}$ is _____

(15) 90% of 90 minus 90 is _____

(16) MMV — DCXLI = _____(Arabic Numeral)

(17) $\frac{1}{5} - \frac{1}{25} + \frac{1}{125} =$ _____

(18) $72 \div 7\frac{1}{5} =$ _____

(19) The LCM of 8, 18, and 32 is _____

***(20)** $397 \times 498 \div 599 =$ _____

(21) $62 \times 58 =$ _____

(22) The number of positive integral divisors of 96 is _____

(23) 13579248 ÷ 6 has a remainder of _____

(24) $8 + 10 + 12 + \ldots + 20 =$ _____

(25) $\frac{3}{8}$ is what % less than $\frac{1}{2}$? _____%

(26) $\sqrt{72 \times 18} =$ _____

(27) $55^2 - 50^2 =$ _____

(28) 234 base 10 equals _____ base 5

(29) $121 \times 124 =$ _____

***(30)** $95634 \div 278 =$ _____

(31) The product of k and 7 has the same value as the sum of 14 and k. Find k. _____

(32) If $f(x) = x^2 - 6x + 9$ then $f(4.7) =$ _____

(33) 3 quarts and 2 pints equals _____ ounces

(34) $\frac{17}{14}$ = _____% (mixed number)

(35) .2313131... = _____ (fraction)

(36) $1728 + 288 + 36 + 4$ = _____ base 12

(37) $22\frac{1}{11} \times 11\frac{1}{11}$ = _____ (mixed number)

(38) $8^3 - 9^3$ = _____

(39) The smaller root of $x^2 + 2x - 15 = 0$ is____

*(40) $53 \times 107 + 47 \times 93$ = _____

(41) (909)(909) = _____

~~(42) If $4^{3x} = 36$ then $4^{2x} =$ _____~~

(43) The slope of the line parallel to the line containing points (2, — 3) and (3,2) is _____

(44) Find x, if $8^x = 256$. _____

(45) The next term in the sequence of 1, 5, 6, 11, 17, 28, ... is _____

(46) 16% of $233\frac{1}{3}$ is _____

(47) $73 \times 77 + 4$ = _____

(48) $\frac{1}{4} + \frac{3}{4} + 1\frac{1}{4} + 1\frac{3}{4} ... + 3\frac{3}{4}$ = _____

(49) 87×111 = _____

*(50) $33^2 \times 31^2$ = _____

(51) $(\sqrt{-196})(\sqrt{-256})$ = _____

(52) The area of a 45° - 45° - 90° triangle with a hypotenuse of $\sqrt{18}$ is _____sq. units

(53) $99^2 + 99$ = _____

(54) A septagon has _____ distinct diagonals.

(55) cos 240 ° — sin 150 ° = _____

(56) $\frac{8}{9} - \frac{87}{100}$ = _____

(57) A pair of dice are rolled. What are the odds that the same number is shown? _____

(58) $3^7 \div 7$ has a remainder of _____

(59) 33 feet per second = _____ miles per hour

*(60) 1428.57×62 = _____

(61) The sum of the coefficients in the expansion of $(x^2 - 6x + 9)^2$ is _____

(62) $58^2 - 59^2 + 60^2 - 61^2$ = _____

(63) $88 \times 12.5 \times .11$ = _____

(64) $\cos 22° = \sin\theta$, $0° < \theta < 90°$, and θ = _____°

(65) $12_5 + 23_5 + 34_5$ = _____$_5$

(66) If $\log_x 64 = 1.5$ then x = _____

(67) $(3 - 5i)(2 + i) = a + bi$, and $a + b$ = _____

(68) The 5th pentagonal number is _____

(69) 234×211 = _____

*(70) $(3\pi + 2e)^4$ = _____

(71) $3\frac{4}{5} \div 2\frac{5}{7}$ = _____ (mixed number)

(72) $\lim_{x \to 3} \frac{x^3 - 27}{x^2 - 9}$ = _____

(73) 2.375×2.4 = _____ (decimal)

(74) Change .14 base 5 to a base 10 decimal. _____

(75) If $\det \begin{vmatrix} 3 & x \\ 2 & 1 \end{vmatrix} = 4$, then x = _____

(76) f(x) = 5 — 3x, find f[f(2)]. _____

(77) $\log_8(\log_4 16)$ = _____

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

(79) $3 + 6 + 9 + 15 + 24 + ... + 267$ = _____

*(80) $32 \times 64 \times 16 \div 48$ = _____

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(1) $2357 + 4608 =$ _____

(2) $14 \times 14 =$ _____

(3) $2004 \div 4 =$ _____

(4) $369 - 246 - 158 =$ _____

(5) $6\frac{7}{8}\% =$ _____ (decimal)

(6) $4\frac{5}{9} + 1\frac{2}{3} =$ _____ (mixed number)

(7) $\frac{3}{7} =$ _____% (mixed number)

(8) $1.1 \times 2.3 =$ _____(decimal)

(9) $19 + 21 - 23 - 12 + 14 + 16 =$ _____

*(10) $888 + 666 + 444 + 222 =$ _____

(11) $\frac{6}{7} - \frac{11}{12} =$ _____ (fraction)

(12) XIII + MMIV = _____ (Arabic Numeral)

(13) $39.39 \div 1.3 =$ _____ (decimal)

(14) The average of 42, 27, and 15 is _____

(15) $23 \times 32 =$ _____

(16) The product of the GCF and the LCM of 24 and 30 is _____

(17) 30% of $\frac{3}{10}$ of 3 is _____ (decimal)

(18) Which is the smaller, $\frac{9}{11}$ or .81? _____

(19) $15^3 =$ _____

*(20) $\sqrt{1294} \times \sqrt{627} \times \sqrt{256} =$ _____

(21) $51 \times 54 =$ _____

(22) If 4 cards cost $.88 then 18 cards cost $_____

(23) $48 =$ _____ base 3

(24) $3\frac{1}{8}\%$ of 32 is _____

(25) .01222... = _____ (fraction)

(26) $104 \times 97 =$ _____

(27) $336.7 \times 3.3 =$ _____ (decimal)

(28) $48^2 - 62^2 =$ _____

(29) 3 cubic feet = _____ cubic inches

*(30) $31 \times 42 \times 53 =$ _____

(31) $10\frac{5}{6} \times 12\frac{4}{5} =$ _____ (mixed number)

(32) $4^3 + 2^3 =$ _____ base 8

(33) 10% of 20% is _____%

(34) What number subtracted from 42 and multiplied by 2 gives the same results?_____

(35) If $x = -8$ and $y = 6$ then $(x - y)(x^2 + xy + y^2) =$ _____

(36) $(-1331)^{\frac{1}{3}} =$ _____

(37) $123_5 \times 4_5 =$ _____$_5$

(38) How many integers are between -67 and 76? _____

(39) $3.9^2 + 1.3^2 =$ _____ (decimal)

*(40) $\sqrt{872143} =$ _____

(41) $118 \times 122 + 4 =$ _____

(42) $122 \times 31 =$ _____

(43) $909^2 =$ _____

(44) The 10th term of 2, 6, 12, 20, 30,... is _____

(45) If the diagonal of a square is $7\sqrt{2}$ dm, then the perimeter of the square is _____ dm

(46) $\sqrt{28} \div \sqrt{63} =$ _____

(47) The product of the slopes of the lines $y = 2x - 5$ and $x = 5 - 2y$ is _____

(48) $707 \times 429 =$ _____

(49) The equation $2x^3 - bx^2 + cx = d$ has roots r, s, and t. If $r + s + t = -2$ then $b =$ _____

*(50) $\sqrt[3]{217777} \times \sqrt{3777} \times 57 =$ _____

(51) The sum of the positive integral divisors of 48 is _____

(52) If $(5 + 12i)^2 = a + bi$ then $a + b =$ _____

(53) $12\frac{1}{2}\%$ of a pint is _____ ounces

(54) $\tan \frac{5\pi}{4} =$ _____

(55) If $3x - 4 = 5x + 6$ then $x - 2 =$ _____

(56) $45 \times 22 - 44 \times 15 =$ _____

(57) The coefficient of the 6th term of the expansion of $(x - y)^8$ is _____

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

(59) $\frac{10! - 11!}{9!} =$ _____

*(60) $34 \times 36 \times 34 \times 36 =$ _____

(61) $\frac{15}{22} + \frac{7}{15} - 1 =$ _____

(62) $1 - 2\sin^2 \frac{\pi}{6} =$ _____

(63) $404 \times 1111 =$ _____

(64) The odds of winning the game is 3 to 5. The probability of losing the game is _____ %

(65) $\frac{4}{13} - \frac{11}{40} =$ _____

(66) $33_4 \times 3_4 - 21_4 =$ _____$_4$

(67) The product of the coefficients of $(a + b)^5$ is _____

(68) $918^2 =$ _____

(69) $8^7 \div 6$ has a remainder of _____

*(70) $(\pi + 1.9)^3 \times (e + 2.3)^3 =$ _____

(71) The 12th hexagonal number is _____

(72) $\sqrt[3]{a^4} \times \sqrt[4]{a^3} = \sqrt[12]{a^n}$ and $n =$ _____

(73) $\frac{7}{30} + \frac{7}{20} + \frac{7}{12} =$ _____

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

(75) Change .234 base 5 to a base 10 fraction. ___

(76) If N is a positive integer and $4N \div 5$ has a remainder of 2, then $N \div 5$ has a remainder of _____

(77) $2^5 \times 3^3 \times 5^2 =$ _____

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

(79) $2(1!) + 3(2!) + 4(3!) + 5(4!) =$ _____

*(80) $8333 \div 6666 \times 4444 =$ _____

University Interscholastic League - Number Sense Answer Key HS • SAC • Fall 2004

*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) 1998

(2) 3700

(3) 334

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

(5) 18

(6) $\frac{4}{13}$

(7) .125

(8) 34

(9) 10020

*(10) 1881 – 2079

(11) 4

(12) – 1.1

(13) 361

(14) $\frac{19}{500}$

(15) 3003

(16) 77

(17) $\frac{13}{27}$

(18) 1462

(19) 1666

*(20) 664695 – 734661

(21) 8

(22) $-1\frac{3}{5}$

(23) 2

(24) 576

(25) 1.44

(26) 5254

(27) 27

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

(29) 31

*(30) 377 – 416

(31) 2100

(32) – 4.2, $-4\frac{1}{5}$ or $-\frac{21}{5}$

(33) 4

(34) $\frac{5}{4}$ or $1\frac{1}{4}$ or 1.25

(35) 5883

(36) $\frac{2}{99}$

(37) 140

(38) 15

(39) 153

*(40) 832 – 918

(41) 33

(42) 420

(43) $7\frac{1}{7}$

(44) 2.5 or $\frac{5}{2}$ or $2\frac{1}{2}$

(45) – 13

(46) 44

(47) 30

(48) 101

(49) 56

*(50) 3036 – 3354

(51) 2

(52) 880

(53) 75

(54) 12

(55) – 2

(56) – 1

(57) 91809

(58) $\frac{1}{2}$ or .5

(59) 10

*(60) 14777 – 16331

(61) $\frac{11}{448}$

(62) – 2

(63) 380

(64) 1.5 or $\frac{3}{2}$ or $1\frac{1}{2}$

(65) 1221

(66) 3444

(67) 4

(68) 3

(69) 12100

*(70) 79345 – 87697

(71) 25652

(72) 218

(73) 0

(74) 24

(75) – 15

(76) 66

(77) 1

(78) – 2

(79) 2

*(80) 497 – 548

University Interscholastic League - Number Sense Answer Key HS • Invitation A • 2005

*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) 401

(2) 418

(3) 180.45

(4) $1\frac{3}{20}$

(5) 2.5

(6) 12030

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

(8) — 11

(9) 256

*(10) 14489 — 16013

(11) 21

(12) .01125

(13) 1800

(14) 147

(15) $\frac{8}{11}$

(16) 2005

(17) 364

(18) $\frac{1}{5}$ or .2

(19) — 196

*(20) 271 — 298

(21) 65

(22) $-\frac{9}{2}$ or $-4\frac{1}{2}$ or — 4.5

(23) 22

(24) 1.2

(25) 720

(26) 45

(27) $29\frac{4}{25}$

(28) 120

(29) 1806

*(30) 186 – 204

(31) 32

(32) 231

(33) 2

(34) 32

(35) 107

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

(37) 104

(38) 2.34

(39) 625

*(40) 25536 — 28224

(41) 15

(42) — 1

(43) 9312

(44) 231

(45) 324

(46) $\frac{1}{2}$ or .5

(47) 91809

(48) 3025

(49) $21\frac{3}{7}$

*(50) 484307 – 535285

(51) $\frac{4}{5}$ or .8

(52) 6

(53) $\frac{1}{2}$ or .5

(54) $-\frac{3}{5}$ or — .6

(55) 4

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

(57) 56

(58) $\frac{11}{328}$

(59) 27772

*(60) 1057 — 1167

(61) 128

(62) — 2

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

(64) 2

(65) .96

(66) 20

(67) 870

(68) 121

(69) 8

*(70) 4139 — 4573

(71) 254

(72) $\frac{10}{29}$

(73) — 3

(74) 2

(75) 1

(76) 1

(77) 2025000

(78) 3

(79) 1

*(80) 6333 — 6999

University Interscholastic League - Number Sense Answer Key HS • Invitation B • 2005

*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) 10025

(2) 22

(3) $1\frac{7}{8}$

(4) 25

(5) .0075

(6) – 2997

(7) 484

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

(9) – 40

*(10) 5985 – 6615

(11) – 324

(12) .8 or $\frac{4}{5}$

(13) – 40

(14) 3

(15) 4

(16) 2222

(17) 81

(18) $\frac{11}{30}$

(19) – 24

*(20) 3529 – 3899

(21) $33\frac{1}{3}$ or $\frac{100}{3}$

(22) 3375

(23) 2.89

(24) 2160

(25) 180

(26) 264

(27) 69

(28) 0

(29) – 363

*(30) 242 – 266

(31) 10

(32) $101\frac{1}{49}$

(33) 2

(34) 63

(35) – 2.25 or $-2\frac{1}{4}$ or $-\frac{9}{4}$

(36) 111

(37) 175

(38) 98

(39) 4

*(40) 6269 – 6927

(41) 46

(42) 720

(43) 81

(44) 3021

(45) 225

(46) $28\frac{4}{7}$

(47) $\frac{3}{4}$ or .75

(48) 25

(49) 759

*(50) 156137 – 172571

(51) 4225

(52) 98

(53) 7

(54) 1.8

(55) 100

(56) – 1

(57) 4545

(58) – 1

(59) $\frac{1}{2}$ or .5

*(60) 2051 – 2265

(61) 1560

(62) 540

(63) $-\frac{11}{42}$

(64) $12\frac{1}{2}$ or $\frac{25}{2}$ or 12.5

(65) 231

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

(67) 120

(68) $\frac{1}{2}$ or .5

(69) 37942

*(70) 7867 – 8695

(71) 170

(72) 143

(73) 3

(74) 9

(75) $\frac{3}{40}$ or .075

(76) – 9

(77) 64800

(78) 4

(79) 11

*(80) 47363 – 52347

2004-05 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) 11101

(2) 6025

(3) 2842

(4) — .0625

(5) $67\frac{2}{9}$

(6) .58

(7) 6.25

(8) — 8020

(9) 961

*(10) — 71179 — — 78671

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

(12) 4213

(13) 30

(14) 343

(15) 720

(16) 1

(17) $\frac{11}{64}$

(18) 19

(19) 77

*(20) 309319 — 341878

(21) 18

(22) $\frac{214}{495}$

(23) 1

(24) 96

(25) 9

(26) 3904

(27) $70\frac{9}{64}$

(28) $\frac{5}{8}$ or .625

(29) 6

*(30) 82696 — 91400

(31) 55

(32) 29

(33) 224

(34) 2904

(35) 48

(36) 10

(37) 130

(38) 3.16

(39) — 189

*(40) 60458 — 66822

(41) 234

(42) 108

(43) $1\frac{1}{112}$

(44) $35\frac{5}{7}$

(45) 1.25 or $\frac{5}{4}$ or $1\frac{1}{4}$

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

(47) 120

(48) 5625

(49) 1681

*(50) 1,126,625 — 1,245,217

(51) 42

(52) — 3

(53) 2

(54) 1

(55) 4410

(56) — 1

(57) — 1

(58) $\frac{11}{258}$

(59) 60

*(60) 948 — 1047

(61) 600

(62) 6

(63) — 1

(64) 271441

(65) 120

(66) 1.2 or $\frac{6}{5}$ or $1\frac{1}{5}$

(67) 666

(68) 1001

(69) 15851

*(70) 19453 — 21499

(71) — 186

(72) 4

(73) .92

(74) $-1\frac{15}{19}$

(75) 27

(76) $\frac{7}{11}$

(77) 30

(78) 4.5 or $\frac{9}{2}$ or $4\frac{1}{2}$

(79) 10800

*(80) 11,128,561 — 12,299,987

2004-05 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) – 210

(2) – 3

(3) 1.25

(4) 1881

(5) 2.68

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

(7) 18.045

(8) 676

(9) 6015

*(10) 380 – 420

(11) 3744

(12) 144

(13) 400

(14) 40

(15) 45

(16) $-\frac{11}{27}$

(17) 5700

(18) 1446

(19) 112

*(20) 61661 – 68151

(21) 3591

(22) 990

(23) 2

(24) – 324

(25) 57

(26) 34

(27) 396

(28) 900

(29) 680

*(30) 13909 – 15373

(31) 1.25 or $\frac{5}{4}$ or $1\frac{1}{4}$

(32) 5913

(33) $64\frac{2}{7}$

(34) $19\frac{9}{25}$

(35) 51

(36) – 18

(37) 210

(38) 1

(39) 1111

*(40) 86184 – 95256

(41) 652864

(42) – 59

(43) 840

(44) – 432

(45) 12096

(46) 28

(47) 4096

(48) 42

(49) 481

*(50) 9991 – 11041

(51) 4970

(52) $-\frac{4}{3}$ or $-1\frac{1}{3}$

(53) 1190

(54) 24

(55) – 9

(56) 10

(57) – 1

(58) $2\frac{1}{2}$ or $\frac{5}{2}$, or 2.5

(59) 35

*(60) 311464 – 344249

(61) 1

(62) – 1

(63) – 2

(64) $\frac{11}{648}$

(65) 310

(66) 3445

(67) 5

(68) 1212

(69) 268324

*(70) 2860 – 3160

(71) 40741

(72) 1.5 or $\frac{3}{2}$ or $1\frac{1}{2}$

(73) 0

(74) – 436

(75) – 2

(76) $\frac{1}{663}$

(77) – 2

(78) $\frac{26}{3}$ or $8\frac{2}{3}$

(79) 810000

*(80) 4,884,388 – 5,398,534

University Interscholastic League - Number Sense Answer Key HS • District 1 • 2005

*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) 2997

(2) 572

(3) $1\frac{5}{9}$

(4) 5656

(5) – 10

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

(7) $\frac{33}{50}$

(8) 529

(9) 202.505

*(10) 719 – 793

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

(12) 294

(13) 401

(14) 102

(15) 20

(16) 736

(17) $\frac{21}{64}$

(18) $1\frac{1}{3}$ or $\frac{4}{3}$

(19) – 289

*(20) 1911 – 2111

(21) 10

(22) – 1

(23) 2197

(24) 2

(25) 1323

(26) 133

(27) 55

(28) 324

(29) .91

*(30) 19700 – 21772

(31) .88 or $\frac{22}{25}$

(32) 11011

(33) $78\frac{4}{7}$

(34) 48

(35) 1331

(36) 1

(37) $\frac{61}{495}$

(38) – 4

(39) $75\frac{1}{36}$

*(40) 298452 – 329868

(41) 499849

(42) 216

(43) 128

(44) 1150

(45) 336

(46) 50

(47) 513

(48) $-\frac{5}{3}$ or $-1\frac{2}{3}$

(49) 7225

*(50) 9306 – 10284

(51) 5

(52) 6

(53) – 64

(54) 6380

(55) 6320

(56) 2

(57) $\frac{18}{979}$

(58) 8

(59) 56

*(60) 1266 – 1399

(61) 233

(62) 302

(63) $\frac{7}{8}$ or .875

(64) 330

(65) $\frac{1}{2}$ or .5

(66) 34013

(67) 274576

(68) – 2

(69) 2

*(70) 5053 – 5584

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

(72) 0

(73) 3

(74) – 224

(75) 196

(76) $\frac{3}{20}$

(77) 2

(78) 1.5 or $1\frac{1}{2}$ or $\frac{3}{2}$

(79) 144000

*(80) 31182 – 34464

University Interscholastic League - Number Sense Answer Key HS • District 2 • 2005

*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) 7007

(2) — 11

(3) 4832

(4) 26

(5) 7.5

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

(7) 180.45

(8) 1089

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

*(10) 4896 — 5410

(11) 84

(12) 700

(13) $1\frac{1}{2}$ or $\frac{3}{2}$ or 1.5

(14) 4

(15) 6300

(16) 1666

(17) — 13

(18) 20

(19) — 24

*(20) 297 — 327

(21) 10

(22) 8

(23) 0

(24) 8

(25) $\frac{9}{10}$ or .9

(26) 6804

(27) 528

(28) 12

(29) 193

*(30) 2625 — 2901

(31) $4\frac{1}{3}$ or $\frac{13}{3}$

(32) $\frac{1}{2}$ or .5

(33) 6776

(34) 147

(35) 4

(36) 625

(37) 8

(38) $92\frac{6}{7}$

(39) — 61

*(40) 8368 — 9248

(41) 41

(42) 511

(43) $\frac{4}{3}$ or $1\frac{1}{3}$

(44) 11

(45) 66

(46) 28

(47) 333

(48) 3721

(49) 9579

*(50) 13167 — 14552

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

(52) 6

(53) — 243

(54) 1

(55) — 2

(56) 4830

(57) 200

(58) 12

(59) 16226

*(60) 561 — 619

(61) 72.6

(62) 5

(63) 326

(64) 8

(65) 222

(66) 2.5 or $2\frac{1}{2}$ or $\frac{5}{2}$

(67) — 11

(68) — 3456

(69) 1

*(70) 494 — 545

(71) 78

(72) 0

(73) 5

(74) $\frac{1}{2}$ or .5

(75) 2

(76) $\frac{3}{4}$ or .75

(77) $-2\frac{8}{17}$

(78) 6

(79) 319

*(80) 58164 — 64285

University Interscholastic League - Number Sense Answer Key HS • Regional • 2005

*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) 651

(2) 726

(3) – 41

(4) 10450

(5) $\frac{19}{50}$

(6) 1089

(7) $\frac{64}{75}$

(8) $137\frac{1}{9}$

(9) – 18.045

*(10) 4109 – 4541

(11) 4140

(12) 273

(13) 1

(14) $-\frac{5}{16}$ or $-.3125$

(15) – 9

(16) 1364

(17) $\frac{21}{125}$ or .168

(18) 10

(19) 288

*(20) 314 – 346

(21) 3596

(22) 12

(23) 0

(24) 98

(25) 25

(26) 36

(27) 525

(28) 1414

(29) 15004

*(30) 327 – 361

(31) $2\frac{1}{3}$ or $\frac{7}{3}$

(32) 2.89, $2\frac{89}{100}$, or $\frac{289}{100}$

(33) 128

(34) $121\frac{3}{7}$

(35) $\frac{229}{990}$

(36) 1234

(37) $245\frac{1}{121}$

(38) – 217

(39) – 5

*(40) 9540 – 10544

(41) 826281

(42) 9

(43) 5

(44) $2\frac{2}{3}$ or $\frac{8}{3}$

(45) 45

(46) $37\frac{1}{3}$

(47) 5625

(48) 16

(49) 9657

*(50) 994203 – 1098855

(51) – 224

(52) 4.5 or $4\frac{1}{2}$ or $\frac{9}{2}$

(53) 9900

(54) 14

(55) – 1

(56) $\frac{17}{900}$

(57) $\frac{1}{5}$ or .2

(58) 3

(59) 22.5, $22\frac{1}{2}$, or $\frac{45}{2}$

*(60) 84143 – 92999

(61) 16

(62) – 238

(63) 121

(64) 68

(65) 124

(66) 16

(67) 4

(68) 35

(69) 49374

*(70) 46340 – 51217

(71) $1\frac{2}{5}$

(72) $4\frac{1}{2}$ or $\frac{9}{2}$ or 4.5

(73) 5.7

(74) .36

(75) $-\frac{1}{2}$ or – .5

(76) 8

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

(78) 2

(79) 693

*(80) 649 – 716

University Interscholastic League - Number Sense Answer Key HS • State • 2004

*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) 6965

(2) 196

(3) 501

(4) – 35

(5) .06875

(6) $6\frac{2}{9}$

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

(8) 2.53

(9) 35

*(10) 2109 – 2331

(11) $-\frac{5}{84}$

(12) 2017

(13) 30.3

(14) 28

(15) 736

(16) 720

(17) .27

(18) .81

(19) 3375

*(20) 13692 – 15132

(21) 2754

(22) 3.96

(23) 1210

(24) 1

(25) $\frac{11}{900}$

(26) 10088

(27) 1111.11

(28) – 1540

(29) 5184

*(30) 65556 – 72456

(31) $138\frac{2}{3}$

(32) 110

(33) 2

(34) 14

(35) – 728

(36) – 11

(37) 1102

(38) 142

(39) 16.9

*(40) 888 – 980

(41) 14400

(42) 3782

(43) 826281

(44) 110

(45) 28

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

(47) – 1

(48) 303303

(49) – 4

*(50) 200221 – 221296

(51) 124

(52) 1

(53) 2

(54) 1

(55) – 7

(56) 330

(57) – 56

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

(59) – 100

*(60) 1,423,268 – 1,573,084

(61) $\frac{49}{330}$

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

(63) 448844

(64) 62.5 or $62\frac{1}{2}$ or $\frac{125}{2}$

(65) $\frac{17}{520}$

(66) 210

(67) 2500

(68) 842724

(69) 2

*(70) 15385 – 17004

(71) 276

(72) 25

(73) $\frac{7}{6}$ or $1\frac{1}{6}$

(74) 7

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

(76) 3

(77) 21600

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

(79) 152

*(80) 5278 – 5833