Contestant's Number _____

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

Read Directions Carefully   **Do Not Unfold This Sheet**
Before Beginning Test   **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) $202 + 219 =$ _____

(2) $97 - 34 =$ _____

(3) $202 \times 4 =$ _____

(4) $2020 \div 5 =$ _____

(5) $11 \times 15 =$ _____

(6) $132 \div 12 =$ _____

(7) $219 + 220 =$ _____

(8) $19 \times 5 \times 4 =$ _____

(9) Which digit is in the ten-thousandths place in 16239.07485 ? _____

*(10) $2020 \times 11 - 2020 =$ _____

(11) $14 \times 16 =$ _____

(12) $9 \times 12 - 12 \times 6 =$ _____

(13) 13764.08256 rounded to the hundredths place is _____

(14) DLV = _____ (Arabic numeral)

(15) There are _____ even numbers between 4 and 16.

(16) $25 \times 14 =$ _____

(17) $7 \times 10^2 + 4 \times 10^{-1} + 3 \times 10^{-2} =$ _____ (decimal)

(18) $21 \times 101 =$ _____

(19) $4192 \div 5$ has a remainder of _____

*(20) $192034 \div 248 =$ _____

(21) $121 \times 50 =$ _____

(22) $\dfrac{17}{20} - \dfrac{11}{20} =$ _____ (common fraction)

(23) $2\dfrac{1}{2}$ feet = _____ inches

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

(25) $\dfrac{3}{50} =$ _____ decimal

(26) Which is larger: $\dfrac{9}{14}$ or $\dfrac{2}{3}$? _____

(27) $75 \times 24 =$ _____

(28) 55 percent = _____ (common fraction)

(29) The sum of the two smallest prime numbers is _____

*(30) $555 \times 1790 + 202 =$ _____

(31) $7\dfrac{1}{2}$ % = _____ (common fraction)

(32) The sum of the prime factors of 70 is _____

(33) $\dfrac{7}{20} + \dfrac{11}{20} =$ _____ (common fraction)

(34) $\dfrac{13}{10} - \dfrac{26}{100} =$ _____ (common fraction)

(35) Four is to seven as twenty-four is to n. n = _____

(36) If 18 ♠ cost 75¢, then 6 ♠ cost _____ ¢

(37) The least common multiple of 36 and 24 is _____

(38) $125 \times 40 =$ _____

(39) $(25 \times 25 \times 25) \div 8$ has a remainder of _____

*(40) $6\dfrac{1}{4} \times 31980 =$ _____

(41) If $z = 4.5$, then $20 - 4z =$ _____

(42) $\dfrac{2}{3} - \dfrac{1}{6} =$ _____(common fraction)

(43) A number, x, added to 11 equals 15. What is x?

_____

(44) The area of a rectangle is 288 and the length of one side is 72. The length of the other side is_____

(45) 72 inches = _____feet

(46) $21^2 =$ _____

(47) $6\dfrac{1}{4} - 4\dfrac{1}{2} =$ _____ (mixed number)

(48) 37 (Base 8) = _____Base 2

(49) What is the number, k, in the sequence:

1, 1, 2, k, 5, 8, . . .? _____

*(50) $49^4 \div 24^2 =$ _____

(51) $2 \times 1\dfrac{1}{4} + \dfrac{1}{2} =$ _____

(52) $102 \times 103 =$ _____

(53) $\dfrac{9}{11} + \dfrac{11}{9} =$ _____(mixed number)

(54) If set A = {B, E, A, U, M, O, N, T} and set B = {T, E, X, L, I, N, E}, then the number of elements in A ∩ B is_____

(55) If three times a number added to 9 is the same as 24, then the number is_____

(56) $44 \times 37 \div 4 =$ _____

(57) If $5x - 18 = 102$, then $x =$ _____

(58) What is the volume of a rectangular box with sides, 25 cm, 12 cm and 5 cm? _____cm^3

(59) A circle has a circumference of 20π. What is the circle's radius? _____

*(60) $\sqrt{231361} =$ _____

(61) $(16) + (-6) \div (-2) =$ _____

(62) $14^2 - 9^2 =$ _____

(63) $\dfrac{1}{2} + \dfrac{1}{3} + \dfrac{1}{4} =$ _____

(64) The number of edges on a cube is _____

(65) $4^2 + 12^2 =$ _____

(66) If a pair of dice is thrown, the probability that the sum of the dice is a multiple of 2 is _____

(67) If the largest angle of an isosceles triangle is 140°, what is the measure of one of the other angles?____°

(68) $\sqrt{169} + \sqrt{225} =$ _____

(69) 123 (Base 5) = _____ (Base 10)

*(70) $175^2 =$ _____

(71) $88 \times \left(\dfrac{1}{8} + \dfrac{3}{8}\right) =$ _____

(72) The perimeter of an equilateral triangle is $3\dfrac{3}{4}$.

What is the length of one side?_____

(73) Twenty-five quarters = $ _____

(74) If $18 + 3x > 12$, then $x >$ _____

(75) $160 \times 12 =$ _____

(76) If a black bag contains 12 blue, 8 red, and 16 green marbles, what is the probability of randomly drawing a red marble? _____

(77) $44\dfrac{4}{9}$ % of 36 is _____

(78) If the angles of a quadrilateral are 15°, 143°, and 82°, what is the measure of the fourth angle? _____°

(79) $208 \times 15 =$ _____

*(80) $225 \times 202 \times 98 =$ _____

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(1) $2020 + 2019 =$ _____

(2) $202 \times 5 =$ _____

(3) $219 + 202 =$ _____

(4) $2020 \div 5 =$ _____

(5) $202 + 202 \times 3 =$ _____

(6) $\dfrac{5}{16} + \dfrac{7}{16} =$ _____(common fraction)

(7) $17^2 =$ _____

(8) $1.25 + 3.50 + 4.25 =$ _____

(9) $22 + 25 + 28 + 31 + 34 =$ _____

*(10) $24903 \div 3.33 =$ _____

(11) $212 \times 11 =$ _____

(12) $\dfrac{17}{24} - \dfrac{5}{8} =$ _____ (common fraction)

(13)   MMXX = _____ (Arabic numeral)

(14) $21 \times 15 =$ _____

(15) $\dfrac{4}{9} \div \dfrac{2}{3} =$ _____

(16)   If 12 is the mean of 8, 14 and n, n = _____

(17) $31 \times 39 =$ _____

(18)   Which is larger, $\dfrac{5}{8}$ or $\dfrac{3}{5}$? _____

(19) $18 \times 5 + 6 \times 18 =$ _____

*(20) $888 \times 719 - 172 =$ _____

(21) $26 \times 27 =$ _____

(22) $40 \div (-2.5) =$ _____

(23)   25 weeks = _____days

(24)   12 cups = _____ ounces

(25) $-12 + (-11) + (-10) + \ldots + (-1) =$ _____

(26)   2 square feet = _____square inches

(27)   If $n \times 25 = 400$, n = _____

(28)   The cube root of 729 = _____

(29)   11% of 4400 = _____

*(30) $24^3 \times 25 =$ _____

(31)   If 14 ♠ cost \$1.54, then 18 ♠ cost \$_____

(32)   The GCF of 24 and 30 is _____

(33)   The perimeter of an octagon with side $6\dfrac{1}{2}$ is_____

(34)   If 12 is to n as 15 is to 10, then n = _____
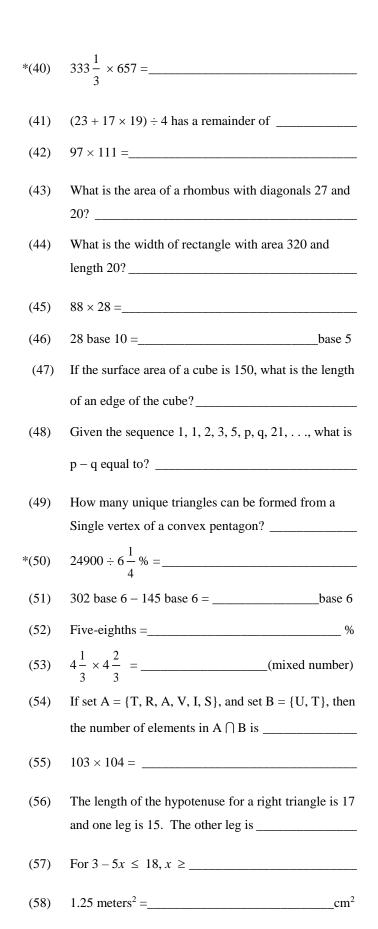
(35) $14 - 4n = 30$. What is n? _____

(36)   If $q(x) = 6x - 16$, then $q(-4) =$ _____

(37)   What is the number of integers that divide evenly into 42?_____

(38)   If the circumference of a circle is doubled, then the area of the old circle is multiplied by _____

(39)   If $\dfrac{2}{3} + \dfrac{1}{x} = \dfrac{5}{6}$, $x =$ _____

*(40) $333\frac{1}{3} \times 657 =$ _____

(41) $(23 + 17 \times 19) \div 4$ has a remainder of _____

(42) $97 \times 111 =$ _____

(43)   What is the area of a rhombus with diagonals 27 and 20? _____

(44)   What is the width of rectangle with area 320 and length 20? _____

(45) $88 \times 28 =$ _____

(46)   28 base 10 = _____ base 5

(47)   If the surface area of a cube is 150, what is the length of an edge of the cube? _____

(48)   Given the sequence 1, 1, 2, 3, 5, p, q, 21, . . ., what is p − q equal to? _____

(49)   How many unique triangles can be formed from a Single vertex of a convex pentagon? _____

*(50) $24900 \div 6\frac{1}{4}\% =$ _____

(51)   302 base 6 − 145 base 6 = _____ base 6

(52)   Five-eighths = _____ %

(53) $4\frac{1}{3} \times 4\frac{2}{3} =$ _____ (mixed number)

(54)   If set A = {T, R, A, V, I, S}, and set B = {U, T}, then the number of elements in A ∩ B is _____

(55) $103 \times 104 =$ _____

(56)   The length of the hypotenuse for a right triangle is 17 and one leg is 15. The other leg is _____

(57)   For $3 - 5x \leq 18$, $x \geq$ _____

(58)   1.25 meters^2 = _____ cm^2

(59)   A parallelogram with sides 14 and 16 has a perimeter of _____

*(60) $\sqrt{144400} =$ _____

(61)   A black bag contains 9 blue, 5 green and 21 red marbles. What is the probability of randomly picking a green marble? _____

(62) $(8! \times 3!) \div 7! =$ _____

(63) $0.4666 \ldots =$ _____ (common fraction)

(64) $\sqrt{1.44} =$ _____ decimal

(65)   The volume of a right cone with diameter 12 and height .11 is $k\pi$, and $k =$ _____

(66)   What is the shortest distance between (4, 2) and (7, -2)? _____

(67) $3^0 + 3^1 \times 3^2 =$ _____

(68) $\sqrt{576} \div 3! =$ _____

(69) $(1 + 3 + 5 + \ldots + 9)^2 =$ _____

*(70) $31^4 =$ _____

(71) $4^3 \div 2^4 =$ _____

(72)   If the probability of an event successfully happening is 2 to 5, then the odds of that event not happening are _____

(73) $0.41666 \ldots + 0.333 \ldots =$ _____ (common fraction)

(74) $4.5^2 + 1.5^2 =$ _____ (decimal)

(75)   25% of 44 is the same as $12\frac{1}{2}$ % of _____

(76)   The number of prime numbers between 20 and 40 is _____

(77) $(2)^2 \times (12.5)^2 =$ _____

(78) $\frac{3}{4} + \frac{4}{3} =$ _____

(79) $23^2 - 27^2 =$ _____

*(80) $429 \times 287 + 77 =$ _____

2019 – 2020 University Interscholastic League Elementary Number Sense Test A – Key

(1) 421

(2) 63

(3) 808

(4) 404

(5) 165

(6) 11

(7) 439

(8) 380

(9) 8

*(10) 19190 – 21210

(11) 224

(12) 36

(13) 13764.08;

$13764\dfrac{2}{25}$;

$\dfrac{344102}{25}$

(14) 555

(15) 5

(16) 350

(17) 700.43

(18) 2121

(19) 2

*(20) 736 – 813

(21) 6050

(22) $\dfrac{3}{10}$

(23) 30

(24) 6

(25) .06

(26) $\dfrac{2}{3}$

(27) 1800

(28) $\dfrac{11}{20}$

(29) 5

*(30) 943970 – 1043334

(31) $\dfrac{3}{40}$

(32) 14

(33) $\dfrac{9}{10}$

(34) $\dfrac{26}{25}$

(35) 42

(36) 25

(37) 72

(38) 5000

(39) 1

*(40) 189882 – 209868

(41) 2

(42) $\dfrac{1}{2}$

(43) 4

(44) 4

(45) 6

(46) 441

(47) $1\dfrac{3}{4}$

(48) 11111

(49) 3

*(50) 9508 – 10508

(51) 3

(52) 10506

(53) $2\dfrac{4}{99}$

(54) 3

(55) 5

(56) 407

(57) 24

(58) 1500

(59) 10

*(60) 457 – 505

(61) 19

(62) 115

(63) $1\dfrac{1}{12}$; $\dfrac{13}{12}$

(64) 12

(65) 160

(66) $\dfrac{1}{2}$; .5

(67) 20

(68) 28

(69) 38

*(70) 29094 – 32156

(71) 44

(72) $1\dfrac{1}{4}$; $\dfrac{5}{4}$; 1.25

(73) 6.25

(74) -2

(75) 1920

(76) $\dfrac{2}{9}$

(77) 16

(78) 120

(79) 3120

*(80) 4231395 – 4676805

Note: *(Number)   x – y means an integer between x and y inclusive.
If an answer is of the type like 2/3 it cannot be written as .666… or $.\overline{6}$.

2019 – 2020 University Interscholastic League Junior High Number Sense Test A – Key

(1)   4039

(2)   1010

(3)   421

(4)   404

(5)   808

(6) $\dfrac{3}{4}$

(7)   289

(8)   9

(9)   140

*(10)   7105 – 7852

(11)   2332

(12) $\dfrac{1}{12}$

(13)   2020

(14)   315

(15) $\dfrac{2}{3}$

(16)   14

(17)   1209

(18) $\dfrac{5}{8}$; .625

(19)   198

*(20)   606385 – 670215

(21)   702

(22)   -16

(23)   175

(24)   96

(25)   -78

(26)   288

(27)   16

(28)   9

(29)   484

*(30)   328320 – 362880

(31)   1.98

(32)   6

(33)   52

(34)   8

(35)   -4

(36)   -40

(37)   16

(38)   4

(39)   6

*(40)   208050 – 229950

(41)   2

(42)   10767

(43)   270

(44)   16

(45)   2464

(46)   103

(47)   5

(48)   -5

(49)   3

*(50)   378480 – 418320

(51)   113

(52) $62\dfrac{1}{2}$; $\dfrac{125}{2}$; 62.5

(53) $20\dfrac{2}{9}$

(54)   1

(55)   10712

(56)   8

(57)   -3

(58)   12500

(59)   60

*(60)   361 – 399

(61) $\dfrac{1}{7}$

(62)   48

(63) $\dfrac{7}{15}$

(64)   1.2

(65)   1.32

(66)   5

(67)   28

(68)   4

(69)   625

*(70)   877345 – 969697

(71)   4

(72) $\dfrac{3}{2}$; 1.5; $1\dfrac{1}{2}$

(73) $\dfrac{3}{4}$

(74)   22.5

(75)   88

(76)   4

(77)   625

(78) $2\dfrac{1}{12}$; $\dfrac{25}{12}$

(79)   -200

*(80)   117040 – 129360

Note: *(Number)   x – y means an integer between x and y inclusive.
If an answer is of the type like 2/3 it cannot be written as .666… or $.\overline{6}$.

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(1) $22 + 21 = $ _____

(2) $69 - 48 = $ _____

(3) $2020 \div 10 = $ _____

(4) $212 \times 3 = $ _____

(5) $307 - 79 = $ _____

(6) $132 \div 6 = $ _____

(7) $21 + 22 + 23 = $ _____

(8) $28 \times 2 \times 5 = $ _____

(9)   Which digit is in the thousands place in
      12360.97485 ? _____

*(10) $2020 \times 25 = $ _____

(11) $18 \times 16 = $ _____

(12) $19 \times 11 - 11 \times 5 = $ _____

(13) 18764.06956 rounded to the hundreds place
      is _____

(14) LXXIV = _____ (Arabic numeral)

(15) There are _____ odd numbers between 3 and 28.

(16) $16 \times 10^2 + 4 \times 10^1 + 5 \times 10^{-2} = $ _____ (decimal)

(17) $83 \times 101 = $ _____

(18) $4492 \div 9$ has a remainder of _____

(19) $73 \times 25 = $ _____

*(20) $2019 + 2020 + 2021 = $ _____

(21) $12.12 \times 50 = $ _____

(22) $\dfrac{9}{24} + \dfrac{11}{24} = $ _____ (common fraction)

(23) $1\dfrac{1}{2}$ yards = _____ inches

(24) $24 \div 8 \times 4 = $ _____

(25) $\dfrac{7}{50} = $ _____ decimal

(26) Which is smaller: $\dfrac{11}{15}$ or $\dfrac{7}{9}$? _____

(27) 65 percent = _____ (common fraction)

(28) $175 \times 4 = $ _____

(29) The smallest prime greater than 90 is _____

*(30) $167 \times 1209 + 499 = $ _____

(31) $4\dfrac{2}{3} \% = $ _____ (common fraction)

(32) The number of unique prime factors of 100 is _____

(33) $\dfrac{17}{24} - \dfrac{5}{24} = $ _____ (common fraction)

(34) $\dfrac{3}{10} - \dfrac{15}{100} = $ _____ (common fraction)

(35) Twelve is to seven as twenty-four is to n. n = _____

(36) If 8 ♠ cost 72¢, then 24 ♠ cost _____ ¢

(37) The least common multiple of 40 and 24 is _____

(38) $(15 \times 20 \times 30) \div 7$ has a remainder of _____

(39) $225 \times 40 =$_____

*(40) $29880 \div 6\dfrac{1}{4} =$ _____

(41) If $z = 6.5$, then $16 + 4z =$_____

(42) $\dfrac{3}{4} - \dfrac{5}{8} =$_____(common fraction)

(43) A number, x, added to 9 equals 33. What is x?

  _____

(44) The area of a rectangle is 350 and the length of one side is 25. The length of the other side is_____

(45) 72 inches =_____yards

(46) $23^2 =$ _____

(47) $8\dfrac{3}{8} + 4\dfrac{3}{4} =$_____ (mixed number)

(48) 123 (Base 8) = _____Base 10

(49) What is the number, k, in the sequence:
  0, 3, 8, k, 24, 35, . . .? _____

*(50) $24^4 \div 9^2 =$ _____

(51) $16 \times 1\dfrac{1}{4} - \dfrac{1}{2} =$_____

(52) $92 \times 93 =$_____

(53) $\dfrac{5}{9} + \dfrac{9}{5} =$_____(mixed number)

(54) If set A = {N, C, A, A} and set B = {U, I, L}, then the number of elements in A $\cup$ B is _____

(55) If 48 is subtracted from three times a number, the result is 24. The number is_____

(56) $105 \times 12 \div 5 =$ _____

(57) If $3x + 17 = 98$, then $x =$ _____

(58) What is the volume of a rectangular box with sides 24 cm, 24 cm and 10 cm? _____cm^3

(59) A circle has an area of 36π. What is the circle's diameter? _____

*(60) $\sqrt{366025} =$ _____

(61) $(12) - (-30) \div (-2) =$ _____

(62) $9^2 - 21^2 =$ _____

(63) $\dfrac{1}{2} + \dfrac{1}{4} + \dfrac{1}{8} =$_____

(64) The area of an isosceles triangle with sides 5, 5, and 8 is _____

(65) $19^2 + 57^2 =$ _____

(66) If a pair of dice is thrown, the probability that the sum of the dice is an even number is _____

(67) If the largest angle of an isosceles triangle is 102°, what is the measure of one of the other angles?____°

(68) $\sqrt{289} - \sqrt{196} =$ _____

(69) 49 (Base 10) =_____ (Base 4)

*(70) $245^2 =$ _____

(71) $24 \times \left(\dfrac{5}{8} - \dfrac{1}{4}\right) =$_____

(72) The perimeter of a regular pentagon is $3\dfrac{3}{5}$. What is the length of one side? _____

(73) \$4.25 =_____quarters

(74) If $24 + 3x > 21$, then $x >$ _____

(75) $12 \times 240 =$ _____

(76) If a black bag contains 8 blue, 12 red, and 16 green marbles, what is the probability of randomly drawing a green marble? _____

(77) $22\dfrac{2}{9}$ % of 18 is _____

(78) If the angles of a quadrilateral are 45°, 103°, and 62°, what is the measure of the fourth angle? _____°

(79) $420 \times 15 =$ _____

*(80) $101 \times 201 \times 89 =$ _____

2019 – 2020 University Interscholastic League Elementary Number Sense Test B – Key

(1) 43

(2) 21

(3) 202

(4) 636

(5) 228

(6) 22

(7) 66

(8) 280

(9) 2

*(10) 47975 – 53025

(11) 288

(12) 154

(13) 18800

(14) 74

(15) 12

(16) 1640.05

(17) 8383

(18) 1

(19) 1825

*(20) 5757 – 6363

(21) 606

(22) $\dfrac{5}{6}$

(23) 54

(24) 12

(25) .14

(26) $\dfrac{11}{15}$

(27) $\dfrac{13}{20}$

(28) 700

(29) 97

*(30) 192282 – 212522

(31) $\dfrac{7}{150}$

(32) 2

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

(34) $\dfrac{3}{20}$

(35) 14

(36) 216

(37) 120

(38) 5

(39) 9000

*(40) 4542 – 5019

(41) 42

(42) $\dfrac{1}{8}$

(43) 24

(44) 14

(45) 2

(46) 529

(47) $13\dfrac{1}{8}$

(48) 83

(49) 15

*(50) 3892 – 4300

(51) $19\dfrac{1}{2}$; 19.5; $\dfrac{39}{2}$

(52) 8556

(53) $2\dfrac{16}{45}$

(54) 6

(55) 24

(56) 252

(57) 27

(58) 5760

(59) 12

*(60) 575 – 635

(61) -3

(62) -360

(63) $\dfrac{7}{8}$; .875

(64) 12

(65) 3610

(66) $\dfrac{1}{2}$; .5

(67) 39

(68) 3

(69) 301

*(70) 57024 – 63026

(71) 9

(72) $\dfrac{18}{25}$; .72

(73) 17

(74) -1

(75) 2880

(76) $\dfrac{4}{9}$

(77) 4

(78) 150

(79) 6300

*(80) 1716450 – 1897128

Note: *(Number)   x – y means an integer between x and y inclusive.
If an answer is of the type like 2/3 it cannot be written as .666… or $.\overline{6}$.

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(1) $22 + 219 =$ _____

(2) $2020 \div 4 =$ _____

(3) $202 \times 25 =$ _____

(4) $\dfrac{23}{24} - \dfrac{17}{24} =$ _____ (common Fraction)

(5) $219 \times 4 - 219 =$ _____

(6) $78 \times 11 =$ _____

(7) $17 + 19 + 21 + 23 =$ _____

(8) $4.75 - 1.25 - 2.50 =$ _____

(9) $1.2 \div 0.04 =$ _____

*(10) $29090 \div 8.33 =$ _____

(11) $75 \times 24 =$ _____

(12) MMXIX = _____ (Arabic numeral)

(13) If 15 is the mean of 12, 6 and n, n = _____

(14) $8 + 12 \times 15 =$ _____

(15) $\dfrac{8}{9} \div \dfrac{2}{3} =$ _____

(16) $1500 \times 1.5 =$ _____

(17) $43 \times 63 =$ _____

(18) Which is smaller, $\dfrac{9}{8}$ or $\dfrac{10}{9}$? _____

(19) $24 \times 12 + 12 \times 24 =$ _____

*(20) $629 \times 556 + 76 =$ _____

(21) $22 \times 41 =$ _____

(22) 60 pints = _____ quarts

(23) $(-2.75) \div 0.25 =$ _____

(24) 3600 minutes = _____ hours

(25) $-1 + (-3) + (-5) + \ldots + (-11) =$ _____

(26) 27 cubic feet = _____ cubic yard

(27) If $18 \times n = 72$, n = _____

(28) The cube root of -216 = _____

(29) 12% of 6000 = _____

*(30) $6^3 \times 7^3 + 12 =$ _____

(31) If 12 ♠ cost $1.44, then 30 ♠ cost $_____

(32) The GCF of 28 and 42 is _____

(33) The perimeter of a hexagon with side $6\dfrac{2}{3}$ is _____

(34) If 24 is to n as 12 is to 8, then n = _____

(35) $44 + 4n = 32$. What is n? _____

(36) If $q(x) = 16 - 8x$, then $q(-3) =$ _____

(37) What is the number of integers that divide evenly into 18? _____

(38) If the circumference of a circle is halved, then the area of the old circle is multiplied by _____

(39) If $\dfrac{3}{4} + \dfrac{1}{x} = \dfrac{1}{2}$, $x =$ _____

*(40) $666\frac{2}{3} \times 239 =$ _____

(41) $(22^3 + 19^3) \div 5$ has a remainder of _____

(42) $978 \times 11 =$ _____

(43) A rhombus with area 100 has diagonals of 20 and n. What is n? _____

(44) What is the width of rectangle with perimeter 20 and length 7? _____

(45) $63 \times 67 =$ _____

(46) 132 base 4 = _____ base 10

(47) If the volume of a cube is 125, what is the length of an edge of the cube? _____

(48) Given the sequence 1, 3, 5, p, 9, 11, q, 15, . . ., what is 2q − p equal to? _____

(49) How many unique triangles can be formed from a single vertex of a convex hexagon? _____

*(50) $36090 \div 8\frac{1}{3}\% =$ _____

(51) 302 base 4 − 223 base 4 = _____ base 4

(52) Five-sixteenths = _____ %

(53) $8\frac{2}{3} \times 4\frac{2}{3} =$ _____ (mixed number)

(54) If set A = {F, O, R, T}, and set B = {W, O, R, T, H}, then the number of elements in A $\cup$ B is _____

(55) $92 \times 95 =$ _____

(56) The length of the hypotenuse for a right triangle is 15 and one leg is 12. The other leg is _____

(57) For $24 + 6x \le 18$, $x \le$ _____

(58) $3200 \text{ cm}^2 =$ _____ m^2

(59) A parallelogram with perimeter 30 has sides 8 and n. What is n? _____

*(60) $\sqrt{280900} =$ _____

(61) A black bag contains 12 blue, 6 green and 18 red marbles. What is the probability of randomly picking a blue marble? _____

(62) $(7! \times 4!) \div 8! =$ _____

(63) $0.0333\ldots =$ _____ (common fraction)

(64) $\sqrt{2.25} =$ _____ decimal

(65) The volume of a right cone with diameter 6 and height 12 is $k\pi$, and $k =$ _____

(66) What is the shortest distance between (9, 6) and (4, -6)? _____

(67) $2^4 + 2^0 \times 2^3 =$ _____

(68) $\sqrt{361} + 4! =$ _____

(69) $(1 + 2 + 3 + \ldots + 6)^2 =$ _____

*(70) $489 \times \pi^3 =$ _____

(71) $4^3 - 2^4 =$ _____

(72) If the odds of an event successfully happening are 6 to 4, then the probability of that event happening is _____

(73) $(0.888\ldots) \div 0.666\ldots =$ _____

(74) $2.4^2 + 0.8^2 =$ _____

(75) $18\frac{3}{4}\%$ of 24 is the same as $6\frac{1}{4}\%$ of _____

(76) The number of prime numbers between 0 and 20 is _____

(77) $(4)^2 \times (12.5)^2 =$ _____

(78) $\frac{8}{5} + \frac{5}{8} =$ _____

(79) If $13^2 - n^2 = 144$, and n > 0, then n = _____

*(80) $67 \times 70 \times 73 =$ _____

2019 – 2020 University Interscholastic League Junior High Number Sense Test B – Key

(1) 241

(2) 505

(3) 5050

(4) $\dfrac{1}{4}$

(5) 657

(6) 858

(7) 80

(8) 1

(9) 30

*(10) 3318 – 3666

(11) 1800

(12) 2019

(13) 27

(14) 188

(15) $\dfrac{4}{3}$; $1\dfrac{1}{3}$

(16) 2250

(17) 2709

(18) $\dfrac{10}{9}$; $1\dfrac{1}{9}$

(19) 576

*(20) 332310 – 367290

(21) 902

(22) 30

(23) -11

(24) 60

(25) -36

(26) 1

(27) 4

(28) -6

(29) 720

*(30) 70395 – 77805

(31) 3.60

(32) 14

(33) 40

(34) 16

(35) -3

(36) 40

(37) 12

(38) $\dfrac{1}{4}$; .25

(39) -4

*(40) 151367 – 167300

(41) 2

(42) 10758

(43) 10

(44) 3

(45) 4221

(46) 30

(47) 5

(48) 19

(49) 4

*(50) 411426 – 454734

(51) 13

(52) $31\dfrac{1}{4}$; $\dfrac{125}{4}$; 31.25

(53) $40\dfrac{4}{9}$

(54) 6

(55) 8740

(56) 9

(57) -1

(58) .32; $\dfrac{8}{25}$

(59) 7

*(60) 504 – 556

(61) $\dfrac{1}{3}$

(62) 3

(63) $\dfrac{1}{30}$

(64) 1.5

(65) 36

(66) 13

(67) 24

(68) 43

(69) 441

*(70) 14404 – 15920

(71) 48

(72) $\dfrac{3}{5}$; .6

(73) $\dfrac{4}{3}$; $1\dfrac{1}{3}$

(74) 6.4; $6\dfrac{2}{5}$; $\dfrac{32}{5}$

(75) 72

(76) 8

(77) 2500

(78) $2\dfrac{9}{40}$; $\dfrac{89}{40}$; 2.225

(79) 5

*(80) 325252 – 359488

Note: *(Number)   x – y means an integer between x and y inclusive.
If an answer is of the type like 2/3 it cannot be written as .666… or $.\overline{6}$.

Contestant's Number _____

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

Read Directions Carefully   **Do Not Unfold This Sheet**
Before Beginning Test   **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) $31 + 46 =$ _____

(2) $77 - 25 =$ _____

(3) $2020 \div 20 =$ _____

(4) $321 \times 3 =$ _____

(5) $218 - 69 =$ _____

(6) $132 \div 4 =$ _____

(7) $19 + 22 + 25 =$ _____

(8) $34 \times 2 \times 5 =$ _____

(9) Which digit is in the thousandths place in 12360.97485 ? _____

*(10) $2020 \times 249 =$ _____

(11) $22 \times 18 =$ _____

(12) $24 \times 11 - 11 \times 6 =$ _____

(13) 18764.06956 rounded to the thousands place is _____

(14) CLXIV = _____ (Arabic numeral)

(15) There are _____ odd numbers between 5 and 32.

(16) $23 \times 10^2 + 5 \times 10^1 + 5 \times 10^{-1} =$ _____ (decimal)

(17) $48 \times 101 =$ _____

(18) $8291 \div 9$ has a remainder of _____

(19) $53 \times 25 =$ _____

*(20) $2017 + 2020 + 2023 =$ _____

(21) $16.16 \times 50 =$ _____

(22) $\dfrac{11}{24} + \dfrac{7}{24} =$ _____ (common fraction)

(23) $1\dfrac{1}{4}$ yards = _____ inches

(24) $20 \div 8 \times 4 =$ _____

(25) $\dfrac{19}{50} =$ _____ decimal

(26) Which is smaller: $\dfrac{13}{15}$ or $\dfrac{7}{8}$? _____

(27) 72 percent = _____ (common fraction)

(28) $175 \times 16 =$ _____

(29) The smallest prime greater than 80 is _____

*(30) $167 \times 2390 + 499 =$ _____

(31) $3\dfrac{1}{3}$ % = _____ (common fraction)

(32) The number of unique prime factors of 90 is _____

(33) $\dfrac{23}{24} - \dfrac{5}{24} =$ _____ (common fraction)

(34) $\dfrac{15}{100} - \dfrac{1}{10} =$ _____ (common fraction)

(35) Twelve is to eight as eighteen is to n. n = _____

(36) If 12 ♠ cost 72¢, then 8 ♠ cost _____ ¢

(37) The least common multiple of 36 and 30 is _____

(38) $(17 \times 16 \times 15) \div 7$ has a remainder of _____

(39) $225 \times 80 =$_____

*(40) $10180 \div 6\dfrac{1}{4} =$ _____

(41) If $z = 3.5$, then $14 + 4z =$_____

(42) $\dfrac{11}{12} - \dfrac{1}{4} =$_____(common fraction)

(43) A number, x, added to 12 equals 30. What is x?

_____

(44) The area of a rectangle is 200 and the length of one side is 25. The length of the other side is_____

(45) 108 inches =_____yards

(46) $24^2 =$ _____

(47) $12\dfrac{5}{6} + 3\dfrac{3}{4} =$_____ (mixed number)

(48) 134 (Base 8) = _____Base 10

(49) What is the number, k, in the sequence:
0, 3, 8, 15, k, 35, 48, . . .? _____

*(50) $12^4 \div 3^3 =$ _____

(51) $16 \times 1\dfrac{3}{4} - \dfrac{1}{2} =$_____

(52) $95 \times 96 =$_____

(53) $\dfrac{6}{11} + \dfrac{11}{6} =$_____(mixed number)

(54) If set A = {C, H, E, R, R, Y} and set B = {P, I, E}, then the number of elements in A $\cup$ B is _____

(55) If 28 is subtracted from three times a number, the result is 20. The number is_____

(56) $65 \times 12 \div 5 =$ _____

(57) If $3x + 24 = 36$, then $x =$ _____

(58) What is the volume of a rectangular box with sides 20 cm, 24 cm and 10 cm? _____cm^3

(59) A circle has an area of 64π. What is the circle's diameter? _____

*(60) $\sqrt{265225} =$ _____

(61) $(32) - (-28) \div (-2) =$ _____

(62) $8^2 - 22^2 =$ _____

(63) $\dfrac{1}{3} + \dfrac{1}{6} + \dfrac{1}{9} =$_____

(64) The area of an isosceles triangle with sides 10, 10, and 16 is _____

(65) $21^2 + 63^2 =$ _____

(66) If a pair of dice is thrown, the probability that the sum of the dice is an odd number is _____

(67) If the largest angle of an isosceles triangle is 112°, what is the measure of one of the other angles?____°

(68) $\sqrt{225} - \sqrt{361} =$ _____

(69) 49 (Base 10) =_____ (Base 6)

*(70) $235^2 =$ _____

(71) $24 \times \left(\dfrac{5}{8} - \dfrac{1}{2} \right) =$ _____

(72) The perimeter of a regular hexagon is $3\dfrac{1}{2}$. What is the length of one side? _____

(73) \$6.75 =_____quarters

(74) If $40 + 3x > 1$, then $x >$ _____

(75) $12 \times 120 =$ _____

(76) If a black bag contains 8 blue, 13 red, and 15 green marbles, what is the probability of randomly drawing a green marble? _____

(77) $22\dfrac{2}{9}$ % of 27 is _____

(78) If the angles of a quadrilateral are 90°, 57°, and 63°, what is the measure of the fourth angle? _____°

(79) $240 \times 15 =$ _____

*(80) $303 \times 201 \times 89 =$ _____

2019 – 2020 University Interscholastic League Elementary Number Sense Test C – Key

(1) 77

(2) 52

(3) 101

(4) 963

(5) 149

(6) 33

(7) 66

(8) 340

(9) 4

*(10) 477831 – 528129

(11) 396

(12) 198

(13) 19000

(14) 164

(15) 13

(16) 2350.5

(17) 4848

(18) 2

(19) 1325

*(20) 5757 – 6363

(21) 808

(22) $\dfrac{3}{4}$

(23) 45

(24) 10

(25) .38

(26) $\dfrac{13}{15}$

(27) $\dfrac{18}{25}$

(28) 2800

(29) 83

*(30) 379648 – 419610

(31) $\dfrac{1}{30}$

(32) 3

(33) $\dfrac{3}{4}$

(34) $\dfrac{1}{20}$

(35) 12

(36) 48

(37) 180

(38) 6

(39) 18000

*(40) 1548 – 1710

(41) 28

(42) $\dfrac{2}{3}$

(43) 18

(44) 8

(45) 3

(46) 576

(47) $16\dfrac{7}{12}$

(48) 92

(49) 24

*(50) 730 – 806

(51) $27\dfrac{1}{2}$; 27.5; $\dfrac{55}{2}$

(52) 9120

(53) $2\dfrac{25}{66}$

(54) 7

(55) 16

(56) 156

(57) 4

(58) 4800

(59) 16

*(60) 490 – 540

(61) 18

(62) -420

(63) $\dfrac{11}{18}$

(64) 48

(65) 4410

(66) $\dfrac{1}{2}$; .5

(67) 34

(68) -4

(69) 121

*(70) 52464 – 57986

(71) 3

(72) $\dfrac{7}{12}$

(73) 27

(74) -13

(75) 1440

(76) $\dfrac{5}{12}$

(77) 6

(78) 150

(79) 3600

*(80) 5149349 – 5691385

Note: *(Number)   x – y means an integer between x and y inclusive.
If an answer is of the type like 2/3 it cannot be written as .666… or $.\overline{6}$.

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(1) $219 + 220 =$ _____

(2) $2019 \div 3 =$ _____

(3) $219 \times 25 =$ _____

(4) $\dfrac{18}{24} - \dfrac{9}{24} =$ _____(common fraction)

(5) $219 \times 3 + 219 =$ _____

(6) $19 \times 11 =$ _____

(7) $16 + 19 + 22 + 25 =$ _____

(8) $8.75 - 2.25 - 3.50 =$ _____

(9) $3.2 \div 0.04 =$ _____

*(10) $19901 \div 8.33 =$ _____

(11) $75 \times 18 =$ _____

(12) MMXXI = _____(Arabic numeral)

(13) If 15 is the mean of 16, 20 and n, n = _____

(14) $8 + 12 \times 16 =$ _____

(15) $\dfrac{8}{9} \div \dfrac{4}{3} =$ _____

(16) $1600 \times 1.5 =$ _____

(17) $23 \times 83 =$ _____

(18) Which is larger, $\dfrac{9}{8}$ or $\dfrac{10}{9}$? _____

(19) $22 \times 12 + 12 \times 38 =$ _____

*(20) $189 \times 556 + 16 =$ _____

(21) $22 \times 32 =$ _____

(22) 48 pints = _____quarts

(23) $(-4.75) \div 0.25 =$ _____

(24) 4200 minutes = _____ hours

(25) $-1 + (-3) + (-5) + \ldots + (-13) =$ _____

(26) 18 cubic feet = _____cubic yard

(27) If $18 \times n = 54$, n = _____

(28) The cube root of -64 = _____

(29) 12% of 4000 = _____

*(30) $6^3 \times 5^3 + 100 =$ _____

(31) If 9 ♠ cost \$1.44, then 30 ♠ cost \$_____

(32) The GCF of 24 and 42 is _____

(33) The perimeter of a hexagon with side $4\dfrac{2}{3}$ is _____

(34) If 9 is to n as 12 is to 8, then n = _____

(35) $44 - 4n = 32$. What is n? _____

(36) If $q(x) = 16 - 6x$, then $q(-3) =$ _____

(37) What is the number of integers that divide evenly into 30? _____

(38) If the circumference of a circle is tripled, then the area of the old circle is multiplied by _____

(39) If $\dfrac{8}{9} + \dfrac{1}{x} = \dfrac{2}{3}$, $x =$ _____

*(40) $666\frac{2}{3} \times 419 = $ _____

(41) $(23^3 + 28^3) \div 5$ has a remainder of _____

(42) $878 \times 11 = $_____

(43) A rhombus with area 80 has diagonals of 16 and n.

What is n?_____

(44) What is the width of rectangle with perimeter 30 and

length 9? _____

(45) $31 \times 39 = $_____

(46) 222 base 4 =_____ base 10

(47) If the volume of a cube is 64, what is the length

of an edge of the cube?_____

(48) Given the sequence 1, 3, p, 7, 9, q, 13, 15, . . ., what

is 2q – p equal to? _____

(49) How many unique triangles can be formed from a

single vertex of a convex octagon? _____

*(50) $48080 \div 8\frac{1}{3} \% = $ _____

(51) 302 base 5 – 223 base 5 = _____base 5

(52) Seven-sixteenths =_____ %

(53) $6\frac{2}{3} \times 6\frac{2}{3} = $ _____(mixed number)

(54) If set A = {F, O, R, T}, and set B = {W, O, R, T, H},

then the number of elements in A ∩ B is _____

(55) $93 \times 95 = $ _____

(56) The length of the hypotenuse for a right triangle is 13

and one leg is 12. The other leg is _____

(57) For $32 + 7x \leq 18$, $x \leq$ _____

(58) $1600 \text{ cm}^2 = $_____$\text{m}^2$

(59) A parallelogram with perimeter 40 has sides 8 and

n. What is n?_____

*(60) $\sqrt{396900} = $_____

(61) A black bag contains 12 blue, 6 green and 18 red
marbles. What is the probability of randomly picking

a red marble? _____

(62) $(6! \times 3!) \div 5! = $ _____

(63) 0.0222 . . . =_____(common fraction)

(64) $\sqrt{3.61} = $_____decimal

(65) The volume of a right cone with diameter 6 and

height 11 is $k\pi$, and $k = $ _____

(66) What is the shortest distance between (9, 6) and

(1, -9)? _____

(67) $2^3 + 2^0 \times 2^4 = $ _____

(68) $\sqrt{576} + 4! = $ _____

(69) $(2 + 4 + 6 + . . . + 10)^2 = $_____

*(70) $667 \times \pi^3 = $_____

(71) $3^3 - 2^4 = $ _____

(72) If the odds of an event successfully happening are
6 to 4, then the probability of that event not

happening is _____

(73) $(0.888 . . .) \div 0.333 . . . = $ _____

(74) $1.5^2 + 0.5^2 = $ _____

(75) $6\frac{3}{4} \%$ of 24 is the same as $13\frac{1}{2} \%$ of _____

(76) The number of prime numbers between 0 and 15 is

_____

(77) $(6)^2 \times (12.5)^2 = $ _____

(78) $\frac{4}{7} + \frac{7}{4} = $ _____

(79) If $13^2 - n^2 = 25$, and n > 0, then n =_____

*(80) $37 \times 40 \times 43 = $ _____

2019 – 2020 University Interscholastic League Junior High Number Sense Test C – Key

(1) 439	(21) 704	*(40) 265367 – 293300	*(60) 599 – 661
(2) 673	(22) 24	(41) 4	(61) $\frac{1}{2}$; .5
(3) 5475	(23) -19	(42) 9658	
(4) $\frac{3}{8}$	(24) 70	(43) 10	(62) 36
	(25) -49	(44) 6	(63) $\frac{1}{45}$
(5) 876	(26) $\frac{2}{3}$	(45) 1209	(64) 1.9
(6) 209		(46) 42	
(7) 82	(27) 3	(47) 4	(65) 33
(8) 3	(28) -4	(48) 17	(66) 17
(9) 80	(29) 480	(49) 6	(67) 24
*(10) 2270 – 2508	*(30) 25745 – 28455	*(50) 548112 – 605808	(68) 48
(11) 1350	(31) 4.80	(51) 24	(69) 900
(12) 2021	(32) 6		*(70) 19648 – 21715
(13) 9	(33) 28	(52) $43\frac{3}{4}$; $\frac{175}{4}$; 43.75	(71) 11
(14) 200	(34) 6		(72) $\frac{2}{5}$; .4
(15) $\frac{2}{3}$	(35) 3	(53) $44\frac{4}{9}$	
	(36) 34	(54) 3	(73) $\frac{8}{3}$; $2\frac{2}{3}$
(16) 2400	(37) 16	(55) 8835	
(17) 1909	(38) 9	(56) 5	(74) 2.5; $2\frac{1}{2}$; $\frac{5}{2}$
(18) $\frac{9}{8}$; $1\frac{1}{8}$; 1.125	(39) $-4\frac{1}{2}$; $-\frac{9}{2}$; -4.5	(57) -2	(75) 12
		(58) $.16$; $\frac{4}{25}$	(76) 6
(19) 720		(59) 12	(77) 5625
*(20) 99845 – 110355			(78) $2\frac{9}{28}$; $\frac{65}{28}$
			(79) 12
			*(80) 60458 – 66822

Note: *(Number)   x – y means an integer between x and y inclusive.
If an answer is of the type like 2/3 it cannot be written as .666… or $.\overline{6}$.