

**University Interscholastic League  
2022 – 2023 Elementary Number Sense Test**

A

Contestant's Number \_\_\_\_\_

Final		
2 <sup>nd</sup>		
1 <sup>st</sup>		
<b>Score</b>	<b>Initials</b>	

**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!**

- |  |   |
|--|---|
| <p>(1) <math>34 - 23 =</math> _____</p> <p>(2) <math>8 \times 9 =</math> _____</p> <p>(3) <math>223 + 222 =</math> _____</p> <p>(4) <math>2022 \div 2 =</math> _____</p> <p>(5) <math>3 \times 5 \times 4 =</math> _____</p> <p>(6) <math>132 \div 11 =</math> _____</p> <p>(7) <math>11 + 12 + 13 =</math> _____</p> <p>(8) <math>458 - 205 =</math> _____</p> <p>(9) <math>32 \times 5 =</math> _____</p> <p>* (10) <math>2296 + 1892 =</math> _____</p> <p>(11) <math>11 \times 34 =</math> _____</p> <p>(12) Which digit is in the thousandths place in 94371.65028? _____</p> <p>(13) <math>32 \times 12 =</math> _____</p> <p>(14) 70836.4728 rounded to the thousandths place is _____ (decimal)</p> <p>(15) What is the remainder for <math>71532 \div 4</math>? _____</p> <p>(16) The number of odd whole numbers between 9 and 25 is _____</p> <p>(17) <math>8 \times 10^3 + 4 \times 10^1 + 4 \times 10^{-1} =</math> _____ (decimal)</p> <p>(18) <math>18 \times 6 + 18 \times 4 =</math> _____</p> <p>(19) MMDCL = _____ (Arabic Numeral)</p> | <p>* (20) <math>149 \times 319 =</math> _____</p> <p>(21) <math>12 - 4 \div 2 =</math> _____</p> <p>(22) <math>9 + 12 + 15 + 18 + 21 =</math> _____</p> <p>(23) 2 days = _____ hours</p> <p>(24) <math>\frac{3}{4} =</math> _____ percent</p> <p>(25) <math>\frac{5}{18} - \frac{1}{18} =</math> _____</p> <p>(26) <math>88 \times 91 =</math> _____</p> <p>(27) 0.55 = _____ common fraction</p> <p>(28) If 18 ♥ costs 43¢ then 36 ♥ cost _____ ¢</p> <p>(29) <math>\frac{5}{12} \times 36 =</math> _____</p> <p>* (30) <math>111 \times 359 =</math> _____</p> <p>(31) 30 nickels = _____ quarters</p> <p>(32) The product of the two largest primes less than 20 is _____</p> <p>(33) 3 cups = _____ ounces</p> <p>(34) <math>1225 \div 25 =</math> _____</p> <p>(35) <math>44\frac{4}{9}\% =</math> _____ common fraction</p> <p>(36) The LCM of 12 and 18 is _____</p> <p>(37) <math>103 \times 104 =</math> _____</p> |
|--|---|

- (38)  $2\frac{4}{9} \times 7\frac{4}{9} =$  \_\_\_\_\_ (mixed number)
- (39) The ratio in inches of 2 yards to 1 foot is \_\_\_\_\_
- \*(40)  $167 \times 603 =$  \_\_\_\_\_
- (41)  $17^2 =$  \_\_\_\_\_
- (42)  $5^3 =$  \_\_\_\_\_
- (43) The side for a cube with volume  $64 \text{ cm}^3$  is \_\_\_\_\_ cm
- (44) The perimeter of a square with area  $361 \text{ m}^2$  is \_\_\_\_\_ m
- (45)  $5\frac{3}{5} \div \frac{1}{5} =$  \_\_\_\_\_
- (46)  $\sqrt{576} =$  \_\_\_\_\_
- (47) What is the perimeter of a right triangle with legs 3 and 4? \_\_\_\_\_
- (48)  $22 \times 13 =$  \_\_\_\_\_
- (49) If  $x = 15$ , then  $21 + 3x =$  \_\_\_\_\_
- \*(50)  $13 + 2023 + 2975 =$  \_\_\_\_\_
- (51) What is the number,  $k$ , in the sequence: 1, 4, 9, 25,  $k$ , 49, 64, ...? \_\_\_\_\_
- (52)  $12\frac{4}{9} - 7\frac{7}{9} =$  \_\_\_\_\_ (mixed number)
- (53) If the circumference of a circle is  $144\pi$ , what is the radius of the circle? \_\_\_\_\_
- (54) What is the volume of a rectangular box that measures 5" by 6" by 8"? \_\_\_\_\_  $\text{in}^3$
- (55) 23 (base 4) = \_\_\_\_\_ (base 10)
- (56) What whole number cubed plus eight equals thirty-five? \_\_\_\_\_
- (57) A triangle has sides of 10, 12, and semiperimeter of 18. What is the third side? \_\_\_\_\_
- (58) If set  $A = \{2, 4, 6, \dots, 10\}$  and set  $B = \{1, 2, 3, 4, 5\}$ , then the number of elements in  $A \cup B$  is \_\_\_\_\_
- (59) What is the perimeter of the square with a side length of  $8\frac{3}{4}$ ? \_\_\_\_\_
- \*(60) 361 days = \_\_\_\_\_ hours
- (61) 57 (base 8) = \_\_\_\_\_ (base 2)
- (62)  $-2^4 \times (-16) =$  \_\_\_\_\_
- (63) Two fair dice are thrown. What is the probability that the sum of the two sides showing is 9? \_\_\_\_\_
- (64) 1 square mile = \_\_\_\_\_ acres
- (65)  $43^2 =$  \_\_\_\_\_
- (66)  $4^6 \div 7$  has remainder of \_\_\_\_\_
- (67) How many edges does a square pyramid have? \_\_\_\_\_
- (68) If  $2x + 12 < 8$ , then  $x <$  \_\_\_\_\_
- (69)  $\frac{6}{7} + \frac{7}{6} = 2 +$  \_\_\_\_\_
- \*(70)  $102 \times \sqrt{784} =$  \_\_\_\_\_
- (71) The multiplicative inverse of  $-3\frac{1}{2}$  is \_\_\_\_\_
- (72) The area of a square with diagonal 12 is \_\_\_\_\_
- (73) If  $13\frac{1}{2}\%$  of  $x$  is  $4\frac{1}{2}\%$  of 6, then  $x =$  \_\_\_\_\_
- (74)  $(-24) \div (-6) \times (-2) =$  \_\_\_\_\_
- (75)  $24^2 + 12^2 =$  \_\_\_\_\_
- (76)  $\left(25\frac{1}{2}\right)^2 - \left(14\frac{1}{2}\right)^2 =$  \_\_\_\_\_
- (77) What is the area of a trapezoid with bases 12, 16 and height 10? \_\_\_\_\_
- (78)  $286 \times 28 =$  \_\_\_\_\_
- (79)  $19^2 + 19 =$  \_\_\_\_\_
- \*(80)  $39 \times 40 \times 42 =$  \_\_\_\_\_

## 2022 – 2023 University Interscholastic League Elementary Number Sense Test A – Key

(1) 11	*(20) 45155 – 49907	(38) $18\frac{16}{81}$	(59) 35
(2) 72	(21) 10	(39) 6	*(60) 8231 – 9097
(3) 445	(22) 75	*(40) 95666 – 105736	(61) 101111
(4) 1011	(23) 48	(41) 289	(62) 256
(5) 60	(24) 75	(42) 125	(63) $\frac{1}{9}$
(6) 12	(25) $\frac{2}{9}$	(43) 4	(64) 640
(7) 36	(26) 8008	(44) 76	(65) 1849
(8) 253	(27) $\frac{11}{20}$	(45) 28	(66) 1
(9) 160	(28) 86	(46) 24	(67) 8
*(10) 3979 – 4397	(29) 15	(47) 12	(68) -2
(11) 374	*(30) 37857 – 41841	(48) 286	(69) $\frac{1}{42}$
(12) 0	(31) $5\frac{3}{5}; \frac{18}{5}; 5.6$	(49) 66	*(70) 2714 – 2998
(13) 384	(32) 323	*(50) 4761 – 5261	(71) $-\frac{2}{7}$
(14) 70836.473	(33) 24	(51) 36	(72) 72
(15) 0	(34) 49	(52) $4\frac{2}{3}$	(73) 2
(16) 7	(35) $\frac{4}{9}$	(53) 72	(74) -8
(17) 8040.4	(36) 36	(54) 240	(75) 720
(18) 180	(37) 10712	(55) 11	(76) 440
(19) 2650		(56) 3	(77) 140
		(57) 14	(78) 8008
		(58) 8	(79) 380
			*(80) 62244 – 68796

Note: \*(Number) x – y means an integer between x and y inclusive.

If an answer is of the type like  $\frac{2}{3}$  it cannot be written as .666... or  $\overline{.6}$ .

**University Interscholastic League**  
**2022 – 2023 Junior High Number Sense Test A**

Contestant's Number \_\_\_\_\_

Final		
2 <sup>nd</sup>		
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- |  |  |
|--|--|
| <p>(1) <math>23 + 51 =</math> _____</p> <p>(2) <math>18 \times 5 =</math> _____</p> <p>(3) <math>79 - 26 =</math> _____</p> <p>(4) <math>1203 \div 3 =</math> _____</p> <p>(5) <math>\frac{3}{8} + \frac{1}{4} =</math> _____</p> <p>(6) <math>24 \div 0.5 =</math> _____</p> <p>(7) <math>40 \times 0.25 =</math> _____</p> <p>(8) <math>24^2 =</math> _____</p> <p>(9) <math>11 \times 5 \times 2 =</math> _____</p> <p>*(10) <math>21 + 2022 + 23 + 2023 =</math> _____</p> <p>(11) <math>1.75 \times 8 =</math> _____</p> <p>(12) The mode of 2, 6, 8, 2, 6 and 2 is _____</p> <p>(13) Which is larger: <math>\frac{6}{11}</math> or 0.55? _____</p> <p>(14) <math>15 \times 35 =</math> _____</p> <p>(15) <math>38 \times 78 =</math> _____</p> <p>(16) <math>97 - 12 - 18 =</math> _____</p> <p>(17) <math>43^2 =</math> _____</p> <p>(18) <math>9 + 14 + 19 + 24 + 29 =</math> _____</p> <p>(19) MCMLI = _____ (Arabic Numeral)</p> | <p>*(20) <math>111.111\% \times 899 =</math> _____</p> <p>(21) <math>0.75 \times 16 - 0.5 \times 16 =</math> _____</p> <p>(22) <math>111 \times 135 =</math> _____</p> <p>(23) If <math>f(x) = 10 - 3x^2</math>, then <math>f(-2) =</math> _____</p> <p>(24) <math>8\frac{1}{3} \times 8\frac{2}{3} =</math> _____ (mixed number)</p> <p>(25) <math>7\frac{3}{4} - 4\frac{5}{6} =</math> _____</p> <p>(26) <math>29^2 + 29 =</math> _____</p> <p>(27) The cube root of -125 is _____</p> <p>(28) If <math>n</math> is to 20 as 12 is to 4, then <math>n =</math> _____</p> <p>(29) If <math>12 - 4x</math> is 4 then <math>x =</math> _____</p> <p>*(30) <math>2023 + 2022 \times 4 =</math> _____</p> <p>(31) <math>93 \times 92 =</math> _____</p> <p>(32) The product of the two largest prime numbers less than 20 is _____</p> <p>(33) If <math>0.025 + 0.075 = n</math>, the <math>n^{-1} =</math> _____</p> <p>(34) 18 is divisible by how many whole numbers? _____</p> <p>(35) 1 square mile = _____ acres</p> <p>(36) 4 percent = _____ (common fraction)</p> <p>(37) The total cost of item, that costs \$10, with a sales tax of <math>8\frac{1}{2}\%</math> is \$ _____</p> |
|--|--|

- (38)  $231 \times 101 =$  \_\_\_\_\_
- (39) The area of an equilateral triangle with an altitude of 6-cm is  $a\sqrt{3}$  and  $a =$  \_\_\_\_\_  $\text{cm}^2$
- \*(40)  $125\sqrt{14400} =$  \_\_\_\_\_
- (41)  $63$  (base 8) = \_\_\_\_\_ (base 2)
- (42)  $5^3 + 3^3 =$  \_\_\_\_\_
- (43) The GCF of 6, 12 and 18 is \_\_\_\_\_
- (44) What is the area of a trapezoid with base 17, 16 and height 20? \_\_\_\_\_
- (45)  $23$  (base 5)  $\times 2$  (base 5) = \_\_\_\_\_ (base 5)
- (46) If  $24 \div 3 = \mathbf{n} \div 2$ , then  $\mathbf{n} =$  \_\_\_\_\_
- (47) What is the length of an edge of a cube with surface area 864? \_\_\_\_\_
- (48)  $1.5 \text{ m}^2 =$  \_\_\_\_\_  $\text{cm}^2$
- (49) If  $24 - 3x < 18$ , then  $2x >$  \_\_\_\_\_
- \*(50)  $55^3 =$  \_\_\_\_\_
- (51) In the sequence: 1, 4,  $\mathbf{a}$ , 16, 25,  $\mathbf{b}$ , 49, . . .  
 $2\mathbf{a} - \mathbf{b} =$  \_\_\_\_\_
- (52) What is the 6<sup>th</sup> term in the sequence 2, 4, 6, . . .? \_\_\_\_\_
- (53) What is the sum of the interior angles for a convex polygon with 5 sides? \_\_\_\_\_ $^\circ$
- (54) What is the product of the LCM and GCD of 18 and 20? \_\_\_\_\_
- (55) What is the length of the side of a rectangle with perimeter 44 and width 8? \_\_\_\_\_
- (56) What is the diameter of a circle with an area of  $576\pi$ ? \_\_\_\_\_
- (57) If set  $\mathbf{A} = \{1, 2, 3, \dots, 19\}$  and set  $\mathbf{B} = \{3, 6, 9, \dots, 21\}$ , then the number of elements in  $\mathbf{A} \cap \mathbf{B}$  is \_\_\_\_\_
- (58)  $(13^2 + 7 \times 6) \div 5$  has a remainder of \_\_\_\_\_
- (59) The number of faces for a cube is \_\_\_\_\_
- \*(60)  $749^2 \times 101 \div 251 =$  \_\_\_\_\_
- (61)  $(2^{-1} + 2^{-2})^{-1} =$  \_\_\_\_\_
- (62) 440 yards = \_\_\_\_\_ mile
- (63) 60 feet/sec = \_\_\_\_\_ yards/min
- (64) 18% of 18 = \_\_\_\_\_
- (65)  $5^7 \div 7$  has a remainder of \_\_\_\_\_
- (66) If the volume of a right circular cylinder, with radius 4 and length 12 is  $k\pi$ , what is  $k$ ? \_\_\_\_\_
- (67) The sum of the positive divisors of 12 is \_\_\_\_\_
- (68)  $6! =$  \_\_\_\_\_
- (69)  $6\frac{3}{4} \div \frac{1}{8} =$  \_\_\_\_\_
- \*(70)  $350\pi^3 =$  \_\_\_\_\_
- (71)  $21^2 + 3^2 =$  \_\_\_\_\_
- (72)  $62\frac{1}{2}\%$  = \_\_\_\_\_ (common fraction)
- (73)  $0.4666\dots =$  \_\_\_\_\_ (common fraction)
- (74) The volume of a right circular cone with height 9 and radius 4 is  $k\pi$ , and  $k =$  \_\_\_\_\_
- (75) The sum of the 4<sup>th</sup> and 5<sup>th</sup> triangular numbers is \_\_\_\_\_
- (76)  $18^2 \times 25 =$  \_\_\_\_\_
- (77) If the shortest distance between the points (0, 3) and ( $\mathbf{x}$ , 0) is 5, what is  $\mathbf{x}$ ? \_\_\_\_\_
- (78)  $\frac{5!}{3!} - 15 =$  \_\_\_\_\_
- (79)  $\left(18\frac{1}{2}\right)^2 - \left(6\frac{1}{2}\right)^2 =$  \_\_\_\_\_
- \*(80) 25 miles = \_\_\_\_\_ yards

## 2022 – 2023 University Interscholastic League Junior High Number Sense Test A – Key

(1) 74	*(20) 949 – 1048	(38) 23331	(59) 6
(2) 90	(21) 4	(39) 12	*(60) 214455 – 237028
(3) 53	(22) 14985	*(40) 14250 – 15750	(61) $1\frac{1}{3}; \frac{4}{3}$
(4) 401	(23) -2	(41) 110011	(62) $\frac{1}{4}; .25$
(5) $\frac{5}{8}; .625$	(24) $72\frac{2}{9}$	(42) 152	(63) 1200
(6) 48	(25) $2\frac{11}{12}; \frac{35}{12}$	(43) 6	(64) $3.24; 3\frac{6}{25}; \frac{81}{25}$
(7) 10	(26) 870	(44) 330	(65) 5
(8) 576	(27) -5	(45) 101	(66) 192
(9) 110	(28) 60	(46) 16	(67) 28
*(10) 3885 – 4293	(29) 2	(47) 12	(68) 720
(11) 14	(30) 9606 – 10616	(48) 15000	(69) 54
(12) 2	(31) 8556	(49) 4	*(70) 10310 – 11394
(13) $.55; \frac{11}{20}$	(32) 323	*(50) 158057 – 174693	(71) 450
(14) 525	(33) 10	(51) -18	(72) $\frac{5}{8}$
(15) 2964	(34) 6	(52) 12	(73) $\frac{7}{15}$
(16) 67	(35) 640	(53) 540	(74) 48
(17) 1849	(36) $\frac{1}{25}$	(54) 360	(75) 25
(18) 95	(37) 10.85	(55) 14	(76) 8100
(19) 1951		(56) 48	(77) 4
		(57) 6	(78) 5
		(58) 1	(79) 300
			*(80) 41800 – 46200

Note: \*(Number) x – y means an integer between x and y inclusive.

If an answer is of the type like  $\frac{2}{3}$  it cannot be written as .666... or  $\overline{.6}$ .

**University Interscholastic League  
2022 – 2023 Elementary Number Sense Test**

**B**

Contestant's Number \_\_\_\_\_

Final		
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- |  |  |
|--|--|
| <p>(1) <math>6 \times 3 =</math> _____</p> <p>(2) <math>314 + 413 =</math> _____</p> <p>(3) <math>57 - 36 =</math> _____</p> <p>(4) <math>3204 \div 4 =</math> _____</p> <p>(5) <math>187 \div 11 =</math> _____</p> <p>(6) <math>15 + 17 + 16 =</math> _____</p> <p>(7) <math>8 \times 6 \times 2 =</math> _____</p> <p>(8) <math>735 - 532 =</math> _____</p> <p>(9) <math>71 \times 6 =</math> _____</p> <p>*(10) <math>2301 + 1981 =</math> _____</p> <p>(11) <math>11 \times 57 =</math> _____</p> <p>(12) Which digit is in the hundreds place in 34976.15802? _____</p> <p>(13) <math>12 \times 16 =</math> _____</p> <p>(14) 78630.4728 rounded to the ten-thousands place is _____</p> <p>(15) What is the remainder for <math>71513 \div 3</math>? _____</p> <p>(16) The number of even whole numbers between 9 and 20 is _____</p> <p>(17) <math>5 \times 10^3 + 4 \times 10^2 + 6 \times 10^{-2} =</math> _____ (decimal)</p> <p>(18) <math>23 \times 6 - 23 \times 4 =</math> _____</p> <p>(19) MMXXII = _____ (Arabic Numeral)</p> | <p>*(20) <math>667 \times 241 =</math> _____</p> <p>(21) <math>24 - 4 \div 2 =</math> _____</p> <p>(22) <math>8 + 12 + 16 + 20 + 24 =</math> _____</p> <p>(23) <math>\frac{3}{5} =</math> _____ percent</p> <p>(24) <math>2\frac{1}{2}</math> days = _____ hours</p> <p>(25) <math>\frac{7}{18} + \frac{5}{18} =</math> _____</p> <p>(26) <math>69 \times 71 =</math> _____</p> <p>(27) 0.85 = _____ common fraction</p> <p>(28) If 42 ♥ costs 48¢ then 63 ♥ cost _____ ¢</p> <p>(29) <math>\frac{7}{18} \times 36 =</math> _____</p> <p>*(30) <math>222 \times 361 =</math> _____</p> <p>(31) 160 nickels = _____ dimes</p> <p>(32) The product of the two smallest primes greater than 40 is _____</p> <p>(33) 5 quarts = _____ ounces</p> <p>(34) <math>2250 \div 25 =</math> _____</p> <p>(35) <math>11\frac{1}{9} \% =</math> _____ common fraction</p> <p>(36) The LCM of 18 and 24 is _____</p> <p>(37) <math>93 \times 94 =</math> _____</p> |
|--|--|

- (38) The ratio in inches of 2 feet to 2 yards is \_\_\_\_\_
- (39)  $3\frac{1}{5} \times 7\frac{1}{5} =$  \_\_\_\_\_ (mixed number)
- \*(40)  $376 \times 641 =$  \_\_\_\_\_
- (41) The side for a cube with volume  $125 \text{ cm}^3$  is \_\_\_\_\_ cm
- (42)  $23^2 =$  \_\_\_\_\_
- (43) The perimeter of a square with area  $625 \text{ m}^2$  is \_\_\_\_\_ m
- (44)  $2^3 + 2^2 =$  \_\_\_\_\_
- (45)  $8\frac{3}{4} \div \frac{1}{4} =$  \_\_\_\_\_
- (46)  $\sqrt{324} =$  \_\_\_\_\_
- (47) What is the perimeter of a right triangle with legs 12 and 5? \_\_\_\_\_
- (48)  $22 \times 18 =$  \_\_\_\_\_
- (49) If  $x = 25$ , then  $18 + 3x =$  \_\_\_\_\_
- \*(50)  $23 + 202 + 2021 + 2022 =$  \_\_\_\_\_
- (51) What is the number,  $k$ , in the sequence: 64, 32, 16,  $k$ , 4, 2, ...? \_\_\_\_\_
- (52)  $10\frac{3}{8} - 5\frac{5}{8} =$  \_\_\_\_\_ (mixed number)
- (53) If the area of a circle is  $324\pi$ , what is the diameter of the circle? \_\_\_\_\_
- (54) What is the volume of a rectangular box that measures 12" by 8" by 11"? \_\_\_\_\_  $\text{in}^3$
- (55) 123 (base 5) = \_\_\_\_\_ (base 10)
- (56) What whole number cubed minus twenty-five equals thirty-nine? \_\_\_\_\_
- (57) A triangle has sides of 18, 12, and a semiperimeter of 20. What is the third side? \_\_\_\_\_
- (58) If set  $A = \{1, 3, 5, \dots, 11\}$  and set  $B = \{3, 6, 9, 12\}$ , then the number of elements in  $A \cap B$  is \_\_\_\_\_
- (59) What is the perimeter of the square with a side length of  $12\frac{1}{2}$ ? \_\_\_\_\_
- \*(60) 281 days = \_\_\_\_\_ hours
- (61) 74 (base 8) = \_\_\_\_\_ (base 2)
- (62)  $-3^4 \times (2) =$  \_\_\_\_\_
- (63) Two fair dice are thrown. What is the probability that the sum of the two sides showing is 3? \_\_\_\_\_
- (64) 1.5 square miles = \_\_\_\_\_ acres
- (65)  $62^2 =$  \_\_\_\_\_
- (66)  $6^6 \div 7$  has remainder of \_\_\_\_\_
- (67) How many edges does a rectangular box have? \_\_\_\_\_
- (68) If  $3x + 12 < 36$ , then  $x <$  \_\_\_\_\_
- (69)  $\frac{5}{8} + \frac{8}{5} = 2 +$  \_\_\_\_\_
- \*(70)  $111 \times \sqrt{325} =$  \_\_\_\_\_
- (71) The additive inverse of  $-3\frac{1}{4}$  is \_\_\_\_\_
- (72) The area of a square with diagonal 16 is \_\_\_\_\_
- (73) If  $7\frac{1}{2}\%$  of  $x$  is  $22\frac{1}{2}\%$  of 6, then  $x =$  \_\_\_\_\_
- (74)  $(-24) \div (-8) \times (2) =$  \_\_\_\_\_
- (75)  $22^2 + 11^2 =$  \_\_\_\_\_
- (76)  $\left(18\frac{1}{2}\right)^2 - \left(11\frac{1}{2}\right)^2 =$  \_\_\_\_\_
- (77) What is the area of a trapezoid with bases 23, 18 and height 10? \_\_\_\_\_
- (78)  $286 \times 49 =$  \_\_\_\_\_
- (79)  $29^2 + 29 =$  \_\_\_\_\_
- \*(80)  $18 \times 20 \times 22 =$  \_\_\_\_\_



## 2022 – 2023 University Interscholastic League Elementary Number Sense Test B – Key

(1) 18	*(20) 152710 – 168784	(38) $\frac{1}{3}$	(59) 50
(2) 727	(21) 22		*(60) 6407 – 7081
(3) 21	(22) 80	(39) $23\frac{1}{25}$	(61) 111100
(4) 801	(23) 60		(62) -162
(5) 17	(24) 60	*(40) 228966 – 253066	(63) $\frac{1}{18}$
(6) 48	(25) $\frac{2}{3}$	(41) 5	(64) 960
(7) 96	(26) 4899	(42) 529	(65) 3844
(8) 203	(27) $\frac{17}{20}$	(43) 100	(66) 1
(9) 426	(28) 72	(44) 12	(67) 12
*(10) 4068 – 4496	(29) 14	(45) 35	(68) 8
(11) 627	*(30) 76135 – 84149	(46) 18	(69) $\frac{9}{40}$
(12) 9	(31) 80	(47) 30	*(70) 1902 – 2101
(13) 192	(32) 1763	(48) 396	(71) $3\frac{1}{4}; \frac{13}{4}; 3.25$
(14) 80000	(33) 160	(49) 93	(72) 128
(15) 2	(34) 90	*(50) 4055 – 4481	(73) 18
(16) 5	(35) $\frac{1}{9}$	(51) 8	(74) 6
(17) 5400.06	(36) 72	(52) $4\frac{3}{4}$	(75) 605
(18) 46	(37) 8742	(53) 36	(76) 210
(19) 2022		(54) 1056	(77) 205
		(55) 38	(78) 14014
		(56) 4	(79) 870
		(57) 10	*(80) 7524 – 8316
		(58) 2	

Note: \*(Number) x – y means an integer between x and y inclusive.

If an answer is of the type like  $\frac{2}{3}$  it cannot be written as .666... or  $\overline{.6}$ .

**University Interscholastic League**  
**2022 – 2023 Junior High Number Sense Test B**

Contestant's Number \_\_\_\_\_

Final		
2 <sup>nd</sup>		
1 <sup>st</sup>		
<b>Score</b>	<b>Initials</b>	

**Read Directions Carefully  
Before Beginning Test**

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**Stop – Wait for Signal!**

- |  |  |
|--|--|
| <p>(1) <math>353 + 51 =</math> _____</p> <p>(2) <math>17 \times 7 =</math> _____</p> <p>(3) <math>84 - 36 =</math> _____</p> <p>(4) <math>120 \div 8 =</math> _____</p> <p>(5) <math>\frac{7}{16} + \frac{1}{4} =</math> _____</p> <p>(6) <math>32 \div 0.8 =</math> _____</p> <p>(7) <math>0.25 \times 44 =</math> _____</p> <p>(8) <math>21^2 =</math> _____</p> <p>(9) <math>8 \times 6 \times 5 =</math> _____</p> <p>*(10) <math>1981 + 2202 + 18 + 2203 =</math> _____</p> <p>(11) <math>1.5 \times 22 =</math> _____</p> <p>(12) The mode of 1, 3, 5, 4, 1 and 2 is _____</p> <p>(13) Which is smaller: <math>\frac{7}{11}</math> or 0.64? _____</p> <p>(14) <math>83 \times 87 =</math> _____</p> <p>(15) <math>24 \times 12 =</math> _____</p> <p>(16) <math>121 - 29 - 21 =</math> _____</p> <p>(17) <math>72^2 =</math> _____</p> <p>(18) <math>7 + 12 + 17 + 22 + 27 =</math> _____</p> <p>(19) MMXXI = _____ (Arabic Numeral)</p> | <p>*(20) <math>222.222\% \times 269 =</math> _____</p> <p>(21) <math>0.25 \times 12 + 0.5 \times 12 =</math> _____</p> <p>(22) <math>423 \times 111 =</math> _____</p> <p>(23) If <math>f(x) = 15 + 2x^2</math>, then <math>f(6) =</math> _____</p> <p>(24) <math>4\frac{4}{5} \times 4\frac{1}{5} =</math> _____ (mixed number)</p> <p>(25) <math>3\frac{5}{6} + 2\frac{2}{3} =</math> _____</p> <p>(26) <math>89^2 + 89 =</math> _____</p> <p>(27) The cube root of -216 is _____</p> <p>(28) If <math>n</math> is to 12 as 3 is to 4, then <math>n =</math> _____</p> <p>(29) If <math>16 + 4x</math> is 24 then <math>x =</math> _____</p> <p>*(30) <math>2022 \times 5 - 2023 =</math> _____</p> <p>(31) <math>105 \times 102 =</math> _____</p> <p>(32) The sum of the two largest prime numbers less than 60 is _____</p> <p>(33) If <math>0.75 + 0.5 = n</math>, the <math>n^{-1} =</math> _____</p> <p>(34) 24 is divisible by how many whole numbers? _____</p> <p>(35) Three-fourths of a square mile = _____ acres</p> <p>(36) 8 percent = _____ (common fraction)</p> <p>(37) The total cost of item, that costs \$100, with a sales tax of <math>8\frac{1}{2}\%</math> is \$ _____</p> |
|--|--|

- (38)  $101 \times 483 =$  \_\_\_\_\_
- (39) The area of an equilateral triangle with an altitude of 9-cm is  $a\sqrt{3}$  and  $a =$  \_\_\_\_\_ cm<sup>2</sup>
- \*(40)  $250\sqrt{16900} =$  \_\_\_\_\_
- (41)  $46$  (base 8) = \_\_\_\_\_ (base 2)
- (42)  $4^3 - 3^2 =$  \_\_\_\_\_
- (43) The GCF of 8, 24 and 18 is \_\_\_\_\_
- (44) What is the area of a trapezoid with base 14, 16 and height 15? \_\_\_\_\_
- (45)  $13$  (base 4)  $\times 2$  (base 4) = \_\_\_\_\_ (base 4)
- (46) If  $15 \div 3 = n \div 6$ , then  $n =$  \_\_\_\_\_
- (47) What is the length of an edge of a cube with surface area 150? \_\_\_\_\_
- (48)  $0.25 \text{ m}^2 =$  \_\_\_\_\_ cm<sup>2</sup>
- (49) If  $15 - 4x < 43$ , then  $2x >$  \_\_\_\_\_
- \*(50)  $25^3 =$  \_\_\_\_\_
- (51) In the sequence: 1, 3,  $a$ , 7, 9,  $b$ , 13, . . .  
 $a + b^2 =$  \_\_\_\_\_
- (52) What is the 5<sup>th</sup> term in the sequence 1, 4, 9, . . .? \_\_\_\_\_
- (53) What is the sum of the interior angles for a convex polygon with 6 sides? \_\_\_\_\_<sup>o</sup>
- (54) What is the product of the LCM and GCD of 16 and 24? \_\_\_\_\_
- (55) What is the length of the side of a rectangle with perimeter 32 and width 5? \_\_\_\_\_
- (56) What is the radius of a circle with a circumference of  $36\pi$ ? \_\_\_\_\_
- (57) If set  $\mathbf{A} = \{1, 2, 3, \dots, 19\}$  and set  $\mathbf{B} = \{2, 4, 6, \dots, 20\}$ , then the number of elements in  $\mathbf{A} \cap \mathbf{B}$  is \_\_\_\_\_
- (58)  $(14^2 + 8 \times 9) \div 6$  has a remainder of \_\_\_\_\_
- (59) The number of edges for a square pyramid is \_\_\_\_\_
- \*(60)  $72^2 \times 101 \div 36 =$  \_\_\_\_\_
- (61)  $(2^{-3} + 2^{-1})^{-1} =$  \_\_\_\_\_
- (62) 880 yards = \_\_\_\_\_ mile
- (63) 30 feet/min = \_\_\_\_\_ yards/sec
- (64) 16% of 16 = \_\_\_\_\_
- (65)  $11^7 \div 7$  has a remainder of \_\_\_\_\_
- (66) If the volume of a right circular cylinder, with radius 5 and length 10 is  $k\pi$ , what is  $k$ ? \_\_\_\_\_
- (67) The sum of the positive divisors of 17 is \_\_\_\_\_
- (68)  $4! =$  \_\_\_\_\_
- (69)  $6\frac{3}{4} \div \frac{3}{8} =$  \_\_\_\_\_
- \*(70)  $4000\pi^2 =$  \_\_\_\_\_
- (71)  $42^2 + 6^2 =$  \_\_\_\_\_
- (72)  $27\frac{3}{11}\% =$  \_\_\_\_\_ (common fraction)
- (73)  $0.1333\dots =$  \_\_\_\_\_ (common fraction)
- (74) The volume of a right circular cone with height 3 and radius 6 is  $k\pi$ , and  $k =$  \_\_\_\_\_
- (75) The sum of the 7<sup>th</sup> and 6<sup>th</sup> triangular numbers is \_\_\_\_\_
- (76)  $20^2 \times 25 =$  \_\_\_\_\_
- (77) If the shortest distance between the points (0, 6) and ( $\mathbf{x}$ , 0) is 10, what is  $\mathbf{x}$ ? \_\_\_\_\_
- (78)  $\frac{4!}{2!} + 12 =$  \_\_\_\_\_
- (79)  $\left(9\frac{1}{2}\right)^2 - \left(5\frac{1}{2}\right)^2 =$  \_\_\_\_\_
- \*(80) 11 miles = \_\_\_\_\_ yards

## 2022 – 2023 University Interscholastic League Junior High Number Sense Test B – Key

(1) 404	*(20) 568 – 627	(38) 48783	(59) 8
(2) 119	(21) 9	(39) 27	*(60) 13817 – 15271
(3) 48	(22) 46953	*(40) 30875– 34125	(61) $\frac{8}{5}$ ; 1.6; $1\frac{3}{5}$
(4) 15	(23) 87	(41) 100110	(62) $\frac{1}{2}$ ; .5
(5) $\frac{11}{16}$ ; .6875	(24) $20\frac{4}{25}$	(42) 55	(63) $\frac{1}{6}$
(6) 40	(25) $6\frac{1}{2}$ ; 6.5; $\frac{13}{2}$	(43) 2	(64) 2.56; $2\frac{14}{25}$ ; $\frac{64}{25}$
(7) 11	(26) 8010	(44) 225	(65) 4
(8) 441	(27) -6	(45) 32	(66) 250
(9) 240	(28) 9	(46) 30	(67) 18
*(10) 6084 – 6724	(29) 2	(47) 5	(68) 24
(11) 33	(30) 7683 – 8491	(48) 2500	(69) 18
(12) 1	(31) 10710	(49) -14	*(70) 37505 – 41452
(13) $\frac{7}{11}$	(32) 112	*(50) 14844 – 16406	(71) 1800
(14) 7221	(33) $\frac{4}{5}$ ; .8	(51) 126	(72) $\frac{3}{11}$
(15) 288	(34) 8	(52) 25	(73) $\frac{2}{15}$
(16) 71	(35) 480	(53) 720	(74) 36
(17) 5184	(36) $\frac{2}{25}$	(54) 384	(75) 49
(18) 85	(37) 108.50	(55) 11	(76) 10000
(19) 2021		(56) 18	(77) 8
		(57) 9	(78) 24
		(58) 4	(79) 60
			*(80) 18392 – 20328

Note: \*(Number) x – y means an integer between x and y inclusive.

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**University Interscholastic League  
2022 – 2023 Elementary Number Sense Test C**

Contestant's Number \_\_\_\_\_

Final		
2 <sup>nd</sup>		
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- |  |   |
|--|---|
| <p>(1) <math>5 \times 9 =</math> _____</p> <p>(2) <math>277 + 722 =</math> _____</p> <p>(3) <math>79 - 43 =</math> _____</p> <p>(4) <math>1206 \div 6 =</math> _____</p> <p>(5) <math>264 \div 11 =</math> _____</p> <p>(6) <math>17 + 19 + 18 =</math> _____</p> <p>(7) <math>4 \times 7 \times 5 =</math> _____</p> <p>(8) <math>876 - 676 =</math> _____</p> <p>(9) <math>51 \times 8 =</math> _____</p> <p>*(10) <math>2022 + 4981 =</math> _____</p> <p>(11) <math>83 \times 11 =</math> _____</p> <p>(12) Which digit is in the ten-thousandths place in 34976.15820? _____</p> <p>(13) <math>18 \times 12 =</math> _____</p> <p>(14) 78630.4728 rounded to the ten's place is _____</p> <p>(15) What is the remainder for <math>82525 \div 3</math>? _____</p> <p>(16) The number of even whole numbers between 6 and 17 is _____</p> <p>(17) <math>8 \times 10^2 + 3 \times 10^1 + 2 \times 10^{-2} =</math> _____ (decimal)</p> <p>(18) <math>17 \times 7 - 17 \times 3 =</math> _____</p> <p>(19) MMXXIII = _____ (Arabic Numeral)</p> | <p>*(20) <math>335 \times 179 =</math> _____</p> <p>(21) <math>18 - 8 \div 2 =</math> _____</p> <p>(22) <math>9 + 11 + 13 + 15 + 17 =</math> _____</p> <p>(23) <math>\frac{4}{5} =</math> _____ percent</p> <p>(24) <math>1 \frac{1}{4}</math> days = _____ hours</p> <p>(25) <math>\frac{11}{18} + \frac{5}{18} =</math> _____</p> <p>(26) <math>29 \times 31 =</math> _____</p> <p>(27) 0.15 = _____ common fraction</p> <p>(28) If 12 ♥ costs 48¢ then 8 ♥ cost _____ ¢</p> <p>(29) <math>\frac{7}{16} \times 48 =</math> _____</p> <p>*(30) <math>777 \times 449 =</math> _____</p> <p>(31) 900 nickels = _____ dimes</p> <p>(32) The product of the two biggest primes smaller than 10 is _____</p> <p>(33) 6 quarts = _____ ounces</p> <p>(34) <math>2250 \div 25 =</math> _____</p> <p>(35) <math>55 \frac{5}{9} \% =</math> _____ common fraction</p> <p>(36) The LCM of 12 and 16 is _____</p> <p>(37) <math>99 \times 97 =</math> _____</p> |
|--|---|

- (38) The ratio in inches of 3 feet to 2 yards is \_\_\_\_\_
- (39)  $4\frac{1}{4} \times 8\frac{1}{4} =$  \_\_\_\_\_ (mixed number)
- \*(40)  $376 \times 479 =$  \_\_\_\_\_
- (41) The side for a cube with volume  $64 \text{ cm}^3$  is \_\_\_\_\_ cm
- (42)  $21^2 =$  \_\_\_\_\_
- (43) The perimeter of a square with area  $289 \text{ m}^2$  is \_\_\_\_\_ m
- (44)  $2^4 + 2^3 =$  \_\_\_\_\_
- (45)  $10\frac{3}{5} \div \frac{1}{5} =$  \_\_\_\_\_
- (46)  $\sqrt{625} =$  \_\_\_\_\_
- (47) What is the perimeter of a right triangle with legs 6 and 8? \_\_\_\_\_
- (48)  $44 \times 16 =$  \_\_\_\_\_
- (49) If  $x = 18$ , then  $18 + 3x =$  \_\_\_\_\_
- \*(50)  $23 + 230 + 2023 + 2022 =$  \_\_\_\_\_
- (51) What is the number,  $k$ , in the sequence:  
64, 32, 16, 8,  $k$ , 2, ...? \_\_\_\_\_
- (52)  $11\frac{5}{8} - 5\frac{7}{8} =$  \_\_\_\_\_ (mixed number)
- (53) If the area of a circle is  $625\pi$ , what is the diameter of the circle? \_\_\_\_\_
- (54) What is the volume of a rectangular box that measures 8" by 15" by 5"? \_\_\_\_\_  $\text{in}^3$
- (55)  $213$  (base 5) = \_\_\_\_\_ (base 10)
- (56) What whole number cubed plus twenty-five equals fifty-two? \_\_\_\_\_
- (57) A triangle has sides of 14, 17, and a semiperimeter of 25. What is the third side? \_\_\_\_\_
- (58) If set  $A = \{2, 4, 6, \dots, 26\}$  and set  $B = \{3, 6, 12, 22\}$ , then the number of elements in  $A \cap B$  is \_\_\_\_\_
- (59) What is the perimeter of the equilateral triangle with a side length of  $12\frac{1}{3}$ ? \_\_\_\_\_
- \*(60) 188 days = \_\_\_\_\_ hours
- (61)  $67$  (base 8) = \_\_\_\_\_ (base 2)
- (62)  $-4^3 \times (2) =$  \_\_\_\_\_
- (63) Two fair dice are thrown. What is the probability that the sum of the two sides showing is 7? \_\_\_\_\_
- (64) 0.5 square miles = \_\_\_\_\_ acres
- (65)  $53^2 =$  \_\_\_\_\_
- (66)  $4^6 \div 7$  has remainder of \_\_\_\_\_
- (67) How many vertices does a cube have? \_\_\_\_\_
- (68) If  $3x - 12 < 36$ , then  $x <$  \_\_\_\_\_
- (69)  $\frac{4}{9} + \frac{9}{4} = 2 +$  \_\_\_\_\_
- \*(70)  $125 \times \sqrt{255} =$  \_\_\_\_\_
- (71) The additive inverse of  $1\frac{3}{7}$  is \_\_\_\_\_
- (72) The area of a square with diagonal 22 is \_\_\_\_\_
- (73) If  $6\frac{1}{2}\%$  of  $x$  is  $19\frac{1}{2}\%$  of 12, then  $x =$  \_\_\_\_\_
- (74)  $(32) \div (-8) \times (4) =$  \_\_\_\_\_
- (75)  $9^2 + 18^2 =$  \_\_\_\_\_
- (76)  $\left(12\frac{1}{2}\right)^2 - \left(7\frac{1}{2}\right)^2 =$  \_\_\_\_\_
- (77) What is the area of a trapezoid with bases 15, 18 and height 10? \_\_\_\_\_
- (78)  $286 \times 14 =$  \_\_\_\_\_
- (79)  $59^2 + 59 =$  \_\_\_\_\_
- \*(80)  $49 \times 50 \times 51 =$  \_\_\_\_\_

## 2022 – 2023 University Interscholastic League Elementary Number Sense Test C – Key

(1) 45	*(20) 56967 – 62963	(38) $\frac{1}{2}$ ; .5	(59) 37
(2) 999	(21) 14		*(60) 4287 – 4737
(3) 36	(22) 65	(39) $35\frac{1}{16}$	(61) 110111
(4) 201	(23) 80		(62) -128
(5) 24	(24) 30	*(40) 171099 – 189109	(63) $\frac{1}{6}$
(6) 54	(25) $\frac{8}{9}$	(41) 4	(64) 320
(7) 140	(26) 899	(42) 441	(65) 2809
(8) 200	(27) $\frac{3}{20}$	(43) 68	(66) 1
(9) 408	(28) 32	(44) 24	(67) 8
*(10) 6653 – 7353	(29) 21	(45) 53	(68) 16
(11) 913	*(30) 331430 – 366316	(46) 25	(69) $\frac{25}{36}$
(12) 2	(31) 450	(47) 24	*(70) 1897 – 2095
(13) 216	(32) 35	(48) 704	(71) $-1\frac{3}{7}$ ; $-\frac{10}{7}$
(14) 78630	(33) 192	(49) 72	(72) 242
(15) 1	(34) 90	*(50) 4084 – 4512	(73) 36
(16) 5	(35) $\frac{5}{9}$	(51) 4	(74) -16
(17) 830.02	(36) 48	(52) $5\frac{3}{4}$	(75) 405
(18) 68	(37) 9603	(53) 50	(76) 100
(19) 2023		(54) 600	(77) 165
		(55) 58	(78) 4004
		(56) 3	(79) 3540
		(57) 19	*(80) 118703 – 131197
		(58) 3	

Note: \*(Number) x – y means an integer between x and y inclusive.

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**University Interscholastic League**  
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- |  |   |
|--|---|
| <p>(1) <math>39 + 282 =</math> _____</p> <p>(2) <math>17 \times 6 =</math> _____</p> <p>(3) <math>63 - 36 =</math> _____</p> <p>(4) <math>105 \div 7 =</math> _____</p> <p>(5) <math>\frac{9}{16} + \frac{3}{8} =</math> _____</p> <p>(6) <math>48 \div 0.8 =</math> _____</p> <p>(7) <math>28 \times 0.25 =</math> _____</p> <p>(8) <math>14^2 =</math> _____</p> <p>(9) <math>11 \times 5 \times 4 =</math> _____</p> <p>*(10) <math>1976 + 1951 + 12 + 2023 =</math> _____</p> <p>(11) <math>32 \times 1.5 =</math> _____</p> <p>(12) The mode of 2, 3, 5, 2, 5 and 2 is _____</p> <p>(13) Which is larger: <math>\frac{8}{11}</math> or 0.73? _____</p> <p>(14) <math>43 \times 47 =</math> _____</p> <p>(15) <math>28 \times 12 =</math> _____</p> <p>(16) <math>130 - 41 - 29 =</math> _____</p> <p>(17) <math>83^2 =</math> _____</p> <p>(18) <math>10 + 13 + 16 + 19 + 22 =</math> _____</p> <p>(19) MMXXIV = _____ (Arabic Numeral)</p> | <p>*(20) <math>222.222\% \times 1809 =</math> _____</p> <p>(21) <math>0.85 \times 18 - 0.35 \times 18 =</math> _____</p> <p>(22) <math>761 \times 111 =</math> _____</p> <p>(23) If <math>f(x) = 16 + 2x^2</math>, then <math>f(4) =</math> _____</p> <p>(24) <math>8\frac{3}{4} \times 8\frac{1}{4} =</math> _____ (mixed number)</p> <p>(25) <math>9\frac{7}{8} + 5\frac{3}{4} =</math> _____</p> <p>(26) <math>39^2 + 39 =</math> _____</p> <p>(27) The cube root of -27 is _____</p> <p>(28) If <math>n</math> is to 4 as 9 is to 12, then <math>n =</math> _____</p> <p>(29) If <math>15 + 9x</math> is 24 then <math>x =</math> _____</p> <p>*(30) <math>2023 \times 5 + 2022 =</math> _____</p> <p>(31) <math>106 \times 105 =</math> _____</p> <p>(32) The sum of the two smallest prime numbers greater than 40 is _____</p> <p>(33) If <math>0.25 + 0.25 = n</math>, the <math>n^{-1} =</math> _____</p> <p>(34) 47 is divisible by how many whole numbers? _____</p> <p>(35) One-eighth of a square mile = _____ acres</p> <p>(36) 6 percent = _____ (common fraction)</p> <p>(37) The total cost of item, that costs \$1, with a sales tax of <math>8\frac{1}{2}\%</math> is \$ _____</p> |
|--|---|



- (38)  $101 \times 738 =$  \_\_\_\_\_
- (39) The area of an equilateral triangle with an altitude of 3-cm is  $a\sqrt{3}$  and  $a =$  \_\_\_\_\_  $\text{cm}^2$
- \*(40)  $250\sqrt{57600} =$  \_\_\_\_\_
- (41)  $72$  (base 8) = \_\_\_\_\_ (base 2)
- (42)  $3^3 - 2^4 =$  \_\_\_\_\_
- (43) The GCF of 18, 24 and 12 is \_\_\_\_\_
- (44) What is the area of a trapezoid with base 15, 17 and height 12? \_\_\_\_\_
- (45)  $33$  (base 4)  $\times$   $3$  (base 4) = \_\_\_\_\_ (base 4)
- (46) If  $24 \div 3 = \mathbf{n} \div 8$ , then  $\mathbf{n} =$  \_\_\_\_\_
- (47) What is the length of an edge of a cube with surface area 24? \_\_\_\_\_
- (48)  $3.5 \text{ m}^2 =$  \_\_\_\_\_  $\text{cm}^2$
- (49) If  $15 - 5x < 55$ , then  $2x >$  \_\_\_\_\_
- \*(50)  $32^3 =$  \_\_\_\_\_
- (51) In the sequence: 1, 3,  $\mathbf{a}$ , 7, 9,  $\mathbf{b}$ , 13, . . .  
 $2\mathbf{a} + \mathbf{b}^2 =$  \_\_\_\_\_
- (52) What is the 5<sup>th</sup> term in the sequence 32, 8, 2, . . .? \_\_\_\_\_
- (53) What is the sum of the interior angles for a convex polygon with 3 sides? \_\_\_\_\_  $^\circ$
- (54) What is the product of the LCM and GCD of 22 and 16? \_\_\_\_\_
- (55) What is the length of the side of a rectangle with perimeter 24 and width 5? \_\_\_\_\_
- (56) What is the radius of a circle with a circumference of  $64\pi$ ? \_\_\_\_\_
- (57) If set  $\mathbf{A} = \{1, 2, 3, \dots, 19\}$  and set  $\mathbf{B} = \{5, 10, 15, \dots, 20\}$ , then the number of elements in  $\mathbf{A} \cap \mathbf{B}$  is \_\_\_\_\_
- (58)  $(24^2 + 5 \times 9) \div 6$  has a remainder of \_\_\_\_\_
- (59) The number of vertices for a square pyramid is \_\_\_\_\_
- \*(60)  $96^2 \times 101 \div 16 =$  \_\_\_\_\_
- (61)  $(2^{-3} + 2^{-2})^{-1} =$  \_\_\_\_\_
- (62) 660 yards = \_\_\_\_\_ mile
- (63) 36 feet/min = \_\_\_\_\_ yards/sec
- (64) 12% of 20 = \_\_\_\_\_
- (65)  $10^7 \div 7$  has a remainder of \_\_\_\_\_
- (66) If the volume of a right circular cylinder, with radius 4 and length 12 is  $k\pi$ , what is  $k$ ? \_\_\_\_\_
- (67) The sum of the positive divisors of 41 is \_\_\_\_\_
- (68)  $1! - 0! =$  \_\_\_\_\_
- (69)  $9\frac{3}{4} \div \frac{3}{8} =$  \_\_\_\_\_
- \*(70)  $3000\pi^2 =$  \_\_\_\_\_
- (71)  $28^2 + 4^2 =$  \_\_\_\_\_
- (72)  $18\frac{2}{11}\% =$  \_\_\_\_\_ (common fraction)
- (73)  $0.2666\dots =$  \_\_\_\_\_ (common fraction)
- (74) The volume of a right circular cone with height 9 and radius 6 is  $k\pi$ , and  $k =$  \_\_\_\_\_
- (75) The sum of the 8<sup>th</sup> and 7<sup>th</sup> triangular numbers is \_\_\_\_\_
- (76)  $16^2 \times 25 =$  \_\_\_\_\_
- (77) If the shortest distance between the points (0, 12) and ( $\mathbf{x}$ , 0) is 13, what is  $\mathbf{x}$ , if  $\mathbf{x} > 0$ ? \_\_\_\_\_
- (78)  $\frac{6!}{3!} - 100 =$  \_\_\_\_\_
- (79)  $\left(18\frac{1}{2}\right)^2 - \left(1\frac{1}{2}\right)^2 =$  \_\_\_\_\_
- \*(80) 12 miles = \_\_\_\_\_ yards

## 2022 – 2023 University Interscholastic League Junior High Number Sense Test C – Key

(1) 321	*(20) 3819 – 4220	(38) 74538	(59) 5
(2) 102	(21) 9	(39) 3	*(60) 55268 – 61084
(3) 27	(22) 84471	*(40) 57000– 63000	(61) $\frac{8}{3}; 2\frac{2}{3}$
(4) 15	(23) 48	(41) 111010	(62) $\frac{3}{8}; .375$
(5) $\frac{15}{16}; .9375$	(24) $72\frac{3}{16}$	(42) 11	(63) $\frac{1}{5}; .2$
(6) 60	(25) $15\frac{5}{8}; \frac{125}{8}; 15.625$	(43) 6	(64) $2.4; 2\frac{2}{5}; \frac{12}{5}$
(7) 7	(26) 1560	(44) 192	(65) 3
(8) 196	(27) -3	(45) 231	(66) 192
(9) 220	(28) 3	(46) 64	(67) 42
*(10) 5664 – 6260	(29) 1	(47) 2	(68) 0
(11) 48	(30) 11531 – 12743	(48) 35000	(69) 26
(12) 2	(31) 11130	(49) -16	*(70) 28129 – 31089
(13) .73	(32) 84	*(50) 31130 – 34406	(71) 800
(14) 2021	(33) 2	(51) 131	(72) $\frac{2}{11}$
(15) 336	(34) 2	(52) $\frac{1}{8}; .125$	(73) $\frac{4}{15}$
(16) 60	(35) 80	(53) 180	(74) 108
(17) 6889	(36) $\frac{3}{50}$	(54) 352	(75) 64
(18) 80	(37) 1.09	(55) 7	(76) 6400
(19) 2024		(56) 32	(77) 5
		(57) 3	(78) 20
		(58) 3	(79) 340
			*(80) 20064 – 22176

Note: \*(Number) x – y means an integer between x and y inclusive.

If an answer is of the type like  $\frac{2}{3}$  it cannot be written as .666... or  $\overline{.6}$ .