

**University Interscholastic League
2020 – 2021 Elementary Number Sense Test A**

Contestant's Number _____

Final		
2 nd		
1 st		
Score	Initials	

**Read Directions Carefully
Before Beginning Test**

**Do Not Unfold This Sheet
Until Told to Begin**

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

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

Stop – Wait for Signal!

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| <p>(1) $21 + 20 =$ _____</p> <p>(2) $11 \times 13 =$ _____</p> <p>(3) $200 \div 40 =$ _____</p> <p>(4) $12 + 13 + 14 =$ _____</p> <p>(5) $69 - 21 =$ _____</p> <p>(6) $25 \times 21 =$ _____</p> <p>(7) $49 - 12 - 13 =$ _____</p> <p>(8) $461 - 208 =$ _____</p> <p>(9) $21 \times 5 \times 2 =$ _____</p> <p>* (10) $199 + 2021 + 3499 =$ _____</p> <p>(11) 73082.92361 rounded to the thousandths place is _____ (decimal)</p> <p>(12) $19 \times 21 =$ _____</p> <p>(13) Which digit is in the ten-thousandths place in 12340.56789? _____</p> <p>(14) $21 \times 101 =$ _____</p> <p>(15) What is the remainder for $2918 \div 4$? _____</p> <p>(16) There are _____ whole numbers between 8 and 21.</p> <p>(17) $4 \times 10^3 + 6 \times 10^2 + 8 \times 10^{-2} =$ _____ (decimal)</p> <p>(18) $16 \times 5 + 4 \times 5 =$ _____</p> <p>(19) DLX = _____ (Arabic Numeral)</p> | <p>* (20) $2021 \times 19 + 2021 =$ _____</p> <p>(21) $2021 + 1202 =$ _____</p> <p>(22) $24 - 8 \div 2 =$ _____</p> <p>(23) $1 \frac{1}{2}$ years = _____ months</p> <p>(24) $2 \frac{1}{2} \% =$ _____ decimal</p> <p>(25) $\frac{19}{20} - \frac{7}{20} =$ _____</p> <p>(26) $102 \times 103 =$ _____</p> <p>(27) $0.45 =$ _____ common fraction</p> <p>(28) If 12 ♣ costs 80¢ then 96 ♣ cost \$ _____</p> <p>(29) $55 \times 75 =$ _____</p> <p>* (30) $333 \times 2397 =$ _____</p> <p>(31) $8989 \div 101 =$ _____</p> <p>(32) The largest prime number less than 50 is _____</p> <p>(33) Which is smaller: $\frac{8}{15}$ or $\frac{4}{7}$? _____</p> <p>(34) $\frac{9}{100} \div \frac{3}{100} =$ _____</p> <p>(35) 72 inches = _____ yards</p> <p>(36) The GCD of 18 and 24 is _____</p> <p>(37) $15 + 18 + 21 + 24 =$ _____</p> |
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- (38) $62.5\% =$ _____ common fraction
- (39) The LCM of 12 and 8 is _____
- *(40) $333\frac{1}{3}\%$ of 6598 = _____
- (41) $18^2 =$ _____
- (42) $6^3 =$ _____
- (43) The volume of a rectangular box with sides 8, 12 and 10 centimeters is _____ cm^3
- (44) The area of a rectangle with sides 15 m and 20 m is _____ m^2
- (45) If $x - 14 = 36$, then $x =$ _____
- (46) $\frac{9}{10} \times \frac{2}{3} =$ _____
- (47) $5\frac{1}{3} \times 4\frac{1}{3} =$ _____ (mixed number)
- (48) $75 \times 16 =$ _____
- (49) If $x = 12$, then $5 + 3x =$ _____
- *(50) $15^4 =$ _____
- (51) What is the number, k , in the sequence:
1, 4, 9, 16, k , 36, 49, ...? _____
- (52) What is the diameter of a circle with a circumference equal to 4π ? _____
- (53) What is the perimeter of a right triangle with legs 3 in. and 4 in.? _____ inches
- (54) $28 \times 22 =$ _____
- (55) What whole number squared and added to eight equals thirty-three? _____
- (56) A triangle with perimeter 48 has sides that are 12, 16 and x . What is x ? _____
- (57) If set $\mathbf{A} = \{\text{W, E, S, L, A, C, O}\}$ and set $\mathbf{B} = \{\text{L, O, S, E, B, A, N, O, S}\}$, then the number of elements in $\mathbf{A} \cap \mathbf{B}$ is _____
- (58) How many elements are in the power set of $\{0, 1, 2, 3, 4\}$? _____
- (59) What is the perimeter of the equilateral triangle with side length of $8\frac{1}{3}$? _____
- *(60) 135 days = _____ hours
- (61) 20 (base 10) = _____ (base 4)
- (62) $12 + 2^4 \div 4 =$ _____
- (63) The area of a square with side 25 is _____
- (64) $53^2 =$ _____
- (65) A black bag contains 8 black, 6 green and 4 red marbles. The probability of blindly picking a red marble is _____
- (66) What is the cost of 5 pounds of meat that cost \$7.99 per pound? \$ _____
- (67) The sum of the interior angles for a quadrilateral is _____ degrees
- (68) If $x - 3 < 8$, then $x <$ _____
- (69) $\frac{5}{3} + \frac{3}{5} =$ _____ (mixed number)
- *(70) $444 \times 809 + 4 =$ _____
- (71) 18 quarts = _____ gallons
- (72) What is the area of a rhombus with diagonal lengths of 12 and 15? _____
- (73) If 14% of x is 28% of 6, then $x =$ _____
- (74) $(-18) \div 2 + 17 =$ _____
- (75) $375 \times 40 =$ _____
- (76) $16^2 - 14^2 =$ _____
- (77) What is the distance between -9 and 12 on the number line? _____
- (78) $111 \times 234 =$ _____
- (79) The area of a square with diagonal 16 is _____
- *(80) $\sqrt{116281} =$ _____

2020 – 2021 University Interscholastic League Elementary Number Sense Test A – Key

(1) 41	*(20) 38399 – 42441	(38) $\frac{5}{8}$	(59) 25
(2) 143	(21) 3223	(39) 24	*(60) 3078 – 3402
(3) 5	(22) 20	*(40) 20894 – 23093	(61) 110
(4) 39	(23) 18	(41) 324	(62) 16
(5) 48	(24) .025	(42) 216	(63) 625
(6) 525	(25) $\frac{3}{5}; .6$	(43) 960	(64) 2809
(7) 24	(26) 10506	(44) 300	(65) $\frac{2}{9}$
(8) 253	(27) $\frac{9}{20}$	(45) 50	(66) 39.95
(9) 210	(28) 6.40	(46) $\frac{3}{5}; .6$	(67) 360
*(10) 5434 – 6004	(29) 4125	(47) $23\frac{1}{9}$	(68) 11
(11) 73082.924	*(30) 758291 – 838111	(48) 1200	(69) $2\frac{4}{15}$
(12) 399	(31) 89	(49) 41	*(70) 341240 – 377160
(13) 8	(32) 47	*(50) 48094 – 53156	(71) $4.5; 4\frac{1}{2}; \frac{9}{2}$
(14) 2121	(33) $\frac{8}{15}$	(51) 25	(72) 90
(15) 2	(34) 3	(52) 4	(73) 12
(16) 12	(35) 2	(53) 12	(74) 8
(17) 4600.08	(36) 6	(54) 616	(75) 15000
(18) 100	(37) 78	(55) 5	(76) 60
(19) 560		(56) 20	(77) 21
		(57) 5	(78) 25974
		(58) 32	(79) 128
			*(80) 324 – 358

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
2020 – 2021 Junior High Number Sense Test A**

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| <p>(1) $2021 + 2020 =$ _____</p> <p>(2) $202 \times 25 =$ _____</p> <p>(3) $201 \div 3 =$ _____</p> <p>(4) $18 - 12 \div 3 =$ _____</p> <p>(5) $\frac{1}{2} + \frac{1}{6} =$ _____</p> <p>(6) $412 - 214 =$ _____</p> <p>(7) $202 \div 0.5 =$ _____</p> <p>(8) $14^2 =$ _____</p> <p>(9) $2 \times 13 \times 15 =$ _____</p> <p>* (10) $2021 + 20190 + 20 =$ _____</p> <p>(11) $3.5 \times 2 =$ _____</p> <p>(12) If the mean of 6, 11, and m is 9, then $m =$ _____</p> <p>(13) Which is smaller $\frac{9}{16}$ or $\frac{5}{9}$? _____</p> <p>(14) $11 \times 38 =$ _____</p> <p>(15) The median of 12, 5, 8 and 10 is _____</p> <p>(16) $23 \times 12 - 23 \times 2 =$ _____</p> <p>(17) $22 \times 37 =$ _____</p> <p>(18) $12 + 15 + 18 + 21 =$ _____</p> <p>(19) MDLV = _____ (Arabic Numeral)</p> | <p>* (20) $555 \times 899 + 55 =$ _____</p> <p>(21) $101 \times 246 =$ _____</p> <p>(22) If $f(x) = 2x^2 - 5$, the $f(6) =$ _____</p> <p>(23) 4 cups = _____ ounces</p> <p>(24) $12\frac{1}{3} \times 12\frac{2}{3} =$ _____ (mixed number)</p> <p>(25) $3\frac{1}{20} - 1\frac{1}{10} =$ _____</p> <p>(26) $105 \times 103 =$ _____</p> <p>(27) The positive square root of 576 is _____</p> <p>(28) If n is to 12 as 8 is to 24, then $n =$ _____</p> <p>(29) If $12 - 4x$ is 16 then $x =$ _____</p> <p>* (30) $12^4 =$ _____</p> <p>(31) $84 \times 150 =$ _____</p> <p>(32) The smallest prime number greater than 50 is _____</p> <p>(33) If $\frac{1}{2} + \frac{3}{4} = \frac{1}{n}$, then $n =$ _____</p> <p>(34) The GCD of 36 and 24 is _____</p> <p>(35) $2.5 \text{ cm}^2 =$ _____ mm^2</p> <p>(36) 2.5 percent = _____ (common fraction)</p> <p>(37) The total cost of item that costs \$16 with a sales tax of $6\frac{1}{4}\%$ is \$ _____</p> |
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- (38) $38 \times 78 =$ _____
- (39) The radius of a circle with area 361π is _____
- *(40) $\sqrt{66564} =$ _____
- (41) 231 (base 4) = _____ (base 10)
- (42) $11^3 =$ _____
- (43) The surface area of a rectangular box with edges 2, 3 and 4 centimeters is _____ cm^2
- (44) What is the length of a diagonal of a rhombus with an area of 36 m^2 and other diagonal 8 m? _____ m
- (45) 23 (base 5) + 133 (base 5) = _____ (base 5)
- (46) $72 \times 78 =$ _____
- (47) $\frac{5}{6} + \frac{6}{5} =$ _____ (mixed number)
- (48) $75 \times 16 =$ _____
- (49) $0.1 + 0.2 + 0.3 + \dots + 1.0 =$ _____ (decimal)
- *(50) $48 \times 50 \times 52 =$ _____
- (51) In the sequence: 1, 3, **a**, 7, 9, **b**, 13, . . .
a + b = _____
- (52) If $\frac{2}{3}x + 12 > 8$, then $x >$ _____
- (53) What is the area of a right triangle with leg 4 cm and hypotenuse 5 cm? _____ cm^2
- (54) What is the sum of the interior angles of a hexagon? _____ degrees
- (55) If six minus four times a number is thirty, what is the number? _____
- (56) What is the area of a trapezoid with bases 14, 12 and altitude 25? _____
- (57) If set **A** = {0, 2, 4, . . . , 10} and set **B** = {1, 2, 3, . . . , 10}, then the number of elements in **A** \cap **B** is _____
- (58) $13^5 \div 11$ has a remainder of _____
- (59) $111 \times 465 =$ _____
- *(60) $1880 \times 319 =$ _____
- (61) $2^4 + 2^3 + 2^2 + 2^1 + 2^0 =$ _____
- (62) 18 days = _____ hours
- (63) The area of a square with diagonal 12 is _____
- (64) 25% of 16% of 100 = _____
- (65) What are the odds of picking a queen from a standard deck of 52 cards? _____
- (66) What is the cost of 15 pounds of meat that cost \$5.99 per pound? \$ _____
- (67) How many whole numbers will evenly divide into 24? _____
- (68) $7! =$ _____
- (69) $8\frac{1}{4} \times 4\frac{1}{4} =$ _____ (mixed number)
- *(70) $206700 \div 111 =$ _____
- (71) $27^2 - 13^2 =$ _____
- (72) $0.454545 \dots =$ _____ (common fraction)
- (73) $(14^3 + 13 \times 17) \div 12$ has a remainder of _____
- (74) What is the radius of a sphere with a surface area of 64π ? _____
- (75) $375 \times 32 =$ _____
- (76) $143 \times 21 =$ _____
- (77) What is the distance between the points (0, 3) and (-4, 0)? _____
- (78) $\frac{12!}{10!} =$ _____
- (79) $8^2 + 24^2 =$ _____
- *(80) $\sqrt{626} \times \sqrt{320} =$ _____

2020 – 2021 University Interscholastic League Junior High Number Sense Test A – Key

(1) 4041	*(20) 474050 – 523950	(38) 2964	(59) 51615
(2) 5050	(21) 24846	(39) 19	*(60) 569734 – 629706
(3) 67	(22) 67	*(40) 246 – 270	(61) 31
(4) 14	(23) 32	(41) 45	(62) 432
(5) $\frac{2}{3}$	(24) $156\frac{2}{9}$	(42) 1331	(63) 72
(6) 198	(25) $1\frac{19}{20}$; 1.95; $\frac{39}{20}$	(43) 52	(64) 4
(7) 404	(26) 10815	(44) 9	(65) $\frac{1}{12}$
(8) 196	(27) 24	(45) 211	(66) 89.85
(9) 390	(28) 4	(46) 5616	(67) 8
*(10) 21121 – 23342	(29) -1	(47) $2\frac{1}{30}$	(68) 5040
(11) 7	(30) 19700 – 21772	(48) 1200	(69) $35\frac{1}{16}$
(12) 10	(31) 12600	(49) 5.5	*(70) 1770 – 1955
(13) $\frac{5}{9}$	(32) 53	*(50) 118560 – 131040	(71) 560
(14) 418	(33) $\frac{4}{5}$; .8	(51) 16	(72) $\frac{5}{11}$
(15) 9	(34) 12	(52) -6	(73) 1
(16) 230	(35) 250	(53) 6	(74) 4
(17) 814	(36) $\frac{1}{40}$	(54) 720	(75) 12000
(18) 66	(37) 17.00	(55) -6	(76) 3003
(19) 1555		(56) 325	(77) 5
		(57) 5	(78) 132
		(58) 10	(79) 640
			*(80) 426 – 469

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
2020 – 2021 Elementary Number Sense Test B**

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| <p>(1) $112 + 201 =$ _____</p> <p>(2) $220 \div 5 =$ _____</p> <p>(3) $23 \times 11 =$ _____</p> <p>(4) $375 - 204 =$ _____</p> <p>(5) $16 + 15 + 14 =$ _____</p> <p>(6) $65 - 14 - 21 =$ _____</p> <p>(7) $32 \times 25 =$ _____</p> <p>(8) $415 - 238 =$ _____</p> <p>(9) $6 \times 32 \times 5 =$ _____</p> <p>*(10) $201 \times 333 + 67 =$ _____</p> <p>(11) 51287.29301 rounded to the hundreds place is
_____</p> <p>(12) $18 \times 22 =$ _____</p> <p>(13) Which digit is in the ten-thousands place in
12340.56789? _____</p> <p>(14) $101 \times 83 =$ _____</p> <p>(15) What is the remainder for $2074 \div 9$? _____</p> <p>(16) How many odd whole numbers are between
5 and 32? _____</p> <p>(17) $5 \times 10^3 + 6 \times 10^1 + 4 \times 10^{-1} =$ _____ (decimal)</p> <p>(18) $19 \times 3 + 3 \times 4 =$ _____</p> | <p>(19) MMXX = _____ (Arabic Numeral)</p> <p>*(20) $449 \times 1109 =$ _____</p> <p>(21) $1234 + 4321 =$ _____</p> <p>(22) $18 + 12 \div 3 =$ _____</p> <p>(23) 15 weeks = _____ days</p> <p>(24) $3\frac{1}{4}\% =$ _____ decimal</p> <p>(25) $\frac{7}{36} + \frac{11}{36} =$ _____</p> <p>(26) $94 \times 98 =$ _____</p> <p>(27) 0.84 = _____ common fraction</p> <p>(28) If 24 ♣ costs 88¢ then 96 ♣ cost \$ _____</p> <p>(29) $68 \times 62 =$ _____</p> <p>*(30) $1249 \times 319 =$ _____</p> <p>(31) $925 \div 25 =$ _____</p> <p>(32) The smallest prime number greater than 80 is _____</p> <p>(33) Which is larger: $\frac{11}{12}$ or $\frac{8}{9}$? _____</p> <p>(34) $\frac{21}{100} \div \frac{63}{100} =$ _____</p> <p>(35) 120 feet = _____ yards</p> <p>(36) The LCM of 21 and 14 is _____</p> <p>(37) $19 + 17 + 15 + 13 =$ _____</p> |
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- (38) $37.5\% =$ _____ common fraction
- (39) The GCF of 20 and 36 is _____
- *(40) $444\frac{4}{9}\%$ of 1790 = _____
- (41) $22^2 =$ _____
- (42) $8^3 =$ _____
- (43) The volume of a rectangular box with sides 6, 8 and 15 centimeters is _____ cm^3
- (44) The area of a rectangle with sides 25 m and 32 m is _____ m^2
- (45) If $x + 23 = 44$, then $x =$ _____
- (46) $\frac{5}{12} \times \frac{8}{15} =$ _____
- (47) $8\frac{2}{3} \times 8\frac{1}{3} =$ _____ (mixed number)
- (48) $36 \times 75 =$ _____
- (49) If $x = 12$, then $45 - 3x =$ _____
- *(50) $18^4 =$ _____
- (51) What is the number, k , in the sequence:
1, 8, 27, k , 125, 216, ... ? _____
- (52) What is the diameter of a circle with an area equal to 49π ? _____
- (53) What is the perimeter of a right triangle with legs 12 in. and 16 in.? _____ inches
- (54) $45 \times 85 =$ _____
- (55) What whole number squared minus eighteen is equal to thirty-one? _____
- (56) A rectangle with perimeter 48 has sides that are 8 and x . What is x ? _____
- (57) If set $\mathbf{A} = \{\mathbf{A}, \mathbf{B}, \mathbf{I}, \mathbf{L}, \mathbf{E}, \mathbf{N}, \mathbf{E}\}$ and set $\mathbf{B} = \{\mathbf{G}, \mathbf{R}, \mathbf{E}, \mathbf{E}, \mathbf{N}, \mathbf{W}, \mathbf{O}, \mathbf{O}, \mathbf{D}\}$, then the number of elements in $\mathbf{A} \cup \mathbf{B}$ is _____
- (58) How many elements are in the power set of $\{-1, \mathbf{A}, 2, \mathbf{B}\}$? _____
- (59) What is the perimeter of the regular pentagon with side length of $6\frac{3}{5}$? _____
- *(60) 12 miles = _____ feet
- (61) 312 (base 4) = _____ (base 10)
- (62) $32 + 3^2 \div 9 - 1 =$ _____
- (63) The perimeter of a square with side 2.5 is _____
- (64) $46^2 =$ _____
- (65) A black bag contains 10 black, 16 green and 24 red marbles. The probability of blindly picking a green marble is _____
- (66) What is the cost of 8 pounds of meat that cost \$6.99 per pound? \$ _____
- (67) The sum of the interior angles for a hexagon is _____ degrees
- (68) If $x + 3 > 21$, then $x >$ _____
- (69) $\frac{4}{7} + \frac{7}{4} =$ _____ (mixed number)
- *(70) $6249 \times 159 + 9 =$ _____
- (71) 48 ounces = _____ quarts
- (72) What is the area of a rhombus with diagonal lengths of 25 and 18? _____
- (73) If 16% of x is 8% of 14, then $x =$ _____
- (74) $(-28) \div (-2) - 17 =$ _____
- (75) $625 \times 80 =$ _____
- (76) $13^2 + 39^2 =$ _____
- (77) What is the distance between -17 and 17 on the number line? _____
- (78) $678 \times 111 =$ _____
- (79) The area of a square with diagonal 12 is _____
- *(80) $\sqrt{166464} =$ _____

2020 – 2021 University Interscholastic League Elementary Number Sense Test B – Key

(1) 313	(19) 2020	(38) $\frac{3}{8}$	(59) 33
(2) 44	*(20) 473044 – 522838	(39) 4	*(60) 60192 – 66528
(3) 253	(21) 5555	*(40) 7558 – 8353	(61) 54
(4) 171	(22) 22	(41) 484	(62) 32
(5) 45	(23) 105	(42) 512	(63) 10
(6) 30	(24) .0325	(43) 720	(64) 2116
(7) 800	(25) $\frac{1}{2}$; .5	(44) 800	(65) $\frac{8}{25}$; .32
(8) 177	(26) 9212	(45) 21	(66) 55.92
(9) 960	(27) $\frac{21}{25}$	(46) $\frac{2}{9}$	(67) 720
*(10) 63650 – 70350	(28) 3.52	(47) $72\frac{2}{9}$	(68) 18
(11) 51300	(29) 4216	(48) 2700	(69) $2\frac{9}{28}$
(12) 396	*(30) 378510 – 418352	(49) 9	*(70) 943920 – 1043280
(13) 1	(31) 37	*(50) 99728 – 110224	(71) $1.5; 1\frac{1}{2}; \frac{3}{2}$
(14) 8383	(32) 83	(51) 64	(72) 225
(15) 4	(33) $\frac{11}{12}$	(52) 14	(73) 7
(16) 13	(34) $\frac{1}{3}$	(53) 48	(74) -3
(17) 5060.4	(35) 40	(54) 3825	(75) 50000
(18) 69	(36) 42	(55) 7	(76) 1690
	(37) 64	(56) 16	(77) 34
		(57) 11	(78) 75258
		(58) 16	(79) 72
			*(80) 388 – 428

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

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| <p>(1) $219 + 2020 =$ _____</p> <p>(2) $2020 - 219 =$ _____</p> <p>(3) $2020 \div 4 =$ _____</p> <p>(4) $21 \times 11 =$ _____</p> <p>(5) $\frac{7}{8} - \frac{1}{16} =$ _____</p> <p>(6) $501 - 105 =$ _____</p> <p>(7) $12 \div 0.25 =$ _____</p> <p>(8) $17^2 =$ _____</p> <p>(9) $4 \times 12 \times 5 =$ _____</p> <p>*(10) $209 \times 333 + 3 =$ _____</p> <p>(11) $2.5 \times 4 =$ _____</p> <p>(12) If the mean of 8, 5, and m is 12, then $m =$ _____</p> <p>(13) Which is larger $\frac{3}{4}$ or $\frac{7}{9}$? _____</p> <p>(14) $31 \times 63 =$ _____</p> <p>(15) The median of 11, 15, 5 and 10 is _____</p> <p>(16) $32 \times 33 =$ _____</p> <p>(17) $17 \times 25 - 13 \times 25 =$ _____</p> <p>(18) $11 + 15 + 19 + 23 =$ _____</p> <p>(19) MCMLI = _____ (Arabic Numeral)</p> | <p>*(20) $24 \times 441 \times 10 =$ _____</p> <p>(21) $369 \times 101 =$ _____</p> <p>(22) If $f(x) = 18 - 2x^2$, the $f(3) =$ _____</p> <p>(23) 2 quarts = _____ ounces</p> <p>(24) $5\frac{3}{4} \times 5\frac{1}{4} =$ _____ (mixed number)</p> <p>(25) $7\frac{5}{8} + 1\frac{3}{4} =$ _____</p> <p>(26) $97 \times 93 =$ _____</p> <p>(27) The negative cube root of 27 is _____</p> <p>(28) If n is to 4 as 11 is to 24, then $n =$ _____</p> <p>(29) If $20 - 3x$ is 11 then $x =$ _____</p> <p>*(30) $8^5 =$ _____</p> <p>(31) $64 \times 125 =$ _____</p> <p>(32) The largest prime number less than 70 is _____</p> <p>(33) If $\frac{2}{3} + \frac{3}{4} = \frac{1}{n}$, then $n =$ _____</p> <p>(34) The LCM of 18 and 12 is _____</p> <p>(35) $6.5 \text{ m}^2 =$ _____ dm^2</p> <p>(36) 5.5 percent = _____ (common fraction)</p> <p>(37) The total cost of item that costs \$32 with a sales tax of $6\frac{1}{4}\%$ is \$ _____</p> |
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- (38) $43 \times 63 =$ _____
- (39) The diameter of a circle with area 16π is _____
- *(40) $\sqrt{130321} =$ _____
- (41) 143 (base 5) = _____ (base 10)
- (42) $12^3 =$ _____
- (43) The surface area of a cube is 54 cm^2 . What is the length of its edge? _____ cm
- (44) What is the area of a rhombus with diagonals 12 cm and 75 cm? _____ cm^2
- (45) 342 (base 5) $- 34$ (base 5) = _____ (base 5)
- (46) $72 \times 78 =$ _____
- (47) $\frac{7}{4} + \frac{4}{7} - 2 =$ _____ (common fraction)
- (48) $75 \times 24 =$ _____
- (49) $0.1 + 0.3 + 0.5 + \dots + 1.1 =$ _____ (decimal)
- *(50) $89 \times 90 \times 91 =$ _____
- (51) In the sequence: 1, 4, **a**, 16, 25, **b**, 49, ...
 $b - a =$ _____
- (52) If $9 - \frac{2}{3}x > 21$, then $x <$ _____
- (53) What is the area of a right triangle with leg 5 cm and hypotenuse 13 cm? _____ cm^2
- (54) If the sum of the interior angles of a convex polygon is 540° , how many edges does it have? _____
- (55) If six minus a number divided by five is twenty-nine, what is the number? _____
- (56) What is the area of a trapezoid with bases 14, 12 and altitude 13? _____
- (57) If set **A** = {3, 6, 9, ..., 15} and set **B** = {2, 4, 6, ..., 16}, then the number of elements in **A** \cap **B** is _____
- (58) $15^4 \div 10$ has a remainder of _____
- (59) $372 \times 111 =$ _____
- *(60) $1670 \times 359 =$ _____
- (61) $3^4 - 3^3 - 3^2 - 3^1 - 3^0 =$ _____
- (62) 22 days = _____ hours
- (63) The area of a square with diagonal 18 is _____
- (64) 45% of 20% of 100 = _____
- (65) If the odds of it raining are 10 to 1, the probability of it is raining is _____ (common fraction)
- (66) What is the cost of 12 pounds of meat that cost \$6.99 per pound? \$ _____
- (67) How many whole numbers will evenly divide into 32? _____
- (68) $6! =$ _____
- (69) $12\frac{1}{3} \times 3\frac{1}{3} =$ _____ (mixed number)
- *(70) $310400 \div 111 =$ _____
- (71) $34^2 - 23^2 =$ _____
- (72) $0.363636\dots =$ _____ (common fraction)
- (73) $(19^3 - 13 \times 16) \div 5$ has a remainder of _____
- (74) If the surface area of a sphere with diameter 6 is $k\pi$, what is k ? _____
- (75) $625 \times 80 =$ _____
- (76) $143 \times 28 =$ _____
- (77) What is the distance between the points (5, 13) and (2, 9)? _____
- (78) $\frac{15!}{13!} =$ _____
- (79) $6^2 + 18^2 =$ _____
- *(80) $\sqrt{257} \times \sqrt{575} =$ _____

2020 – 2021 University Interscholastic League Junior High Number Sense Test B – Key

(1) 2239	* (20) 100548 – 111132	(38) 2709	(59) 41292
(2) 1801	(21) 37269	(39) 8	* (60) 569554 – 629506
(3) 505	(22) 0	* (40) 343 – 379	(61) 41
(4) 231	(23) 64	(41) 48	(62) 528
(5) $\frac{13}{16}$; .8125	(24) $30\frac{3}{16}$	(42) 1728	(63) 162
(6) 396	(25) $9\frac{3}{8}$; 9.375; $\frac{75}{8}$	(43) 3	(64) 9
(7) 48	(26) 9021	(44) 450	(65) $\frac{10}{11}$
(8) 289	(27) -3	(45) 303	(66) 83.88
(9) 240	(28) $\frac{11}{6}$; $1\frac{5}{6}$	(46) 5616	(67) 6
* (10) 66120 – 73080	(29) 3	(47) $\frac{9}{28}$	(68) 720
(11) 10	* (30) 31130 – 34406	(48) 1800	(69) $41\frac{1}{9}$
(12) 23	(31) 8000	(49) 3.6	* (70) 2657 – 2936
(13) $\frac{7}{9}$	(32) 67	* (50) 692465 – 765355	(71) 627
(14) 1953	(33) $\frac{12}{17}$	(51) 27	(72) $\frac{4}{11}$
(15) 10.5; $10\frac{1}{2}$; $\frac{21}{2}$	(34) 36	(52) -18	(73) 1
(16) 1056	(35) 6500	(53) 30	(74) 36
(17) 100	(36) $\frac{11}{200}$	(54) 5	(75) 50000
(18) 68	(37) 34.00	(55) -115	(76) 4004
(19) 1951		(56) 169	(77) 5
		(57) 2	(78) 210
		(58) 5	(79) 360
			* (80) 366 – 403

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
2020 – 2021 Elementary Number Sense Test C**

Contestant's Number _____

Final		
2 nd		
1 st		
Score	Initials	

**Read Directions Carefully
Before Beginning Test**

**Do Not Unfold This Sheet
Until Told to Begin**

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

The person conducting this contest should explain these directions to the contestants.
Stop – Wait for Signal!

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| <p>(1) $220 + 211 =$ _____</p> <p>(2) $220 \div 4 =$ _____</p> <p>(3) $53 \times 11 =$ _____</p> <p>(4) $615 - 414 =$ _____</p> <p>(5) $11 + 12 + 13 =$ _____</p> <p>(6) $40 - 18 - 12 =$ _____</p> <p>(7) $51 \times 25 =$ _____</p> <p>(8) $503 - 317 =$ _____</p> <p>(9) $5 \times 27 \times 6 =$ _____</p> <p>*(10) $210 \times 667 + 30 =$ _____</p> <p>(11) 51287.29301 rounded to the tens place is
_____</p> <p>(12) $29 \times 31 =$ _____</p> <p>(13) Which digit is in the hundred-thousandths place in 12340.56789? _____</p> <p>(14) $101 \times 43 =$ _____</p> <p>(15) What is the remainder for $2174 \div 9$? _____</p> <p>(16) How many odd whole numbers are between 5 and 28? _____</p> <p>(17) $7 \times 10^3 + 4 \times 10^1 + 1 \times 10^{-1} =$ _____ (decimal)</p> <p>(18) $18 \times 5 + 5 \times 4 =$ _____</p> | <p>(19) MMXXI = _____ (Arabic Numeral)</p> <p>*(20) $269 \times 1109 =$ _____</p> <p>(21) $2345 + 5432 =$ _____</p> <p>(22) $15 + 12 \div 3 =$ _____</p> <p>(23) 14 weeks = _____ days</p> <p>(24) $4\frac{3}{4}\%$ = _____ decimal</p> <p>(25) $\frac{11}{36} + \frac{13}{36} =$ _____</p> <p>(26) $96 \times 97 =$ _____</p> <p>(27) 0.72 = _____ common fraction</p> <p>(28) If 18 ♣ costs 88¢ then 54 ♣ cost \$ _____</p> <p>(29) $88 \times 82 =$ _____</p> <p>*(30) $1249 \times 479 =$ _____</p> <p>(31) $875 \div 25 =$ _____</p> <p>(32) The smallest prime number greater than 50 is _____</p> <p>(33) Which is larger: $\frac{5}{12}$ or $\frac{3}{7}$? _____</p> <p>(34) $\frac{27}{100} \div \frac{63}{100} =$ _____</p> <p>(35) 111 feet = _____ yards</p> <p>(36) The LCM of 18 and 27 is _____</p> <p>(37) $21 + 19 + 17 + 15 =$ _____</p> |
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- (38) $87.5\% =$ _____ common fraction
- (39) The GCF of 24 and 36 is _____
- *(40) $444\frac{4}{9}\%$ of 2690 = _____
- (41) $23^2 =$ _____
- (42) $7^3 =$ _____
- (43) The volume of a rectangular box with sides 8, 3 and 12 centimeters is _____ cm^3
- (44) The area of a rectangle with sides 25 m and 24 m is _____ m^2
- (45) If $x + 33 = 44$, then $x =$ _____
- (46) $\frac{5}{16} \times \frac{4}{15} =$ _____
- (47) $5\frac{2}{3} \times 5\frac{1}{3} =$ _____ (mixed number)
- (48) $48 \times 75 =$ _____
- (49) If $x = 5$, then $27 - 3x =$ _____
- *(50) $16^4 =$ _____
- (51) What is the number, k , in the sequence:
1, 4, 9, k , 25, 36 . . . ? _____
- (52) What is the diameter of a circle with an area equal to 25π ? _____
- (53) What is the perimeter of a right triangle with legs 9 in. and 12 in.? _____ inches
- (54) $55 \times 85 =$ _____
- (55) What whole number squared minus eighteen is equal to forty-six? _____
- (56) A rectangle with perimeter 32 has sides that are 12 and x . What is x ? _____
- (57) If set $\mathbf{A} = \{\text{L, O, N, G, V, I, E, W}\}$ and set $\mathbf{B} = \{\text{P, I, N, E, T, R, E, E}\}$, then the number of elements in $\mathbf{A} \cup \mathbf{B}$ is _____
- (58) How many elements are in the power set of $\{-3, Z, 2\}$? _____
- (59) What is the perimeter of the regular pentagon with side length of $2\frac{4}{5}$? _____
- *(60) 11 miles = _____ feet
- (61) 321 (base 4) = _____ (base 10)
- (62) $16 + 2^4 \div 4 - 2 =$ _____
- (63) The perimeter of a square with side 3.5 is _____
- (64) $42^2 =$ _____
- (65) A black bag contains 10 black, 16 green and 24 red marbles. The probability of blindly picking a red marble is _____
- (66) What is the cost of 9 pounds of meat that cost \$6.99 per pound? \$ _____
- (67) The sum of the interior angles for a pentagon is _____ degrees
- (68) If $x + 14 > 21$, then $x >$ _____
- (69) $\frac{5}{6} + \frac{6}{5} =$ _____ (mixed number)
- *(70) $624 \times 321 - 4 =$ _____
- (71) 40 ounces = _____ quarts
- (72) What is the area of a rhombus with diagonal lengths of 25 and 26? _____
- (73) If 16% of x is 8% of 18, then $x =$ _____
- (74) $(-28) \div (-4) - 7 =$ _____
- (75) $625 \times 40 =$ _____
- (76) $11^2 + 33^2 =$ _____
- (77) What is the distance between -14 and 14 on the number line? _____
- (78) $759 \times 111 =$ _____
- (79) The area of a square with diagonal 18 is _____
- *(80) $\sqrt{164025} =$ _____

2020 – 2021 University Interscholastic League Elementary Number Sense Test C – Key

(1) 431	(19) 2021	(38) $\frac{7}{8}$	(59) 14
(2) 55	*(20) 283405 – 313237	(39) 12	*(60) 55176 – 60984
(3) 583	(21) 7777	*(40) 11358 – 12553	(61) 57
(4) 201	(22) 19	(41) 529	(62) 18
(5) 36	(23) 98	(42) 343	(63) 14
(6) 10	(24) .0475	(43) 288	(64) 1764
(7) 1275	(25) $\frac{2}{3}$	(44) 600	(65) $\frac{12}{25}$; .48
(8) 186	(26) 9312	(45) 11	(66) 62.91
(9) 810	(27) $\frac{18}{25}$	(46) $\frac{1}{12}$	(67) 540
*(10) 133095 – 147105	(28) 2.64	(47) $30\frac{2}{9}$	(68) 7
(11) 51290	(29) 7216	(48) 3600	(69) $2\frac{1}{30}$
(12) 899	*(30) 568358 – 628184	(49) 12	*(70) 190285 – 210315
(13) 9	(31) 35	*(50) 62260 – 68812	(71) 1.25; $1\frac{1}{4}$; $\frac{5}{4}$
(14) 4343	(32) 53	(51) 16	(72) 325
(15) 5	(33) $\frac{3}{7}$	(52) 10	(73) 9
(16) 11	(34) $\frac{3}{7}$	(53) 36	(74) 0
(17) 7040.1	(35) 37	(54) 4675	(75) 25000
(18) 110	(36) 54	(55) 8	(76) 1210
	(37) 72	(56) 4	(77) 28
		(57) 11	(78) 84249
		(58) 8	(79) 162
			*(80) 385 – 425

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
2020 – 2021 Junior High Number Sense Test C**

Contestant's Number _____

Final		
2 nd		
1 st		
Score	Initials	

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| <p>(1) $220 + 2021 =$ _____</p> <p>(2) $2021 - 219 =$ _____</p> <p>(3) $219 \div 3 =$ _____</p> <p>(4) $19 \times 11 =$ _____</p> <p>(5) $\frac{8}{9} - \frac{1}{6} =$ _____</p> <p>(6) $201 - 102 =$ _____</p> <p>(7) $21 \div 0.25 =$ _____</p> <p>(8) $19^2 =$ _____</p> <p>(9) $4 \times 16 \times 5 =$ _____</p> <p>*(10) $419 \times 333 + 73 =$ _____</p> <p>(11) $4.5 \times 4 =$ _____</p> <p>(12) If the mean of 18, 15, and m is 12, then $m =$ _____</p> <p>(13) Which is larger $\frac{8}{15}$ or $\frac{7}{13}$? _____</p> <p>(14) $29 \times 63 =$ _____</p> <p>(15) The median of 11, 12, 5 and 15 is _____</p> <p>(16) $45 \times 33 =$ _____</p> <p>(17) $24 \times 25 - 14 \times 25 =$ _____</p> <p>(18) $12 + 16 + 20 + 24 =$ _____</p> <p>(19) MCMLXXXI = _____ (Arabic Numeral)</p> | <p>*(20) $28 \times 1431 \times 10 =$ _____</p> <p>(21) $829 \times 101 =$ _____</p> <p>(22) If $f(x) = 28 - 2x^2$, the $f(4) =$ _____</p> <p>(23) 3 quarts = _____ ounces</p> <p>(24) $7\frac{3}{5} \times 7\frac{2}{5} =$ _____ (mixed number)</p> <p>(25) $4\frac{5}{9} + 1\frac{2}{3} =$ _____</p> <p>(26) $91 \times 94 =$ _____</p> <p>(27) The negative cube root of 64 is _____</p> <p>(28) If n is to 4 as 9 is to 24, then $n =$ _____</p> <p>(29) If $20 - 4x$ is 12 then $x =$ _____</p> <p>*(30) $6^5 =$ _____</p> <p>(31) $24 \times 125 =$ _____</p> <p>(32) The largest prime number less than 100 is _____</p> <p>(33) If $\frac{5}{6} + \frac{1}{2} = \frac{1}{n}$, then $n =$ _____</p> <p>(34) The LCM of 15 and 25 is _____</p> <p>(35) $0.67 \text{ m}^2 =$ _____ dm^2</p> <p>(36) 8.5 percent = _____ (common fraction)</p> <p>(37) The total cost of item that costs \$48 with a sales tax of $6\frac{1}{4}\%$ is \$ _____</p> |
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- (38) $97 \times 17 =$ _____
- (39) The diameter of a circle with area 25π is _____
- *(40) $\sqrt{180625} =$ _____
- (41) 124 (base 6) = _____ (base 10)
- (42) $13^3 =$ _____
- (43) The surface area of a cube is 24 cm^2 . What is the length of its edge? _____ cm
- (44) What is the area of a rhombus with diagonals 16 cm and 75 cm? _____ cm^2
- (45) 221 (base 5) $- 14$ (base 5) = _____ (base 5)
- (46) $43 \times 47 =$ _____
- (47) $\frac{5}{8} + \frac{8}{5} - 2 =$ _____ (common fraction)
- (48) $75 \times 12 =$ _____
- (49) $0.2 + 0.4 + 0.6 + \dots + 1.2 =$ _____ (decimal)
- *(50) $79 \times 80 \times 81 =$ _____
- (51) In the sequence: 3, 6, a , 12, 15, b , 21, ...
 $b - a =$ _____
- (52) If $9 - \frac{2}{3}x > 39$, then $x <$ _____
- (53) What is the area of a right triangle with leg 12 cm and hypotenuse 13 cm? _____ cm^2
- (54) If the sum of the interior angles of a convex polygon is 720° , how many edges does it have? _____
- (55) If six minus a number divided by four is twenty-one, what is the number? _____
- (56) What is the area of a trapezoid with bases 13, 11 and altitude 12? _____
- (57) If set $\mathbf{A} = \{1, 2, 3, \dots, 14\}$ and set $\mathbf{B} = \{2, 4, 6, \dots, 16\}$, then the number of elements in $\mathbf{A} \cup \mathbf{B}$ is _____
- (58) $25^4 \div 10$ has a remainder of _____
- (59) $566 \times 111 =$ _____
- *(60) $417 \times 359 - 3 =$ _____
- (61) $2^4 - 2^3 - 2^2 - 2^1 - 2^0 =$ _____
- (62) 15 days = _____ hours
- (63) The area of a square with diagonal 22 is _____
- (64) 28% of 20% of 100 = _____
- (65) If the odds of it raining are 5 to 9, the probability of it is raining is _____ (common fraction)
- (66) What is the cost of 11 pounds of meat that cost \$6.99 per pound? \$ _____
- (67) How many whole numbers will evenly divide into 27? _____
- (68) $5! =$ _____
- (69) $8\frac{1}{3} \times 4\frac{1}{3} =$ _____ (mixed number)
- *(70) $399600 \div 111 =$ _____
- (71) $45^2 - 34^2 =$ _____
- (72) $0.818181\dots =$ _____ (common fraction)
- (73) $(29^3 - 12 \times 26) \div 5$ has a remainder of _____
- (74) If the surface area of a sphere with diameter 4 is $k\pi$, what is k ? _____
- (75) $625 \times 16 =$ _____
- (76) $143 \times 35 =$ _____
- (77) What is the distance between the points (-3, 13) and (2, 1)? _____
- (78) $\frac{25!}{23!} =$ _____
- (79) $9^2 + 27^2 =$ _____
- *(80) $\sqrt{360} \times \sqrt{440} =$ _____

2020 – 2021 University Interscholastic League Junior High Number Sense Test C – Key

(1) 2241	*(20) 380646 – 420714	(38) 1649	(59) 62826
(2) 1802	(21) 83729	(39) 10	*(60) 142215 – 157185
(3) 73	(22) -4	*(40) 404 – 446	(61) 1
(4) 209	(23) 96	(41) 52	(62) 360
(5) $\frac{13}{18}$	(24) $56\frac{6}{25}$	(42) 2197	(63) 242
(6) 99	(25) $6\frac{2}{9}; \frac{56}{9}$	(43) 2	(64) $5.6; 5\frac{3}{5}; \frac{28}{5}$
(7) 84	(26) 8554	(44) 600	(65) $\frac{5}{14}$
(8) 361	(27) -4	(45) 202	(66) 76.89
(9) 320	(28) $\frac{3}{2}; 1\frac{1}{2}; 1.5$	(46) 2021	(67) 4
*(10) 132620 – 146580	(29) 2	(47) $\frac{9}{40}$	(68) 120
(11) 18	*(30) 7388 – 8164	(48) 900	(69) $36\frac{1}{9}$
(12) 3	(31) 3000	(49) 4.2	*(70) 3420 – 3780
(13) $\frac{7}{13}$	(32) 97	*(50) 486324 – 537516	(71) 869
(14) 1827	(33) $\frac{3}{4}; .75$	(51) 9	(72) $\frac{9}{11}$
(15) $11.5; 11\frac{1}{2}; \frac{23}{2}$	(34) 75	(52) -45	(73) 2
(16) 1485	(35) 67	(53) 30	(74) 16
(17) 250	(36) $\frac{17}{200}$	(54) 6	(75) 10000
(18) 72	(37) 51.00	(55) -60	(76) 5005
(19) 1981		(56) 144	(77) 13
		(57) 15	(78) 600
		(58) 5	(79) 810
			*(80) 379 – 417

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 $\overline{.6}$.