CONTESTANT ID #: _____

GRADE LEVEL :_____

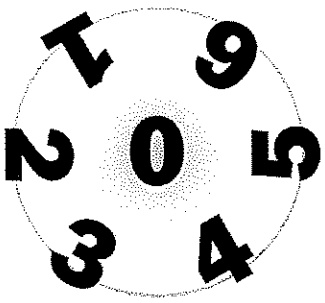
Place Contestant ID label here AFTER grading

PSIA
Private Schools Interscholastic Association

Number Sense

State Contest

Grades 6-8



2023

Grader #1 Score: _____

Grader #2 Score: _____

Grader #3 Score: _____

FINAL SCORE: _____

(Please do not open test until the signal is given to begin.)

1. $702 - 488 =$ _____
2. $171 + 172 + 173 =$ _____
3. $90 \times 400 =$ _____
4. $392 + 491 - 590 =$ _____
5. $\frac{5}{6} \times 42 =$ _____
6. CLXIV = _____ (Arabic numerals)
7. $51 + 511 + 5111 =$ _____
8. $7.5 \times 6 =$ _____
9. What number added to 1459 is 2023? _____
10. * $8439 + 7596 + 3871 =$ _____
11. $17^2 =$ _____
12. Which is smaller: $\frac{3}{11}$ or $\frac{9}{31}$? _____
13. $11 \times 374 =$ _____
14. $(32 + 18) \div (3^2 + 1) =$ _____
15. The median of 29, 28, 24, and 7 is _____
16. $16 \times 21 + 16 \times 29 =$ _____
17. $2388 \div 4 =$ _____
18. $53 \times 57 =$ _____
19. $\frac{7}{12} - \frac{3}{8} =$ _____ (fraction)
20. * $607 \times 609 =$ _____
21. $\sqrt{484} =$ _____
22. $3\frac{1}{6}$ feet = _____ inches
23. If $a = 5$ and $b = 7$, then $9a + 8b =$ _____
24. The smallest prime number greater than 21 is _____
25. 60% of 45 is _____
26. $4\frac{2}{3} - 2\frac{5}{6} =$ _____ (mixed number)
27. $89 \times 91 =$ _____
28. If 2 cookies cost \$2.98, then one dozen cookies cost \$ _____
29. The GCD of 144 and 120 is _____
30. * $93476 \div 221 =$ _____
31. $1 + 2 + 3 + 4 + \ldots + 39 =$ _____
32. $66 \times 37 =$ _____
33. $713 - 1001 =$ _____
34. The area of a square is 81 cm^2. Its perimeter is _____ cm
35. $65 \times 65 =$ _____
36. 1875 milliliters = _____ liters (mixed number)
37. How many multiples of 4 are there between 25 and 65? _____
38. $\frac{9}{10} \div \frac{3}{7} =$ _____
39. $\frac{5 \times 6 - 2 \times 8}{\sqrt{4}} =$ _____
40. * $31\frac{1}{5} \times 63\frac{2}{5} =$ _____
41. The 17th term in the sequence 8, 14, 20, 26, … is _____

42. $43^2 =$ _____

43. $83452 \div 9$ has a remainder of _____

44. A rectangle has length $1\frac{1}{5}$ meters and width $\frac{1}{2}$ meter. What is the length of its diagonal? _____ meters

45. $62_{10} =$ _____ $_8$

46. If $5x^2 - 7 = 73$ and $x < 0$, then $x =$ _____

47. $\frac{1}{12} + \frac{1}{16} =$ _____

48. The angle complementary to 56° is _____ °

49. $5\frac{2}{3} \times 5\frac{1}{3} =$ _____ (mixed number)

* 50. $76\sqrt{5432} =$ _____

51. $\frac{5}{11} - \frac{19}{37} =$ _____

52. The volume of a cube whose sides measure 5 hm is _____ hm^3

53. $51 \times 62 =$ _____

54. $4\frac{2}{3}$ square yards = _____ square feet

55. How many subsets of {y, a, x, i, s} have exactly 2 elements? _____

56. $58^2 + 174^2 =$ _____

57. $11 \times \frac{13}{15} =$ _____ (mixed number)

58. $(1.25)^2 \times 320 =$ _____

59. A regular polygon has 24 sides. What is the measure of each interior angle of this polygon? _____ °

* 60. $25^3 \div 71 =$ _____

61. $(3!) \times (5! - 4!) =$ _____

62. The 8th triangular number is _____

63. $99 \times 85 =$ _____

64. If $\frac{5x-17}{x^2-4x-45} = \frac{A}{x-9} + \frac{B}{x+5}$, then $B =$ _____

65. If $22\frac{2}{9}\%$ of 35 is $77\frac{7}{9}\%$ of x, what is x? _____

66. $14^3 =$ _____

67. $0.64444\ldots =$ _____ (fraction)

68. $(152_8 \times 47_8 + 32_8) \div 7$ has a remainder of _____

69. If $f(x) = 9x - 17$, then $f(10) =$ _____

* 70. $888\pi^4 =$ _____

71. 7 quarts = _____ fluid ounces

72. $\frac{6^7 \times 5^5}{30^4} =$ _____

73. 25% less than 400 is _____

74. The midpoint of the segment with endpoints $(-3, 7)$ and $(-9, -3)$ is (x, y) and $y =$ _____

75. $11 + 13 + 15 + 17 + \ldots + 63 =$ _____

76. $34^2 - 32^2 =$ _____

77. The sum of the positive integral solutions to $5x - 1 < 14$ is _____

78. $997 \times 994 =$ _____

79. If $7^x = 5$, then $7^{x+1} =$ _____

* 80. $\sqrt{845} + \sqrt{2023} =$ _____

For each estimation problem, the exact value (rounded to two decimal places) appears in square brackets.

(1) 214

(2) 516

(3) 36000

(4) 293

(5) 35

(6) 164

(7) 5673

(8) 45

(9) 564

***(10)** 18911 – 20901 [19906]

(11) 289

(12) $\frac{3}{11}$

(13) 4114

(14) 5

(15) 26

(16) 800

(17) 597

(18) 3021

(19) $\frac{5}{24}$

***(20)** 351180 – 388146 [369663]

(21) 22

(22) 38

(23) 101

(24) 23

(25) 27

(26) $1\frac{5}{6}$

(27) 8099

(28) 17.88

(29) 24

***(30)** 402 – 444 [422.97]

(31) 780

(32) 2442

(33) –288

(34) 36

(35) 4225

(36) $1\frac{7}{8}$

(37) 10

(38) $2\frac{1}{10}$; $\frac{21}{10}$; 2.1

(39) 7

***(40)** 1880 – 2076 [1978.08]

(41) 104

(42) 1849

(43) 4

(44) $1\frac{3}{10}$; 1.3; $\frac{13}{10}$

(45) 76

(46) –4

(47) $\frac{7}{48}$

(48) 34

(49) $30\frac{2}{9}$

***(50)** 5322 – 5881 [5601.36]

(51) $-\frac{24}{407}$

(52) 125

(53) 3162

(54) 42

(55) 10

(56) 33640

(57) $9\frac{8}{15}$

(58) 500

(59) 165

***(60)** 210 – 231 [220.07]

(61) 576

(62) 36

(63) 8415

(64) 3

(65) 10

(66) 2744

(67) $\frac{29}{45}$

(68) 2

(69) 73

***(70)** 82175 – 90824 [86499.27]

(71) 224

(72) 1080

(73) 300

(74) 2

(75) 999

(76) 132

(77) 3

(78) 991018

(79) 35

***(80)** 71 – 77 [74.05]