

FOR CONTEST DIRECTOR ONLY: Complete this portion after the contest is scored:

Contestant's Name: _____

Contestant's School #: _____



Number Sense District Contest Grades 6, 7 & 8 2007

Grade Level: _____

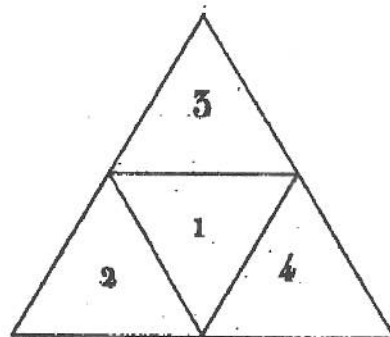
Contestant ID Number: _____

Score 1: _____

Score 2: _____

Directions and Rules: Do not turn this page until the person conducting the contest 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. Contestants must use their own BLUE ballpoint or rollerball ink pens that they have brought to contest.** Make no calculations with paper and pen/pencil. Write only the answer in the space provided for each problem. Problems marked with an asterisk (*) require approximate integral answers; any answer to a starred problem that is within five percent of the exact answer will be scored correct. Every tenth problem is an estimation problem. All other problems require exact answers.

Scoring: For every correct answer, the contestant will be awarded five points. For every incorrect answer or skipped problem, the contestant will be deducted two points. No deduction is taken after the last problem attempted. **Erasures, mark-overs, mark-outs, and extraneous marks on paper ARE counted as misses.**



Do not open test until the start signal is given.

PSIA – Number Sense – 2007 – Grades 6-8 – District Test

1. $1000 - 35 =$ _____.
2. $49 \times 11 =$ _____.
3. $36 + 63 + 3663 =$ _____.
4. $75 \div 5 =$ _____.
5. $\frac{2}{3} - \frac{1}{9} =$ _____.
6. CCL = _____ (Arabic numerals).
7. $32 \div (4 + 4) =$ _____.
8. $\frac{2}{7} \times (49 + 63) =$ _____.
9. $14^2 =$ _____.
- (*) 10. $366 + 493 + 1761 - 202 =$ _____.
11. The median of 27, 48, and 91 is _____.
12. $2 + 4 + 6 + 8 + 10 =$ _____.
13. $48 \times 25 =$ _____.
14. Which is larger: $\frac{3}{7}$ or $\frac{5}{12}$? _____.
15. $1.78 \times .02 =$ _____.
16. $\frac{5}{6} \div \frac{25}{36} =$ _____.
17. What number subtracted from 55 is 27?
_____.
18. $85 \times 34 =$ _____.
19. $559 \div 13 =$ _____.
- (*) 20. $698 \times 803 =$ _____.
21. The GCD of 24 and 42 is _____.
22. 35% of 40 is _____.
23. How many distinct prime factors does 48 have? _____.
24. $27 \times 12 =$ _____.
25. $63 - 96 =$ _____.
26. $6\frac{1}{4} \times 32 =$ _____.
27. If $N = 6$, then $N^2 + 6N + 9 =$ _____.
28. The perimeter of a square is 20 cm.
Find its area. _____ cm^2 .
29. $7\frac{1}{4}$ kilometers = _____ centimeters.
- (*) 30. $270341 \div 811 =$ _____.
31. $\sqrt{40000} =$ _____.
32. If $9x - 3 = 6x + 9$, then $x =$ _____.
33. $3\frac{1}{4} \times 1\frac{1}{4} =$ _____ (mixed number).
34. If 2 cups of coffee cost \$1.28, how much will 3 cups of coffee cost? \$ _____.
35. The average of 18, 25, and 38 is _____.
36. $5 \times \frac{5}{7} =$ _____ (mixed number).
37. What percent of 30 is 18? _____ %.
38. 3.2 hours = _____ minutes.
39. $51^2 =$ _____.
- (*) 40. $349 \times 749 =$ _____.
41. $48 \times 52 =$ _____.
42. $6^4 \div 2^4 =$ _____.

43. A right triangle with legs 7 and 24 has a hypotenuse of _____.
44. $32_5 =$ _____ $_{10}$.
45. Each interior angle of a regular quadrilateral measures _____ degrees.
46. $\frac{15}{16} + \frac{31}{32} + \frac{63}{64} =$ _____ (mixed number).
47. The next term in the sequence 3, 4, 7, 11, 18, ... is _____.
48. $1 + 3 + 5 + 7 + \dots + 41 =$ _____.
49. $\frac{31}{2(5^2)} =$ _____ (decimal).
- (*) 50. $59^2 + 60^2 + 61^2 =$ _____.
51. A circle whose diameter is 8 mm has an area of _____ mm^2 .
52. 45% of 72 is _____ % of 81.
53. The area of a trapezoid whose bases are 6 and 9 and whose height is 12 is _____.
54. $44^2 - 33^2 =$ _____.
55. $97 \times 92 =$ _____.
56. The cube root of -8 is _____.
57. $93472 \div 9$ has a remainder of _____.
58. $63 \times 67 =$ _____.
59. The surface area of a cube whose sides measure 4 inches is _____ in^2 .
- (*) 60. $\sqrt{302611} =$ _____.
61. $4! =$ _____.
62. The sum of the roots of $3x^2 + 6x - 22 = 0$ is _____.
63. $\frac{11}{12} + \frac{12}{11} =$ _____ (mixed number).
64. The product of the GCD and LCM of 24 and 26 is _____.
65. $.4545\dots =$ _____ (fraction).
66. $1 + 2 + 3 + 4 + \dots + 200 =$ _____.
67. $C(7, 2) =$ _____.
68. If $\frac{x}{3} = \frac{27}{x}$ and $x > 0$, then $\sqrt{x} =$ _____.
69. $111 \times 314 =$ _____.
- (*) 70. $2857 \times 21 =$ _____.
71. If $f(x) = (x-1)(x^2+x+1)$, then $f(10) =$ _____.
72. How many vertices does an icosahedron have? _____.
73. $103 \times 104 =$ _____.
74. The slope of the line $x - 3y = 6$ is _____.
75. Find the discriminant of $x^2 - 3x - 5 = 0$.
_____.
76. $1^3 - 2^3 - 3^3 + 4^3 =$ _____.
77. The third triangular number is _____.
78. How many more faces does an octahedron have than a tetrahedron? _____.
79. $107 \times 701 =$ _____.
- (*) 80. $8\pi^8 =$ _____.

PSIA – Number Sense – Grades 6-8 – District Test – 2007

ANSWER KEY

Every tenth problem requires an approximate integer answer. The answer must be between the two numbers given, inclusive.

- | | | | |
|--|-------------------------|-----------------------|-----------------------|
| 1. 965 | 23. 2 | 43. 25 | 62. -2 |
| 2. 539 | 24. 324 | 44. 17 | 63. $2\frac{1}{132}$ |
| 3. 3762 | 25. -33 | 45. 90 | 64. 624 |
| 4. 15 | 26. 200 | 46. $2\frac{57}{64}$ | 65. $\frac{5}{11}$ |
| 5. $\frac{5}{9}$ | 27. 81 | 47. 29 | 66. 20100 |
| 6. 250 | 28. 25 | 48. 441 | 67. 21 |
| 7. 4 | 29. 725000 | 49. .62 | 68. 3 |
| 8. 32 | *30. 317 – 350 | *50. 10262 –
11342 | 69. 34854 |
| 9. 196 | 31. 200 | 51. 16π | *70. 56998 –
62996 |
| *10. 2298 – 2538 | 32. 4 | 52. 40 | 71. 999 |
| 11. 48 | 33. $4\frac{1}{16}$ | 53. 90 | 72. 12 |
| 12. 30 | 34. 1.92 | 54. 847 | 73. 10712 |
| 13. 1200 | 35. 27 | 55. 8924 | 74. $\frac{1}{3}$ |
| 14. $\frac{3}{7}$ | 36. $3\frac{4}{7}$ | 56. -2 | 75. 29 |
| 15. .0356 | 37. 60 | 57. 7 | 76. 30 |
| 16. $\frac{6}{5}$; $1\frac{1}{5}$; 1.2 | 38. 192 | 58. 4221 | 77. 6 |
| 17. 28 | 39. 2601 | 59. 96 | 78. 4 |
| 18. 2890 | *40. 248331 –
274471 | *60. 523 – 577 | 79. 75007 |
| 19. 43 | 41. 2496 | 61. 24 | *80. 72113 –
79703 |
| *20. 532470 –
588518 | 42. 81 | | |
| 21. 6 | | | |
| 22. 14 | | | |

