

CHAMPIONSHIP TESTS 2007-2008

NUMBER SENSE TEST #1

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 an (*) require approximate integer 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.

**DO NOT UNFOLD THIS SHEET
UNTIL TOLD TO BEGIN**

- | | |
|---|---|
| <p>(1) $2007 \div 9 =$ _____</p> <p>(2) $18 \times 32 =$ _____</p> <p>(3) $8^2 + 6^2 \div 4 - 1 =$ _____</p> <p>(4) $178 \div 5 =$ _____ (Mixed Number)</p> <p>(5) $28\frac{1}{2}\% =$ _____ (Fraction)</p> <p>(6) $36 \div \frac{3}{4} =$ _____</p> <p>(7) $200.7 - 2.007 =$ _____</p> <p>(8) $43^2 =$ _____</p> <p>(9) $1\frac{3}{4} + 3\frac{1}{5} =$ _____ (Mixed Number)</p> <p>*(10) $123 + 456 - 789 + 1098 =$ _____</p> <p>(11) $\frac{1}{6} + \frac{1}{12} + \frac{1}{20} =$ _____ (Fraction)</p> <p>(12) Which is greater: $\frac{11}{27}$ or $\frac{2}{5}$? _____</p> <p>(13) $9^3 =$ _____</p> <p>(14) $14 \times \frac{14}{17} =$ _____ (Mixed Number)</p> <p>(15) $2 + 4 + 6 + \dots + 22 + 24 =$ _____</p> <p>(16) MCMXLIV = _____ (Arabic Numeral)</p> <p>(17) What is the remainder of $192734 \div 9$? _____</p> | <p>(18) $14 \times 6\frac{2}{7} =$ _____</p> <p>(19) $\frac{11}{2^3 \times 5} =$ _____ (Decimal)</p> <p>*(20) $304 \times 428 =$ _____</p> <p>(21) $.1232323\dots =$ _____ (Fraction)</p> <p>(22) $127_8 =$ _____₁₀</p> <p>(23) $7 + 10 + 13 + 16 + \dots + 40 =$ _____</p> <p>(24) $98 \times 93 =$ _____</p> <p>(25) The number of positive integral divisors of 48 is _____</p> <p>(26) $14 \times 37 + 13 \times 37 =$ _____</p> <p>(27) 11 pints = _____ ounces</p> <p>(28) $(14^2 + 11 - 7^2) \div 4$ has a remainder of _____</p> <p>(29) 35% of 40 is 20% of _____</p> <p>*(30) $47 \times 52 + 58 \times 43 =$ _____</p> <p>(31) If $f(x) = 4x^2 + 12x + 9$, then $f(11) =$ _____</p> <p>(32) The number of proper subsets of {A, B, C, D} is _____</p> <p>(33) $143 \times 21 =$ _____</p> <p>(34) $78\frac{4}{7}\% =$ _____ (Fraction)</p> <p>(35) The area of a rhombus with diagonals 26 cm and 44 cm is _____ cm²</p> |
|---|---|

- (36) What number added to seven and twice the number subtracted from 19, gives the same result? _____
- (37) The LCM of 24 and 64 is _____
- (38) If $x = 7$ and $y = 3$, the value $(x + y)(x^2 - xy + y^2)$ is _____
- (39) If 10 strawberries cost 90 cents, find the cost of 2 dozen. \$ _____
- *(40) $\sqrt{137500} =$ _____
- (41) $8 \times 5! - 2 \times 5! =$ _____
- (42) An icosahedron has _____ faces.
- (43) $53 \div .111.. =$ _____
- (44) $72 + 18 + 5 =$ _____
- (45) If $f(x) = 3x^2 - 7x + 11$, then $f(3) =$ _____
- (46) If $3x + y = 11$ and $2x - y = 14$, then the value of x is _____
- (47) $98 \times 105 =$ _____
- (48) The fourth hexagonal number is _____
- (49) The area of an equilateral triangle with side 8 cm is _____ cm^2
- *(50) $387143 \div 557 =$ _____
- (51) $28^2 + 25^2 - 3^2 =$ _____
- (52) $3 + \frac{3}{5} + \frac{3}{25} + \dots =$ _____
- (53) 42% of 533 $\frac{1}{3} =$ _____
- (54) $63 \times 67 + 2^2 =$ _____
- (55) Find the probability of having a sum of 4 when rolling two dice. _____
- (56) If $48_b = 60_{10}$, then b equals _____
- (57) If $(2 + 5i)^2 = a + bi$, then $a =$ _____
- (58) $141 \times 163 =$ _____
- (59) If one root of $f(x) = ax^2 + bx + c$ is $2 - 3i$, then the sum of the roots of $f(x)$ is _____
- *(60) Find the surface area of a tetrahedron with a side of 6. _____
- (61) $444 \times \frac{21}{37} =$ _____
- (62) If $\sin \theta = \frac{4}{5}$, then $\cos(2\theta) =$ _____
- (63) $(2\log_3 5)(2\log_5 3) =$ _____
- (64) Find the slope of the line perpendicular to $3x + 5y - 7 = 0$. _____
- (65) $407^2 =$ _____
- (66) $427_8 \div 3_8 =$ _____
- (67) $\sin\left(\frac{2\pi}{3}\right) =$ _____
- (68) $20^2 - 18^2 + 16^2 - 14^2 =$ _____
- (69) $89^2 + 89 =$ _____
- *(70) $2.4^3 \times 4.8^3 =$ _____
- (71) $444 \times \frac{1}{27} =$ _____ (Mixed Number)
- (72) If $f(x) = 3x + 11$, then $f^{-1}(5)$ equals _____
- (73) $14 \times \frac{18}{19} - 14 =$ _____
- (74) The sum of the first nine terms of the sequence 2, 5, 7, 12, 19, ... is _____
- (75) The minimum value of $f(x) = 3 \cos(4x) + 5$ is _____
- (76) The horizontal asymptote of $y = 3^x - 5$ is $y =$ _____
- (77) If $f(x) = x^3 + 11x - 17$, then $f'(2) =$ _____
- (78) $\frac{1}{10} + \frac{1}{15} + \frac{1}{21} =$ _____ (Fraction)
- (79) $\int_3^7 x dx =$ _____
- *(80) $(2e)^4 =$ _____

Championship Test 2007 Key #1

- | | | | |
|-----------------------|------------------------|---|---------------------------|
| (1) 223 | (18) 88 | (36) 4 | (61) 252 |
| (2) 576 | (19) .275 | (37) 192 | (62) $\frac{-7}{25}$ |
| (3) 72 | * (20) 123607 - 136617 | (38) 370 | (63) 4 |
| (4) $35\frac{3}{5}$ | (21) $\frac{61}{495}$ | (39) 2.16 | (64) $\frac{5}{3}$ |
| (5) $\frac{57}{200}$ | (22) 87 | * (40) 353 - 389 | (65) 165649 |
| (6) 48 | (23) 282 | (41) 720 | (66) 135 |
| (7) 198.693 | (24) 9114 | (42) 20 | (67) $\frac{\sqrt{3}}{2}$ |
| (8) 1849 | (25) 10 | (43) 477 | (68) 136 |
| (9) $4\frac{19}{20}$ | (26) 999 | (44) 235 | (69) 8010 |
| * (10) 844-932 | (27) 176 | (45) 17 | * (70) 1453 - 1605 |
| (11) $\frac{3}{10}$ | (28) 2 | (46) 5 | (71) $16\frac{4}{9}$ |
| (12) $\frac{11}{27}$ | (29) 70 | (47) 10290 | (72) - 2 |
| (13) 729 | * (30) 4692 - 5184 | (48) 28 | (73) $\frac{-14}{19}$ |
| (14) $11\frac{9}{17}$ | (31) 625 | (49) $16\sqrt{3}$ | (74) 338 |
| (15) 156 | (32) 15 | * (50) 661 - 729 | (75) 2 |
| (16) 1944 | (33) 3003 | (51) 1400 | (76) -5 |
| (17) 8 | (34) $\frac{11}{14}$ | (52) $\frac{15}{4}, 3\frac{3}{4}, 3.75$ | (77) 23 |
| | (35) 572 | (53) 224 | (78) $\frac{3}{14}$ |
| | | (54) 4225 | (79) 20 |
| | | (55) $\frac{1}{12}$ | * (80) 830 - 917 |
| | | (56) 13 | |
| | | (57) -21 | |
| | | (58) 22983 | |
| | | (59) 4 | |
| | | * (60) 60 - 65 | |