

Number Sense Test, Series TT-1

Contestant's Number _____

Contestant's Score _____

Read Directions Carefully
Before Beginning TestDo 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 only approximate answers; any answer to a starred problem that is within five per cent 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!

- (1) $1926 + 8073 - 666 =$ _____
- (2) $22.73 \times 10^2 - 51 =$ _____
- (3) $(4 + 7)(16 + 9) =$ _____
- (4) $27 \times 23 =$ _____
- (5) $2\frac{1}{4} \times 8\frac{4}{5} =$ _____
- (6) $12\frac{1}{2}\% =$ _____ (decimal).
- (7) $7 \times 14 + 21 \times 2 =$ _____
- (8) $43^2 =$ _____
- (9) $26 \div 2\frac{1}{2} =$ _____
- * (10) $298 \times 301 =$ _____ (Integer).
- (11) $\sqrt{1024} =$ _____
- (12) $3 - 16 \div 4 \times 4 =$ _____
- (13) $163 \times 111 =$ _____
- (14) $4 \text{ sq. ft.} =$ _____ square inches.
- (15) $3 + 5 + 7 + \dots + 19 =$ _____
- (16) 14 is what percent of 5? _____ %.
- (17) The GCD of 84 and 30 is _____.
- (18) If after a 30% discount, a TV sold for \$665, the original price was \$ _____.
- (19) If 1 gram = .04 oz., 2250 grams = _____ oz.
- * (20) $22229 \div 149 =$ _____ (Integer).
- (21) $94 \times 86 =$ _____
- (22) Which is smaller, $\frac{6}{11}$ or .55? _____
- (23) $321_5 =$ _____ 10 .
- (24) How many positive integers divide 24? _____
- (25) $F(x) = 2x^3 - 2x - 1$. Evaluate $F(2)$. _____
- (26) The simple interest on \$700 at 8% for 3 months is \$ _____.
- (27) The product of the prime factors of 30 is _____.
- (28) $(4 \times 13 + 37) \div 4$ has a remainder of _____.
- (29) Find x , if $2x + 5 = 3x + 1$. _____
- * (30) $19 \times 20 \times 21 =$ _____ (Integer).
- (31) A trapezoid has bases of 12" and 16". The altitude is 9". The area is _____ square inches.
- (32) $.4\bar{7} =$ _____ (fraction).
- (33) The next term in the sequence 4, 6, 10, 12, 16, 18, ... is _____.
- (34) A car travels 160 miles in $3\frac{1}{3}$ hours. The average speed was _____ mph.
- (35) The product of the roots of $3x^2 - 7x + 12 = 0$ is _____.
- (36) $(13_5)(3_5) =$ _____ 5 .
- (37) If $16/x = x/9$, $x < 0$, then $x =$ _____.
- (38) For what value of k does $2x^2 + 3x + k = 0$ have equal roots? _____
- (39) Find x , if $2x = y$ and $x + y = 8$. _____
- * (40) $29 \times 120 + 119 \times 119 =$ _____ (Integer).
- (41) Find x , if $9^x = 27$. _____
- (42) If $5^2 + x^2 = 13^2$ and $x > 0$, then $x =$ _____.
- (43) The largest integer x , such that $3x + 1 < 11$, is _____.

- (44) The distance between the lines $x = 6$ and $x = 1$ is _____.
- (45) The area of an equilateral triangle with altitude 3" is _____ square inches.
- (46) The length of a diagonal of a square with sides 5" is _____ in.
- (47) If $x > 0$, and $|2x - 1| = 7$, then $x =$ _____.
- (48) The measure of an exterior angle of a regular octagon is _____ degrees.
- (49) The remainder, in base 8, when 147, base 8, is divided by 7 is _____.
- *(50) $\sqrt{137641} =$ _____ (Integer).
- (51) $i^{38} =$ _____.
- (52) $(3 - 5i)^2 = a + bi$, $a =$ _____.
- (53) If $\log_4 64 = x$, then $x =$ _____.
- (54) The sum of the coefficients in the expansion $(3x - y)^4$ is _____.
- (55) The ninth term of the sequence 12, 10, 8, 6, . . . is _____.
- (56) If $F(x) = 2x + \log_5 x$, find $F(5)$. _____.
- (57) The length of the major axis of the ellipse $9x^2 + 4y^2 = 36$ is _____.
- (58) How many 3-digit numbers end in 1 or a 2? _____.
- (59) If $\log 6 = .78$, then $\log 1/6 =$ _____.
- *(60) $524392 \div 1111 =$ _____ (Integer).
- (61) $\cos 240^\circ =$ _____.
- (62) Two dice are tossed. What is the probability that the difference of the faces is 5? _____.
- (63) $6 + 4 + 8/3 + 16/9 + \dots =$ _____.
- (64) How many different 5 letter words real or imaginary, can be constructed using the letters T, E, X, A, S? _____.
- (65) $\sin(\text{Arccos } 1/2 + \pi) =$ _____.
- (66) The perimeter of a square decreases from 60" to 40". The area decreases by _____ square inches.
- (67) The probability of drawing an ace or a spade from a standard deck of cards is _____.
- (68) $\cos(\text{Arcsin } 1/2) =$ _____.
- (69) Find the sum of the squares of the roots of $x^2 + 5x + 4 = 0$. _____.
- *(70) $142857 \times 22 =$ _____ (Integer).
- (71) The smallest value in the domain of $f(x) = \sqrt{6x + 9}$, so that $f(x)$ is real-valued is _____.
- (72) Find x , if $\det \begin{vmatrix} x & 4 \\ 6 & 3 \end{vmatrix} = 6$. _____.
- (73) $\lim_{x \rightarrow 2} \frac{3x^2 - 12}{x - 2} =$ _____.
- (74) Change .23, base 5, to a base 10 decimal. _____.
- (75) The horizontal asymptote of $f(x) = \frac{3x - 4}{x - 2}$ is $y =$ _____.
- (76) The vertex of the parabola $y = 2x^2 - 4x + 1$ is (a, b) and $b =$ _____.
- (77) $f(x) = x^2 + 1$ and $g(x) = x - 1$. Find $f[g(3)]$. _____.
- (78) The slope of the line tangent to $y = 2x^2 - x + 1$ at the point $(2, 7)$ is _____.
- (79) $\int_1^2 x \, dx =$ _____.
- *(80) The perimeter of the ellipse $10x^2 + 40y^2 = 400$ is _____ (Integer).