TruePath Academics
High School Number Sense Test

Directions: 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.

Stop - Wait for Signal!

(1) $4005 + 4053 - 48 =$ _____

(2) $2557 - 215 =$ _____

(3) $\frac{2}{11} \div \frac{3}{7} =$ _____

(4) $33\frac{1}{3}$ %of 1 = _____ proper fraction

(5) $8 + 2 \times (9 + 6) \div (12 - 15) =$ _____

(6) $87\frac{1}{2}$ %= _____ common fraction

(7) 34501 ÷ 4 has a remainder of _____

(8) $164 \times \frac{2}{41} =$ _____

(9) Add all positive factors of 20, except 20 itself.
_____

*(10) $198 \times 499 + 57 =$ _____

(11) 24440 ÷ 9 has a remainder of _____

(12) $7\frac{3}{5} + 8\frac{5}{8} =$ _____ (mixed number)

(13) At $8.75 for 7 ounces of popcorn, find the cost of one pound. _____ $

(14) The GCD of 32 and 16 is _____

(15) $47^2 - 43^2 = 30 \times$ _____

(16) The smallest prime number greater than 17 is
_____

(17) $10 + 12 + 14 + ... + 44 =$ _____

(18) $2002 \times 7 - 14 =$ _____

(19) 1 gram = .10 oz. and 30 oz. = _____ grams

*(20) $151\overline{)66564} =$ _____

(21) $\overline{IX}CXXV =$ _____ (Arabic numeral)

(22) $0.25 + 0.75 + 0.333... =$ _____

(23) 17×17 _____

(24) How many subsets can be formed from the set {1, 2, 3, 4, 5, 6}? _____

(25) $8\frac{5}{9} \times 8\frac{4}{9}$ _____ (mixed number)

(26) $\$2.94 + \$4.64 + \$0.76 =$ _____ $

(27) $\frac{2}{5} =$ _____ decimal

(28) If $f(x) = x^2 - 6x + 9$, then $f(14) =$ _____

(29) The cube root of 2744 = _____

*(30) $\sqrt{519866} =$ _____

(31) $6\frac{5}{8} - 2\frac{14}{15} =$ _____ (mixed number)

(32) If $n + (n + 4) + (n + 8) + (n + 12) + (n + 16) + (n + 20) + (n + 24) = 105$, then $(n + 12) =$ _____

(33) The reciprocal of 0.5 is _____

(34) The 6th term of the sequence 6, 12, 24, 48, ... is 192. The 5th term is _____

(35) 0.181818 . . . = _____ proper fraction

(36) $650_8 =$ _____ $_{10}$

(37) The sum of the roots of $7x^2 - 16x + 9 = 0$ is
_____

(38) $\sqrt[3]{1331} =$ _____

Copyright TruePath Academics

(39) $33\frac{1}{3}$ %of 9.3 is _____

*(40) 68659 ÷ 173 = _____

(41) 35 x 73 = _____

(42) The sum of the roots plus the product of the roots of $x^3 + 0x^2 - 13x + 12 = 0$ is _____

(43) 14 x 14 _____

(44) In an isosceles right triangle, the hypotenuse is $\sqrt{288}$ and each leg is x. Find x. _____

(45) $35^2 + 65^2$ = _____

(46) $(2x + 2)^2 = ax^2 + bx + c$ and a + b + c = _____

(47) 51 base 8 x 12 base 8 = _____ base 8

(48) The point ((-6, 7)) is reflected across the y-axis to the point ((h, k)). Find h + k. _____

(49) $1023_5 + 1441_5$ = _____ $_5$

*(50) 626 inches is equivalent to _____ centimeters

(51) $(9^3 - 7^3) \div (9 - 7)$ = _____

(52) 1 + 8 + 9 + 17 + 26 + 43 + 69 + 112 + 181 + 293 + 474 + 767 = _____

(53) 1.25 = _____ improper fraction

(54) $(100)^{1.5}$ = _____

(55) $12^{20} \div 25$ has a remainder of _____

(56) A box has 3 white chips and 4 blue chips. Two chips are chosen without replacement; find the probability both are blue. _____

(57) $4737 \div 35_8$ has a remainder of _____

(58) The sum of the digits of a 3-digit number is 4. How many such numbers exist? _____

(59) The perimeter of a square is decreased from 36 m to 32 m. Find the corresponding decrease in its area. _____ m^2

*(60) $\sqrt[4]{3317760000}$ = _____

(61) 11 x 11 + 5 = _____

(62) 308 feet per second = _____ miles per hour

(63) Is 496 a perfect number? _____

(64) If $\frac{2x+4}{x-3} - \frac{2x+3}{x+5} = \frac{ax^2+bx+c}{dx^2+ex+f}$, then a + b + c + d + e + f = _____

(65) Let 4x - y = 10 and x + y = 0. Find 4x + y. _____

(66) The Greatest Integer Function is written as f(x) = [x]. Find: $[\sqrt{26} - \sqrt{17} + \sqrt{3}]$ _____

(67) 92 x 9 + 5 = _____

(68) Change $0.2121212..._4$ to a base 4 fraction. _____ $_4$

(69) If $5\sin(80°) = k\sin(40°)\cos(40°)$, then k = _____

*(70) The volume of a hemisphere with radius 14 cm is _____ cubic cm

(71) Let $f(x) = \frac{3}{6} - \frac{4x}{7}$. If $f^{-1}(x) = ax + b$, then a = _____

(72) 97^3 = _____

(73) $401_6 \div 5_6$ = _____ $_{10}$

(74) $h(x)=x^3 + 6x^2 + 5x + 4$ and h'(1)= _____

(75) $\text{Log}_4\sqrt{1024}$ = _____

(76) $\int_0^2 \int_5^6 xy\, dxdy$ = _____

(77) $3^3 - 4^3 + 5^3 - 6^3 + 7^3$ = _____

(78) Given: 1, 1, 3, 5, 9, k, 25, 41, ... k = _____

(79) 2340 x 12 = _____

*(80) $\sqrt[4]{4362470400}$ = _____

Copyright TruePath Academics

TruePath Academics High School Number Sense Test - Key

(1)	8010	(21)	9125	(41)	2555	(61)	126
(2)	2342	(22)	4/3; 1 1/3	(42)	-12	(62)	210
(3)	14/33	(23)	289	(43)	196	(63)	yes
(4)	1/3	(24)	64	(44)	12	(64)	34
(5)	-2	(25)	72 20/81	(45)	5450	(65)	6
(6)	7/8	(26)	8.34	(46)	16	(66)	2
(7)	1	(27)	0.4	(47)	632	(67)	833
(8)	8	(28)	121	(48)	13	(68)	3/11
(9)	22	(29)	14	(49)	3014	(69)	10
*(10)	93917 - 103801	*(30)	685 - 757	*(50)	1511 - 1669	*(70)	5460 - 6034
(11)	5	(31)	3 83/120	(51)	193	(71)	-7/4; -1.75
(12)	16 9/40	(32)	15	(52)	2000	(72)	912673
(13)	20.00	(33)	2	(53)	5/4	(73)	29
(14)	16	(34)	96	(54)	1000	(74)	20
(15)	12	(35)	2/11	(55)	1	(75)	5/2; 2 1/2; 2.5
(16)	19	(36)	424	(56)	2/7	(76)	11
(17)	486	(37)	16/7; 2 2/7	(57)	10	(77)	215
(18)	14000	(38)	11	(58)	10	(78)	15
(19)	300	(39)	3.1	(59)	17	(79)	28080
*(20)	37011 - 40905	*(40)	378 - 416	*(60)	228 - 252	*(80)	245 - 269

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

Fraction answers must be written as fractions, not decimals, unless the problem asks for a decimal.

Copyright TruePath Academics