The University of Texas Interscholastic League

Number Sense Test, Series BB-6

Contestant's Number..... Contestant's Score.....

Read Directions Carefully Before Beginning Test

Do 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 square provided at the end of each problem. Problems marked with a star(*) 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.

Person conducting contest should explain these directions carefully to the contestants.

Stop—Wait for Signal

(1) $326 + 109 + 445 =$ .....

(2) $109 - 326 + 445 =$ .....

(3) $10 + 9 + 32 + 64 + 45 =$ .....

(4) $84 \times 96 =$ .....

(5) $33 \times 47 =$ .....

(6) $\sqrt{529} =$ .....

(7) $84 \div 19 =$ .....

(8) What is the area of a triangle whose base is 7 and whose altitude is 5? .....

(9) If 80 kph is equivalent to 50 mph then 25 kph is equivalent to how many mph? .....mph.

(10) Write 6/5 as a percentage. .....

(11) $2\frac{3}{8} - 4\frac{1}{4} =$ .....

(12) What is the sum of the positive integral divisors of 42? .....

(13) $2\frac{3}{8} \div 3\frac{3}{8} =$ .....

(14) What is the largest prime divisor of 136? .....

(15) What is the area of a square whose perimeter is 8? .....

(16) If 3 cokes cost 19¢, how much will 15 cost? .....¢.

(17) $288 \div 24 =$ .....

(18) $57 \times 8 =$ .....

(19) What is the perimeter of a square whose area is ¼? .....

(20) Solve for X: $125^X = 1/25$ .....

(21) The interest on $200 for 90 days at 4% is how many dollars? $.....

(22) Multiply 45 in base six by 4 in base six and give the answer in base six. .....

*(23) Find the average score if 17 test scores add up to 1042. .....

(24) $78 \times 2\frac{2}{3} =$ .....

(25) What common fraction is 28 4/7%? .....

(26) $1/3 + 1/6 + 1/9 =$ .....

(27) Change 27 in base eight to base ten. .....

(28) $7^3 =$ .....

(29) What is the length of the tangent from a point 6 inches from the center of a circle of radius 5 inches? .....in.

(30) Find the greatest common divisor of 60, 36, 84. .....

(31) Change 23 in base four to base three. .....

(32) What is the area of a square whose diagonal is 12? .....

(33) Find the least common multiple of 60, 36, 72. .....

*(34) $\frac{5267}{26} =$ .....

(35) What is the hypotenuse of a right triangle whose sides are 4 and 7? .....

(36) How many dollars is 500 pesos at 12½ pesos per dollar? $.....

(37) Add 54 in base six to 35 in base six and give the answer in base six. .....

(38) $103 \times 896 =$ .....

(39) If 80 kilometers per hour equals 50 miles per hour, then 70 mph equals how many kph? .....kph.

(40) At 12½ pesos per dollar, how many pesos is 26 dollars? .....pesos.

(41) $2/3 \div 4/9 =$ .....

*(42) $537 \times 13 =$ .....

(43) How many seconds in 1⅓ hours? .....sec.

(44) $2\frac{1}{3} \div 5\frac{2}{3} =$ .....

(45) The number of positive prime factors of 87 is .....

(46) $.0205 \div .005 =$ .....

(47) A car travels at 63 miles per hour for 3 hours and 20 minutes. How far does it travel? .....miles.

(48) $98 \times 82 =$ .....

(49) What is the largest root of $X^2 - 13X + 42 = 0$? .....

(50) Change 44 4/9% to a fraction. .....

(51) What is the 16th term in this progression: 3, 7, 11, 15, . . .? .....

(52) An automobile travels 195 miles in 3 hours. How fast does it travel? ..... mph.

(53) How many hours between 1:45 p.m. and 6:15 p.m.? ..... hrs.

(54) What is the simple interest rate if $200 earns $6 interest in 6 months? ..... %.

(55) 120% of 17 = ...

(56) What is the sum of the roots of $X^2 - 9X + 33 = 0$? .....

(57) ..... % of 36 = 84

(58) Solve for X: $3X - 2Y = 2$
$X + Y = 4$
.....

(59) What is the coefficient of a^4b in the binomial expansion of $(a + b)^5$? .....

(60) $(-\frac{1}{2})^{-4}$ = ...

(61) If the ratio of 3 to 5 is the same as the ratio of 9 to X, what is X? .....

(62) What is the product of the roots of $X^2 + 3X + 14 = 0$? .....

(63) If $f(X) = 3X^2 - X + 3$, what is $f(-3)$? .....

(64) $(256)^{1/4}$ = ...

(65) What is the diameter of a circle whose area is 44π? .....

(66) If $X = -13$, what is $|X|$? .....

(67) $21 + 58 + 44 + 32 + 98$ = ...

(68) $215 + 844 + 329 + 821$ = ...

(69) $2158 + 4432 + 9821$ = ...

(70) In how many ways can 4 different books be arranged in a bookcase? .....

(71) How many ways can 3 people be seated in 6 chairs? .....

*(72) How many gallons of water in a tank 20 feet in diameter and 10 feet deep if there are 7½ gallons to the cubic foot? ..... gal.

(73) How many committees of 5 can be formed from a group of 6 people? .....

(74) If 3 coins are tossed simultaneously, what is the probability that 2 or more tails will come up? .....

(75) $\left(\frac{1}{81}\right)^{-3/4}$ = ...

(76) What is the slope of the line whose equation is $X + 4Y - 3 = 0$? .....

(77) What is the slope of a line perpendicular to the line whose equation is $X + 4Y - 3 = 0$? .....

(78) What is the slope of the line through the points (1, 4) and 3, 9) in the plane? .....

(79) What is the distance between the points (1, 4) and (3, 9) in the plane? .....

(80) What is the radius of the circle whose equation is $X^2 + Y^2 - 121 = 0$? .....

HS Number Sense Series Z-8 Test Answer Key

(1) 880

(2) 228

(3) 160

(4) 8064

(5) 1551

(6) 23

(7) $\frac{84}{19}$

(8) $\frac{35}{2}$

(9) $\frac{125}{8}$

(10) 120

(11) $-1\frac{13}{20}$

(12) 96

(13) $\frac{13}{17}$

(14) 17

(15) $\frac{9}{16}$

(16) 95

(17) 12

(18) 456

(19) 2

(20) $\frac{-2}{3}$

(21) 2.00

(22) 312

***(23) 58.23-64.35**

(24) 208

(25) $\frac{2}{7}$

(26) $\frac{11}{18}$

(27) 23

(28) 343

(29) $\sqrt{11}$

(30) 12

(31) 102

(32) 72

(33) 360

***(34) 192.45-212.70**

(35) $\sqrt{65}$

(36) 40.00

(37) 133

(38) 92288

(39) 112

(40) 325

(41) $\frac{3}{2}$

***(42) 6631.95-7330.05**

(43) 4800

(44) $\frac{7}{17}$

(45) 2

(46) 4.1

(47) 18.9

(48) 8036

(49) 7

(50) $\frac{4}{9}$

(51) 63

(52) 4.5

(53) 65

(54) 6

(55) $\frac{102}{5}$

(56) 9

(57) $233\frac{1}{3}$

(58) 2

(59) 5

(60) 16

(61) 15

(62) 14

(63) 33

(64) 4

(65) $4\sqrt{11}$

(66) 13

(67) 253

(68) 2209

(69) 16411

(70) 24

(71) 120

***(72) 22383.85-24740.04**

(73) 6

(74) $\frac{1}{2}$

(75) 27

(76) $\frac{-1}{4}$

(77) 4

(78) $\frac{5}{2}$

(79) $\sqrt{29}$

(80) 11