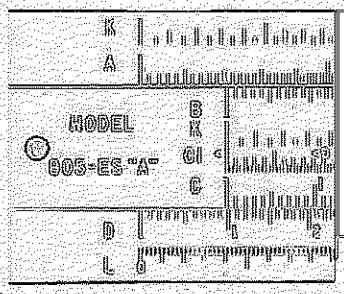

Texas Competitive Mathematics
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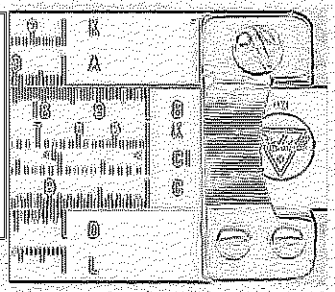
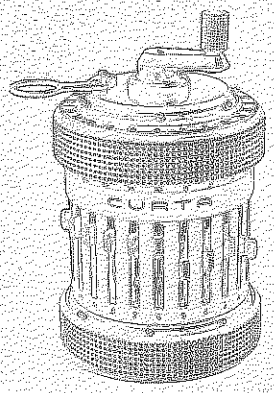
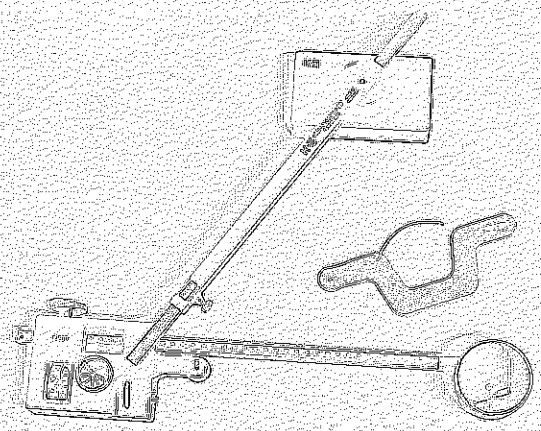
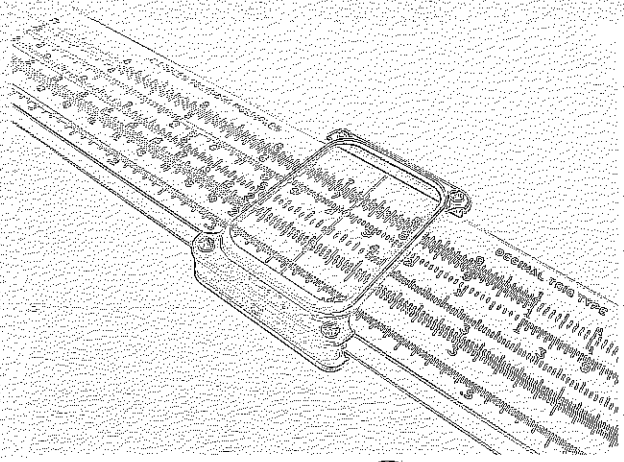
E-Mail - webmaster@texasmath.org

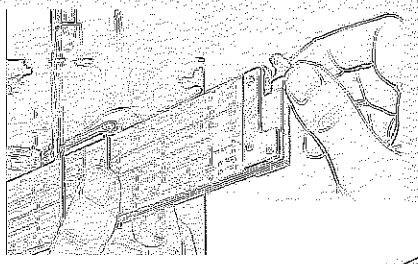


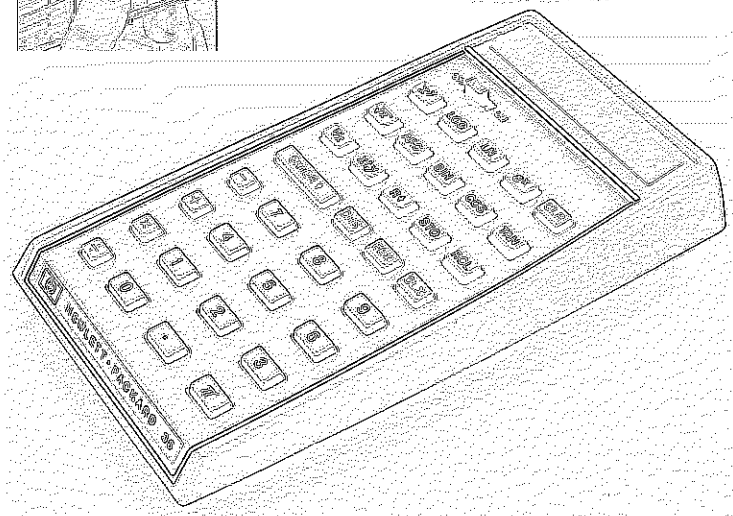
1977-78 UIL Number Sense
(16 pages)

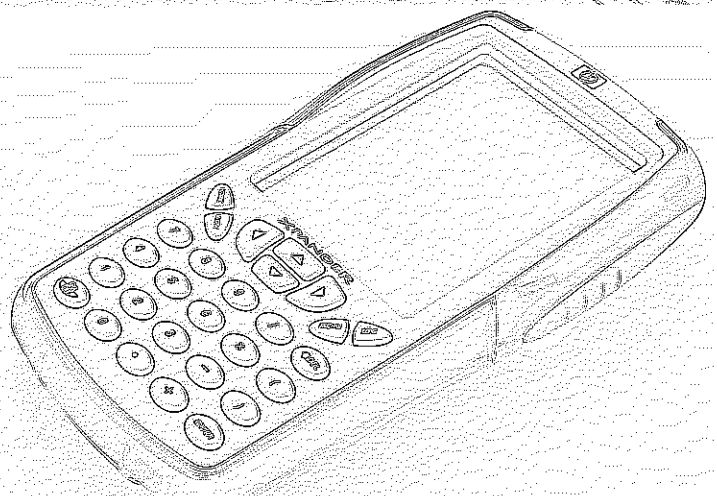


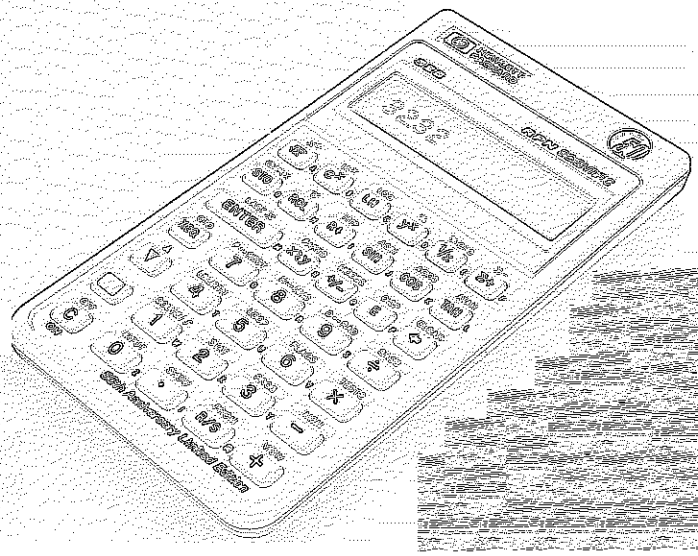


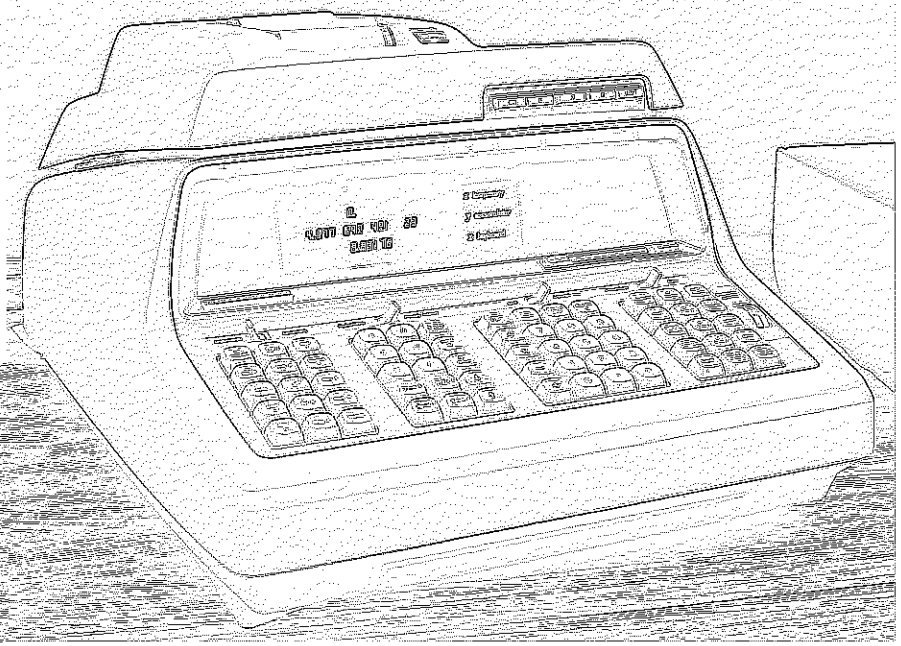












The University of Texas Interscholastic League

Number Sense Test, Series KK-1

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

Read Directions Carefully Before Beginning Test

Do not Unfold This Sheet Until Told to Begin

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Stop—Wait for Signal

(1) $4732 + 80146 - 45 =$ .....

(2) $90012 - 7537 =$ .....

(3) $75 + 85 + 91 + 76 + 42 =$ .....

(4) $64 \times 53 =$ .....

(5) $4750 \div 38 =$ .....

(6) $8\frac{2}{3} \times 9\frac{1}{6} =$ .....

(7) $(150)^2 =$ .....

(8) $8\frac{2}{3}\%$ of \$195 = \$ .....

(9) $25 \times 8068 =$ .....

*(10) $21476 + 81926 + 4925 + 73 =$ .....

(11) $\sqrt{3249} =$ .....

(12) Jim caught a fish whose head was 9 inches long. Its body was twice as long as its head and its tail was exactly as long as the head. How long was the fish? ..... inches.

(13) The great common divisor of 90 and 612 is .....

(14) The least common multiple of 90 and 612 is .....

(15) $793 \times 11 =$ .....

(16) $19\frac{1}{6} - 12\ 2/9 =$ .....

(17) $89.87 \div 4.3 =$ .....

(18) The average of 174, 193, 172 and 185 is .....

(19) If $2x + \frac{2}{3} = 5/9$, $x =$ .....

*(20) $5^7 + 3 \times 5 =$ .....

(21) The area of a circle whose diameter is $1\frac{1}{2}$ is ..... (use pi=22/7).

(22) 461, base eight, added to 352, base eight = ... base eight.

(23) 7 is what percent of 25? .....%.

(24) The number of distinct prime divisors of 492 is .....

(25) $7\frac{3}{5} \div 9\frac{1}{2} =$ .....

(26) If $2x/5 + 9 = 4x - 1\frac{4}{5}$, $x =$ .....

(27) The remainder when 52017 is divided by 9 is .....

(28) Solve for y: $7x + 8y = 5$
$y + 2x = -5$, $y =$ .....

(29) The median of $9\frac{1}{2}$, 7, $2\frac{3}{4}$, 8 is .....

*(30) $804 \times 925 =$ .....

(31) If $f(x) = 2x^2 - 5/4 + 3x$, $f(-2) =$ .....

(32) 184 quarts = ... pecks.

(33) If a line is parallel to $5x/2 - y/3 = 7$, its slope is .....

(34) Change 313, base ten, to base seven. ..... base seven.

(35) If set A contains 7 elements, and B contains 13 elements and the union of A and B contains 18 elements, then the intersection of A and B contains ..... elements.

(36) The distance between the points $(2, \frac{1}{2})$ and $(\frac{1}{3}, 3)$, in simplified form, is a $\sqrt{b}$ and a = ...

(37) $(9.2 + 5.8) \div .03 =$ .....

(38) The mode of 5, 7, 2, 7, 9, 1, 2, 3, 7, 4 is .....

(39) If 5 pencils cost 39¢, at the same rate, how many pencils can you purchase for \$1.56? .....

*(40) $\sqrt{351649} + 7 =$ .....

(41) If the side of an equilateral triangle is 8, its altitude is .....

(42) How many integers between 1 and 50 are divisible by 6? .....

(43) If $3^{2x} + 9^x = 54$, $x =$ .....

(44) 57 kilograms = ... centigrams.

(45) The larger of 17/27 and 37/59 is .....

(46) The remainder when 205651 is divided by 11 is .....

(47) The product of the roots of $5x - 3x^2 + 4/3 = 0$ is .....

(48) The slope of the line containing the points $(\frac{3}{4}, -1)$ and $(2, -2)$ is .....

(49) The volume of a cone whose radius is $2\frac{1}{2}$ and whose height is $24/\pi$ is .....

*(50) $240920 \div 634 =$ .....

(51) 12 cubic feet = ... cu. in.

(52) If a circle with radius 3/2 is inscribed in a square, the perimeter of the square is .....

(53) The y coordinate of the midpoint of the line segment with endpoints $(-1, \frac{1}{8})$ and $(\frac{1}{8}, -5/9)$ is .....

(54) Write $.\overline{91}$ or .9111... as a common fraction. .....

(55) If two cards are drawn from a standard deck without replacement, what is the probability that both cards are black? .....

(56) 1536 oz. = ... gallons.

(57) If $f(x, y) = 5x - y|x - 5|$, then $f(2, 3) =$ .....

(58) If a/19 has a remainder of 8 and b/19 has a remainder of 15, then ab/19 has a remainder of .....

(59) $\text{Tan}\,\frac{\pi}{4} + \cos\frac{4\pi}{3} =$ .....

*(60) $23 \times 36 \times 75 =$ .....

(61) If $\log_7 x^2 = 4$ and $x > 0$, then $x =$ .....

(62) How many different 5-element subsets can be constructed from a set which contains 8 elements? .....

(63) The largest value in the domain of $f(x) = \sqrt{5-7x}$ so that $f(x)$ is real valued is .....

(64) How many different 6-letter words, real or imaginary, can be constructed using the letters "d a d d a y"? .....

(65) If the probability that it will rain today is 5/9, what are the odds that it will not rain? .....

(66) If x and y vary indirectly and x is 7 when y is 4, find y when $x = \frac{1}{3}$. .....

(67) $79 \times 111 =$ .....

(68) The sum of the coefficients in the binomial expansion of $(9x - 5y)^3$ is .....

(69) The discriminant of $3x^2 - 4x = 3$ is .....

*(70) $85 \times 24 + 48 \times 36 + 12 =$ .....

(71) The largest value of $f(x) = x - 5x^2$ is .....

(72) If $g(x) = 4x^2 - 7$ and $f(x) = -2x$. g of(3) = ...

(73) The sum of the infinite geometric series $\frac{2}{3} + \frac{1}{3} + \frac{1}{6} + \frac{1}{12} + \ldots$ is .....

(74) The remainder when $f(x) = 5x^2 - x^3 + 5$ is divided by $x + 3$ is .....

(75) The slope of the line tangent to $y = 4x^3 - 7x^2$ at $x = 2$ is .....

(76) The vertical asymptote of $f(x) = \dfrac{2x+3}{5-3x}$ is $x =$ .....

(77) Given a point $(3\sqrt{2}, 315°)$ in polar coordinates, find its rectangular coordinates. .....(.....,.....).....

(78) $\int_0^4 3x^3 dx =$ .....

(79) The second derivative of $f(x) = 4x - 5x^2$ is .....

*(80) The volume of a cylinder whose radius is 28 and height is 140 is ..... (Use pi = 22/7).

The University of Texas Interscholastic League

Number Sense Test, Series KK-2

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 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 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.

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Stop—Wait for Signal

(1) $38716 + 55822 - 29 =$ .....

(2) $50037 - 8679 =$ .....

(3) $77 \times 68 =$ .....

(4) $156 + 198 + 271 + 14 =$ .....

(5) $(170)^2 =$ .....

(6) $1887 \div 37 =$ .....

(7) $7\frac{3}{4} \div 9\frac{1}{2} =$ .....

(8) $7600 \div 25 =$ .....

(9) $\sqrt{1156} =$ .....

*(10) $26483 + 22586 + 55331 =$ .....

(11) $11\frac{1}{8} \times 6\frac{1}{4} =$ .....

(12) The average of 212, 241, 237 and 190 is .....

(13) Sam bought a calf for $30.00. He paid $100 for feed. When the calf weighed 990 pounds, he sold it for $.40 per pound. How much money did he have left, over the cost of the calf and feed? $.....

(14) $16\frac{2}{3}\%$ of $753.00 = $.....

(15) The greatest common divisor of 156 and 240 is .....

(16) The least common multiple of 156 and 240 is .....

(17) If $n - 4213 = 17562$, $n =$ .....

(18) $478 \times 11 =$ .....

(19) $17\ 2/7 - 13\ 2/5 =$ .....

*(20) $8^5 + 4 \times 8 =$ .....

(21) Change 53, base seven, to base ten. .....

(22) $(2.7)^2 =$ .....

(23) The circumference of a circle whose radius is $12\frac{1}{4}$ is ..... (Use pi = 22/7).

(24) If $7x/3 + 5 = 2x + 3\frac{2}{3}$, $x =$ .....

(25) The product of the distinct prime divisors of 292 is .....

(26) $17\frac{1}{2}\%$ of what number equals 28? .....

(27) The mode of 19, 27, 18, 15, 21, 18, 23 is .....

(28) 45, base eight, multiplied by 5, base eight = ... base eight.

(29) 49 bushels = ... pecks.

*(30) $632 \times 540 =$ .....

(31) The remainder when 1102456 is divided by 3 is .....

(32) Solve for y: $3y - 2x = 4$
$x + 4y = 9$, $y =$ .....

(33) 39 centiliters = ... milliliters.

(34) If $f(x) = 5x^2 + 6 - 3x/2$, $f(4) =$ .....

(35) If a line is perpendicular to $7x/3 + 21y = 4$, its slope is .....

(36) The x coordinate of the midpoint of the line segment whose endpoints are $(\frac{2}{3}, \frac{1}{2})$ and $(\frac{2}{5}, -1)$ is .....

(37) Change 219, base ten, to base five. ..... base five.

(38) George is painting his garage. Each gallon of the paint he is using costs $8.00. Each quart sells for $2.35. He needs six gallons. How much will he save by buying gallons instead of quarts? $ .....

(39) Write $.\overline{891}$ as a common fraction. .....

*(40) $\sqrt{7935489} + 3 =$ .....

(41) How many integers between 2 and 31 are divisible by 3? .....

(42) When two dice are tossed, what is the probability that the sum of the faces is 6? .....

(43) The sum of the roots of $2x/3 - 4x^2 = 7$ is .....

(44) $74 \times 83 =$ .....

(45) If set A contains 9 elements and the union of sets A and B contains 17 elements and their intersection contains 4 elements, set B contains how many elements? .....

(46) The distance between the points $(\frac{1}{3}, 3)$ and $(-\frac{2}{3}, 5)$ is .....

(47) $(3.72 + 4.8) \div .03 =$ .....

(48) The smaller of 8/17 and .48 is .....

(49) The sum of the roots of $3x - 4x^2 = \frac{2}{5}$ is .....

*(50) $724800 \div 302 =$ .....

(51) The slope of the line containing the points (2, —3) and $(\frac{2}{3}, 1)$ is .....

(52) The remainder when 201273 is divided by 11 is .....

(53) The smallest value in the domain of $f(x) = \sqrt{3 + 5x}$ so that f(x) is real valued is .....

(54) If a 6 inch square is inscribed in a circle, the radius of the circle is a $\sqrt{b}$ in. and a = ...

(55) Write $47\frac{1}{2}\%$ as a common fraction. .....

(56) The x coordinate of the midpoint of the line segment with endpoints $(\frac{2}{3}, 5)$ and $(\frac{5}{8}, -2)$ is .....

(57) If three coins are tossed, what is the probability of getting exactly two tails? .....

(58) 5 cu. ft. = ... cu. in.

(59) If $f(x,y) = 2x^2 - x\,|\,y - 3\,|$, $f(3, -2) =$ .....

*(60) $18 \times 24 \times 45 =$ .....

(61) The odds that a car will win a race are 7 to 4. What is the probability the car will not win the race? .....

(62) $\text{Cos}\,\frac{5\pi}{6} + 3 \sin \pi/3 =$ .....

(63) If a/17 has a remainder of 12 and b/17 has a remainder of 15, ab/17 has a remainder of .....

(64) The number of permutations of seven elements taken 5 at a time is .....

(65) If $\log_8 (3x^3 - 16) = 1$, x = ...

(66) How many different 4-element subsets can be constructed from a set which contains 9 elements? .....

(67) $58 \times 111 =$ .....

(68) If x and y vary directly and $x = \frac{1}{4}$ when y = 9, find x when y = 12 .....

(69) The coefficient of the x^4y^2 term in the binomial expansion of $(3x^2 - y)^4$ is .....

*(70) $37 \times 29 + (486 \div 18) =$ .....

(71) How many different seven letter words, real or imaginary, can be constructed using the letters "r o r r l o o"? .....

(72) The smallest value of $f(x) = 4x^2 - 3x + 1/16$ is .....

(73) The remainder when $f(x) = 2x^3 + 3x^2 + 7$ is divided by x + 3 is .....

(74) If $f(x) = 5x - 3x^2 + 4$ and $g(x) = -2x$, g of (—1) = ...

(75) The sum of the infinite geometric series $\frac{2}{3} + \frac{1}{2} + \frac{3}{8} + 9/32 + \ldots$ is .....

(76) If two cards are drawn from a deck of cards without replacement, what is the probability that both are face cards (K, Q, or J)? .....

(77) The slope of the line tangent to $y = x - 3x^4 + 2$ at x = —2 is .....

(78) The second derivative of $f(x) = 3x - 2x^3 + 9$ is .....

(79) If matrix $A = \begin{bmatrix} 0 & -2 \\ 3 & 1 \end{bmatrix}$ and $B = \begin{bmatrix} 4 \\ -3 \end{bmatrix}$, then AB = ...[ ].....

*(80) $\int_{-6}^{6} (5x^2 + x)\,dx =$ .....

The University of Texas Interscholastic League

Number Sense Test, Series KK-3

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

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Stop—Wait for Signal

(1) $31407 + 82164 + 38 =$ .....

(2) $501001 - 72464 =$ .....

(3) $4^5 =$ .....

(4) $35 \times 207 =$ .....

(5) $1368 \div 24 =$ .....

(6) $11\frac{2}{3} \times 7\frac{1}{6} =$ .....

(7) $62 \times 7 + 6 \times 31 =$ .....

(8) $(125)^2 =$ .....

(9) $\frac{1}{8} + 2\frac{1}{3} - 5/12 =$ .....

*(10) $5782 + 3652 + 3355 + 12711 =$ .....

(11) The greatest common divisor of 66 and 438 is .....

(12) The least common multiple of 66 and 438 is .....

(13) $7\frac{7}{8} \div 4\frac{1}{2} =$ .....

(14) If $1\frac{1}{2} - \frac{4x}{9} = \frac{3}{4}$, $x =$ .....

(15) The average of 312, 290, 296 and 310 is .....

(16) $489 \times 111 =$ .....

(17) If 1 pound = 0.45 kilograms, $2\frac{2}{3}$ ounces = ... kilograms.

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

(19) Find the area of a circle whose radius is $1\frac{10}{11}$.
..... (Use pi = 22/7).

*(20) $452 \times 782 - 4 =$ .....

(21) Change 804, base nine, to base ten. .....

(22) Find a root of $x^2 + 4x - 3 = 0$. .....

(23) $51 \times .06 \div 2\frac{1}{4} =$ .....

(24) Write as a common fraction: $0.41\overline{6}$. .....

(25) Write as a common fraction: $46\frac{2}{3}\%$. .....

(26) 321, base five, multiplied by 3, base five, = ... base five.

(27) The smaller of 31/17 and 19/10 is .....

(28) The remainder when 20146 is divided by 3 is .....

(29) The positive cube root of 1728 is .....

*(30) $(35)^3 + 25 =$ .....

(31) The area of a trapezoid whose sides are 17 and 36 and whose height is 18 is .....

(32) The smallest real value for x such that $\frac{5x}{6} - \frac{1}{3} \leq 4x + 6$ is .....

(33) If John has $47.86 and Joe has $76.94 and they pool their money to buy fishing reels which sell for $31.20 each, how many can they buy? .....

(34) If $\log_7 (x - 3) = 2$, $x =$ .....

(35) 28% of what number equals 770? .....

(36) If $f(x) = 5x - 17 + \frac{4x^2}{3}$, $f(-9) =$ .....

(37) Among 40 students a survey showed 23 taking biology, 20 taking chemistry and 8 taking both biology and chemistry. How many students were taking neither biology nor chemistry? .....
.....

(38) $124 \times 306 =$ .....

(39) If $(4)^{4(2^{3x})} = 32$, $x =$ .....

*(40) $(13060684 \div 364) - 1 =$ .....

(41) The remainder when 751023 is divided by eleven is .....

(42) The largest value of x such that $\left| \frac{3x}{8} + \frac{1}{2} \right| = 17$ is .....

(43) Change 62, base seven, to base three. ..... base three.

(44) If an item costing $780 is discounted 20% and the sales tax is 5%, the cost of the item will be $.....

(45) Change 361, base ten, to base seven. ..... base seven.

(46) If I have 6 gallons of juice, how many 1½ pint containers can I fill? .....

(47) Write $1.\overline{48}$ as a common fraction. .....

(48) If $\frac{a}{23}$ has a remainder of 19 and $\frac{b}{23}$ has a remainder of 13, then $\frac{ab}{23}$ has a remainder of .....

(49). The distance between the points (—2,3) and (3,7) is .....

*(50) $\sqrt{435600} =$ .....

(51) If $\log_9 (3x^2 + 33) = 2$ and $x > 0$, $x =$ .....

(52) Solve for x: $2x - y = 5$
$y + 2z = 9$
$z - x = 1$; $x =$ .....

(53) If 50 mph is the same speed as 80 kph, 104 kph = ... mph.

(54) If x and y vary indirectly and $x = ½$ when $y = ⅔$, find y when $x = ¾$. .....

(55) If one coin is tossed 4 times, what is the probability that all 4 tosses will be heads? .....

(56) If $f(x,y) = 3xy - \frac{2y^2}{3} + \frac{x}{4}$, $f(8,3) =$ .....

(57) Find the y-intercept if a line contains the point (⅙, 2) and the x-intercept is —1. .....

(58) Find the number of combinations of eleven elements taken four at a time. .....

(59) The x coordinate of the center of the circle $3x^2 + 3y^2 - 4x + y = 10$ is .....

*(60) $4528 - 3256 + 58884 - 2144 + 12088 =$ .....

(61) 146, base eight, multiplied by 5, base eight, = ... base eight.

(62) When two dice are tossed, what is the probability that the sum of the faces is 4 or the sum of the faces is 7? .....

(63) The minimum value of the function $f(x) = ⅔ - 4x + x^2$ is .....

(64) The remainder when $f(x) = 2x^2 - 3x^3 + x - 4$ is divided by $x + 2$ is .....

(65) How many positive integers with at least four digits can be formed using the set {2, 4, 6, 7, 8} if repetition of digits is not permitted? .....

(66) The largest critical value of $f(x) = \frac{3x - 2}{4x + 5x^2 - 1}$ is .....

(67) The slope of the line containing the points (2, —⅔) and (⅝, —1) is .....

(68) The discriminant of $\frac{5x^2}{2} - 3x = 1$ is .....

(69) The midpoint of the line segment whose endpoints are (⅛, 2) and (3, —½) is .....(.....,.....).....

*(70) $364 \times 29 + 241 \times 38 + 6 =$ .....

(71) If $(3i + i^2 - 4)(i - 1) = a + bi$, $a =$ .....

(72) Find the slope of the line tangent to $y = 4x^2 + 3x^3 + 2$ at $x = -2$. .....

(73) The horizontal asymptote of $y = \frac{3x - 1}{x + 2}$ is $y =$ .....

(74) The second derivative of $f(x) = 3x^4 - 2x$ is .....

(75) The sum of the infinite geometric series $5 + 2 + ⅘ + 8/25 + \ldots$ is .....

(76) If $f(x) = \frac{x}{2} + 5x^2 - 1$ and $g(x) = 3x - 2$, find $gof(2)$. .....

(77) $\int_2^5 (3x^2 - 6)\,dx =$ .....

(78) If $A = [3, -1, 4]$ and $B = \begin{bmatrix} 2 \\ -7 \\ -2 \end{bmatrix}$, $AB =$ .....

(79) If $f(x) = \frac{2x}{3} - 5$, the inverse function $f^{-1}(x) = ax + b$ and $b =$ .....

*(80) The sum of the coefficients in the binomial expansion of $(27x^2 + 13y)^4$ is .....

The University of Texas Interscholastic League

Number Sense Test, Series KK-4

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 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 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) $576 + 1982 + 7214 =$ .....

(2) $40010 - 6357 =$ .....

(3) $55 \times 97 =$ .....

(4) $1014 \div 26 =$ .....

(5) $14\frac{1}{2} \div 19\frac{1}{3} =$ .....

(6) $6^4 =$ .....

(7) $\frac{2}{3} - \frac{5}{6} + \frac{1}{2} =$ .....

(8) $(135)^2 =$ .....

(9) $1278 - 5629 + 8017 =$ .....

*(10) $50814 + 63582 + 8224 =$ .....

(11) 36 times what number equals 630? .....

(12) The greatest common divisor of 255 and 165 is .....

(13) The least common multiple of 255 and 165 is .....

(14) $547 \times 11 =$ .....

(15) $19^2 - 7^2 =$ .....

(16) The average of 14.5, 21.6 and 30.8 is .....

(17) The negative reciprocal of $2\frac{2}{3}$ is .....

(18) If the difference of two numbers is 7 and and their sum is 19, find the smaller of the numbers. .....

(19) If a rectangle is twice as long as it is wide and its area is 50, find its perimeter. .....

*(20) $3740880 \div 654 =$ .....

(21) $\sqrt{3481} =$ .....

(22) $4.71 + 2\frac{2}{3}\% + 5\frac{1}{2}\% =$ ..... (decimal)

(23) The area of an equilateral triangle with side 9 is, in simplified form, $a\sqrt{b}$ and $b =$ .....

(24) Change 174, base ten, to base six. ..... base six.

(25) The median of 17, 29, 54 and 22 is .....

(26) If one liter = .26 gallons, at $.50 per gallon, 7 liters will cost $.....

(27) The larger of 29/45 and .64 is .....

(28) $(47)^2 =$ .....

(29) The sum of the distinct prime divisors of 666 is .....

*(30) $8^6 + 2 \times 8 =$ .....

(31) The remainder when 402176 is divided by 11 is .....

(32) If set A has 17 elements and $A \cup B$ has 35 elements and $A \cap B$ has 5 elements, how many elements are in B? .....

(33) The sum of the roots of $14x^2 - \frac{7x}{3} = 8$ is .....

(34) Solve for x: $5x + y = 4$, $2x - y = 3$, $y - z = 0$, $x =$ .....

(35) If $x < 0$ and $\log_2 (3x^2 - 2x) = 3$, $x =$ .....

(36) If $f(x) = 3x - 2x^2 + \frac{4}{3}|x - 4|$, $f(-2) =$ .....

(37) $482 \times 111 =$ .....

(38) Assuming that boys and girls are born with equal frequency, what are the odds of having three boys in a three-child family? .....

(39) $66875 \div 625 =$ .....

*(40) $624 \times 345 - 60 \times 88 =$ .....

(41) The smallest value for x such that $|7x - 2| \leq 4$ is .....

(42) The slope of the line containing the point $(\frac{2}{3}, 4)$ and whose x-intercept is $-1/3$ is .....

(43) If the area of a circle is $\frac{29}{\pi}$, the circumference of the circle is .....

(44) Find the midpoint of the line segment whose endpoints are $(9/5, -\frac{1}{3})$ and $(-10, \frac{1}{2})$. .....(.....,.....).....

(45) If a set contains 9 elements, how many different 3-element subsets can be found? .....

(46) How many different 6-letter words, real or imaginary, can be constructed using the letters "c, o, r, o, r, o"? .....

(47) Write $2.\overline{81}$ as a common fraction. .....

(48) If $f(x,y) = 9x/4 - 2xy^2 + 4y/3$, $f(-4,3) =$ .....

(49) If a/23 has a remainder of 20 and b/23 has a remainder of 18, the remainder of ab/23 is .....

*(50) If $x = 14$, $x^3 + 5x^2 - 4 =$ .....

(51) How many different 4-digit numbers can be constructed using {2, 5, 7, 8, 9} if repetition of numerals is not permitted? .....

(52) After a $38\frac{1}{2}\%$ discount, an \$860 article sold for \$.....

(53) The area of an isosceles triangle is 12. Its altitude is 3. Find the perimeter. .....

(54) If $\log_5 125 = 3x$, $x =$ .....

(55) 476, base eight, divided by 6, base eight, = ... base eight.

(56) When two dice are tossed what is the probability that the sum of the faces is 6 or one of the faces is 2? .....

(57) If x and y vary directly and $x = \frac{2}{3}$ when $y = 8$, find x when $y = 42$. $x =$ .....

(58) The distance between $(\frac{1}{4}, -2)$ and $(-\frac{3}{4}, 3)$ is .....

(59) Change 23, base six, to base four. ..... base four.

*(60) $\sqrt{614656} - 4 =$ .....

(61) The slope of the line containing the point $(\frac{1}{2}, -1)$ and whose y intercept is $-\frac{2}{3}$ is .....

(62) How many 5-digit odd numbers are there? .....

(63) If $\frac{(i-1)(2+i)}{i} = a + bi$, $b =$ .....

(64) The largest value of $f(x) = \frac{3}{4} - 3x - x^2$ is .....

(65) The diameter of the circle $x^2 + y^2 - 7x + 3y = 3/2$ is .....

(66) The coefficient of the a^4b^6 term in the binomial expansion of $(3a^2 - 2b^3)^4$ is .....

(67) $\frac{3 + 1\frac{1}{5}}{7\frac{2}{5} + 1} =$ .....

(68) Find the volume of a sphere whose diameter is 21. ..... (Use pi = 22/7).

(69) The smallest value for x so that $f(x) = \sqrt{1 - 9x^2}$ is real valued is .....

*(70) $65 \times 51 + 89 \times 32 + 125 \times 17 + 3 \times 4 =$ .....

(71) The discriminant of $2x^2 - 5x + \frac{3}{4} = 0$ is .....

(72) If four coins are tossed, what is the probability that the toss is not four tails? .....

(73) The slope of the line tangent to the curve $y = 5x^4 - 3x^2 + 4$ at $x = 2$ is .....

(74) The second derivative of $f(x) = \frac{4x^3}{3} - 2x^2$ is .....

(75) The horizontal asymptote of $y = \frac{5x + 1}{1 - 2x}$ is $y =$ .....

(76) If $A = \begin{bmatrix} 3 & -1 \\ 2 & \frac{1}{2} \end{bmatrix}$ and $B = \begin{bmatrix} 2 & -3 \\ 6 & 4 \end{bmatrix}$, $AB =$ .....[.....].....

(77) $\int_{-1}^{3} 5x^4 dx =$ .....

(78) Given a point $(-2, 2\sqrt{3})$ in rectangular coordinates, find its polar coordinates. (Use radian measure).....

.....(.....,.....).....

(79) $\lim_{x \to 1} \frac{x^3 - 1}{3x^2 + x - 4} =$ .....

*(80) 55 acres = ... square rods.

The University of Texas Interscholastic League

Number Sense Test, Series KK-A

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 person conducting this test gives the signal to begin. This is a ten-minute test. There are 70 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 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.

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Stop—Wait for Signal

(1) $56818 + 24896 =$ .....

(2) $10591 - 7595 =$ .....

(3) $56 \times 34 =$ .....

(4) $2\,2/9 \times 3\,3/10 =$ .....

(5) $3045 \div 35 =$ .....

(6) $52 \times 46 + 28 \times 46 =$ .....

(7) 185 is what percent of 740? .....%.

(8) $9\frac{3}{4} \div 4\frac{7}{8} =$ .....

(9) $(225)^2 =$ .....

*(10) $3265 + 5874 + 36582 + 459 =$ .....

(11) The reciprocal of 1⅝ is .....

(12) $\sqrt{3969} =$ .....

(13) $379 \times 11 =$ .....

(14) 40 acres = ... sq. rds.

(15) If $6n^2 - 2n = 0$ and $n \neq 0$, then $n =$ .....

(16) $3.25 + 74.3 + .87 =$ .....

(17) If $f(x) = 9x^3 + 4x^2 - 5$, $f(-2) =$ .....

(18) The average of 65, 35, 32 and 58 is .....

(19) The area of the right triangle whose sides are $\sqrt{8}$, $\sqrt{13}$, and $\sqrt{5}$ is $\sqrt{a}$ and a is .....

*(20) $795 \times 352 =$ .....

(21) The greatest common divisor of 315 and 175 is .....

(22) The least common multiple of 315 and 175 is .....

(23) Find the circumference of a circle with radius 9⅝.

(Use pi = 22/7) .....

(24) If the sum of three consecutive odd integers is 69, the largest is .....

(25) Change 241, base seven, to base ten. .....

(26) Find the larger of two numbers whose product is 35/2 and whose difference is 3/2. .....

(27) The largest possible value of x such that $3 - \frac{5x}{2} \geq$ ½ is .....

(28) $13^2 - 8^2 =$ .....

(29) Change 177, base ten, to base nine. ....., base nine.

*(30) $31 \times 87 \times 45 \times 20 =$ .....

(31) The sum of the distinct prime divisors of 376 is .....

(32) If 1.1. qts. equals 1 liter, 15 liters = ... pts.

(33) The larger of 59/64 and .92 is .....

(34) The remainder when 140123 is divided by 9 is .....

(35) $357 \times 111 =$ .....

(36) If set A ∪ B has 30 elements, set A has 16 elements and A and B are disjoint, find the number of elements in B. .....

(37) Find z: $y + z = 1$, $x + y = 2$, $2x - z = 0$ $z =$ .....

(38) Find the sum of the roots of $\frac{5x^2}{6} - \frac{2x}{3} = 4$. .....

(39) If $f(x) = |4-x| + 10 - 2x$, $f(6) =$ .....

*(40) $2193926 \div 2569 + 6 =$ .....

(41) Change 502, base ten, to base five. ....., base five.

(42) 1.7 miles = ... ft.

(43) The slope of the line perpendicular to $5x - 3y = 4$ is .....

(44) $2\frac{2}{3}$ is what percent of $22\ 2/9$? .....%.

(45) If two dice are tossed, what is the probability that the difference of the faces is five? .....

(46) The number of permutations of 10 things taken 4 at a time is .....

(47) The median of 24, 57, 69, 82, 91 and 60 is .....

(48) Write $.\overline{972}$ as a common fraction. .....

(49) How many six-digit even numbers are there? .....

*(50) $\sqrt{219024} - 8 =$ .....

(51) The smallest integral value of x such that $|3x - 4| \leq 5$ is .....

(52) Find the area of the ellipse $36y^2 + 49x^2 = 1764$. (Use pi = 22/7). .....

(53) 420, base seven, divided by 5, base seven, = ..., base seven.

(54) If $\log_x 2^x = 4$, x = ...

(55) Find the midpoint of the line segment whose endpoints are (2/5, 1/9) and (—2, 1). .....(.....,.....).....

(56) The volume of a cone with radius $4\frac{2}{3}$ and height 27 is (Use pi = 22/7). .....

(57) 49 pecks = ... qts.

(58) The third term in the binomial expansion of $(x - 2y)^5$ is .....

(59) The largest value of x such that $f(x) = 2\sqrt{9 - x^2}$ is real valued is .....

*(60) 95590 yards = ... rds.

(61) The smallest possible value of $f(x) = 5x^2 - 7x + 2$ is .....

(62) $\lim_{x \to -1} \frac{5x^2 + x - 4}{x^3 + 1} =$ .....

(63) If two cards are drawn from a standard deck, without replacement, what is the probability that neither card is a face card? (K, Q, J) .....

(64) The slope of the line tangent to the curve $y = 5x - 3x^3 + 4$ at $x = -2$ is .....

(65) The sum of the infinite geometric series $\frac{1}{2} + 1/3 + 2/9 + 4/27 + \ldots$ is .....

(66) $\frac{7\frac{1}{2} - 2\frac{2}{3}}{1/3 + 4\frac{1}{2}} =$ .....

(67) The second derivative of $f(x) = 2x + 3x^{-3} + 2$ is .....

(68) The vertical asymptote fartherest to the left for $f(x) = \frac{3x + 1}{5x^2 - 7x + 2}$ is x = ...

(69) $\int_3^4 \frac{4x^3}{5}\, dx =$ .....

*(70) If $A = [24, 36, -60]$ and $B = \begin{bmatrix} 56 \\ 21 \\ 13 \end{bmatrix}$, AB = ...

The University of Texas Interscholastic League

Number Sense Test, Series KK-B

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 person conducting this test gives the signal to begin. This is a ten-minute test. There are 70 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 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.

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Stop—Wait for Signal

(1) $91872 + 4618 =$ .....

(2) $576 + 947 + 829 =$ .....

(3) $10021 - 7938 =$ .....

(4) $49 \times 61 =$ .....

(5) $9 \times 94 + 18 \times 23 =$ .....

(6) $16 + 26 + 36 + 46 + 56 =$ .....

(7) $9375 \div 15 =$ .....

(8) $64/7 \times 10\frac{1}{2} =$ .....

(9) $(235)^2 =$ .....

*(10) $701864 + 98321 + 715 - 74300 =$ .....

(11) $8013 - 742 - 528 =$ .....

(12) $\frac{1}{3} + \frac{3}{4} + \frac{5}{6} =$ .....

(13) $\sqrt{3249} =$ .....

(14) 3.6 is what per cent of 600? .....%.

(15) 19 bushels = ... pecks.

(16) $837 \times 11 =$ .....

(17) The average of 29, 86, 74 and 38 is .....

(18) What is the area of a circle whose circumference is 44?

(Use pi = 22/7) .....

(19) The negative reciprocal of $-9\ 3/7$ is .....

*(20) $5364 \times 9820 =$ .....

(21) Change 78 base ten to base three. ....., base three.

(22) $(25)^2 + (25)^2 + 25 \times 24 =$ .....

(23) If eight pencils cost $.56, at the same price per pencil,

4 dozen pencils will cost $ .....

(24) If 10565 is divided by 9 the remainder is .....

(25) The smaller of 23/24 and 19/20 is .....

(26) If $4x/3 + 2 = 14$, $x =$ .....

(27) If set A contains 101 elements, set $A \cup B$ contains 147

and $A \cap B$ contains 19, then set B contains ..... elements.

(28) If the area of a trapezoid is 125 and the sum of its bases

is 40, its height is .....

(29) $548 \times 111 =$ .....

*(30) $2140560 \div 3964 =$ .....

(31) If $f(x) = 7x/4 - 3|x + 2| + x^2$, $f(-8) =$ .....

(32) 602, base nine, minus 435, base nine, = ... base nine.

(33) The median of 176, 147, 125, and 152 is .....

(34) If a/19 has a remainder of 15 and b/19 has a remainder

of 12, then ab/19 has a remainder of .....

(35) If two coins are flipped what is the probability that at

least one head appears? .....

(36) The greatest common divisor of 184 and 80 is .....

(37) The least common multiple of 184 and 80 is .....

(38) Solve for z: $x - y = 8$
$y + 3z = 1$
$x - z = 1$ $z =$ .....

(39) The sum of the roots of $4x^2/3 - 20x = 4$ is .....

*(40) $5/9 \times 93600 + \frac{2}{3} \times 510 =$ .....

(41) The sum of the distinct prime divisors of 606 is .....

(42) The number of combinations of 13 elements taken 10

at a time is .....

(43) If $\log_4 (x - 5) = 3$, $x =$ .....

(44) The smallest value of x such that $4x^2 - 3 \leq 13$ is .....

(45) Write $.\overline{409}$ as a common fraction. .....

(46) The slope of a line perpendicular to $5x/3 + 2y = 4$ is .....

(47) When two dice are tossed, what is the probability that the difference of the faces is not 3? .....

(48) A boy's clothing consists of slacks that cost \$19.00, shirt that cost \$7.50, tie that cost \$3.00, socks that cost \$2.00 and shoes that cost \$18.50. If he purchased all of these items at the same time from the same store and the sales tax is 5%, how much did he have to pay for these items? \$.....

(49) What is the x intercept of the line $3x - 4y + 3 = 0$. .....

*(50) $\sqrt{48163600} =$ .....

(51) If a/23 has a remainder of 15 and b/23 has a remainder of 7, ab/23 has a remainder of .....

(52) The slope of the line containing the points $(-\frac{2}{3}, \frac{1}{3})$ and $(2, -\frac{2}{3})$ is .....

(53) The difference of two complementary angles is equal to one third of their sum. Find the measure in degrees of the smaller angle. .....

(54) The distance between the points $(-1, 1)$ and $(\frac{3}{8}, \frac{3}{4})$ is in simplified form $a\sqrt{b}$ and $b =$ .....

(55) How many six letter words, real or imaginary can be constructed using the letters "m, i, m, m, i, y"? .....

(56) 433, base seven, divided by 5, base seven, = ... base seven.

(57) The coefficient of the a^3b^8 term of the binomial expansion of $(a - 3b^4)^5$ is .....

(58) Change 1010011101, base two, to base eight. ..... base eight.

(59) 128 hours after 9 o'clock is ..... o'clock.

*(60) $(562)^2 + \sqrt{5776} =$ .....

(61) Find the smallest positive value of x such that $2 + \cos x = 3 \cos x + 1$. .....

(62) 3 gallons = ... ounces.

(63) $(5 - 2i)(i - 1)^2 = a + bi$ and $a =$ .....

(64) $\sum_{x=2}^{5} (x-2) =$ .....

(65) The largest value of $f(x) = 4x - x^2/2 + 2$ is .....

(66) $5.768 \div .00103 =$ .....

(67) $\int_3^5 3x^3dx =$ .....

(68) If $\frac{2}{3x+7} - \frac{5}{6x+14} = \frac{-1}{56}$, x = ...

(69) If matrix $A = \begin{bmatrix} 3 & -1 \\ 4 & 1 \end{bmatrix}$ and matrix $B = \begin{bmatrix} 3 \\ -4 \end{bmatrix}$ then $AB = \begin{bmatrix} & \end{bmatrix}$

*(70) 370 pecks = ... pints.

The University of Texas Interscholastic League

Number Sense Test, Series KK-C

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 person conducting this test gives the signal to begin. This is a ten-minute test. There are 70 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 caculations with paper and pencil. Write only the answer in the space 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.

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Stop—Wait for Signal

(1) $5927 + 8294 =$ .....

(2) $1562 + 935 + 284 =$ .....

(3) $20101 - 7593 =$ .....

(4) $39 \times 31 =$ .....

(5) $6\,7/9 + 14\,\frac{1}{3} =$ .....

(6) $66 \times 7 - 2 \times 11 =$ .....

(7) $(215)^2 =$ .....

(8) $\frac{7}{8}\%$ of 320 is .....

(9) $7104 - 836 - 257 =$ .....

*(10) $38037 + 3652 - 32587 + 20478 =$ .....

(11) $851 \div 23 =$ .....

(12) 7 square miles = ... acres.

(13) $794 \times 11 =$ .....

(14) $6\,2/9 \times 13\frac{1}{2} =$ .....

(15) The area of a triangle whose base is 2.5 and whose height is 52 is .....

(16) $\sqrt{2116} =$ .....

(17) $96 \times 104 =$ .....

(18) $\frac{1}{2} + 2.83 + 16\% =$ .....

(19) If $7n - 40 = 72$, $n =$ .....

*(20) $425 \times 728 =$ .....

(21) Write as a common fraction: 71 3/7%. .....

(22) Change 69, base ten, to base four. ....., base four.

(23) $26 \times 18 + 12 =$ .....

(24) $4\frac{7}{8} - 2\frac{1}{3} =$ .....

(25) If $3\frac{1}{2}$ pounds of cheese costs $2.38, at the same price per pound, 9 pounds will cost $. .....

(26) The average of 127, 146, 114 and 131 is .....

(27) If 1 gram equals .04 oz., 3200 grams = ... lbs.

(28) The volume of a cone with radius 6 and height 15 is a π and a = ...

(29) The median of 47, 89, 62, 54, 26 and 57 is .....

*(30) $49 \times 128 + 276 \times 130 + 4 \times 7 =$ .....

(31) You paint all surfaces of a four inch wooden cube, then cut the cube into one-inch cubes. How many of the one-inch cubes will have paint on one side and one side only? .....

(32) The greatest common divisor of 234 and 204 is .....

(33) The least common multiple of 234 and 204 is .....

(34) Change 412, base six, to base ten. .....

(35) Write $.01\overline{45}$ as a common fraction. .....

(36) If $f(x) = 5x^2 - 3x + 4|x - 7|$, $f(3) =$ .....

(37) If the number of elements in $A \cup B$ is 76 and in A is 51 and in B is 60, the number of elements in $A \cap B$ is .....

(38) If the sum of two numbers is 6 and if the product of the two numbers is added to the square of the larger number, the sum is 24, find the larger number. .....

(39) The product of the distinct prime divisors of 408 is .....

*(40) $\sqrt{36966400} =$ .....

(41) Which is larger, 47/49 or .96? .....

(42) If three cards are dealt, what is the probability that all three are hearts? .....

(43) $463 \times 111 =$ .....

(44) Solve for z: $x + y = 1$
$z - x = 3$
$2y + z = 7$, $z =$ .....

(45) The distance between the points $(2, \frac{1}{4})$ and $(-1, -2)$ is .....

(46) The remainder when 8017 is divided by 11 is .....

(47) The product of the roots of $\frac{5x^2}{2} - 3x = 15$ is .....

(48) If $f(x, y) = \frac{6xy^2}{5} + 2x^2$, $f(-3, 5) =$ .....

(49) The number of permutations of 12 elements taken 4 at a time is .....

*(50) $(384)^2 + (67)^2 + 15 =$ .....

(51) 523, base eight, minus 474, base eight = ... base ten.

(52) If $6^3 \times (36)^2 \div (216)^5 = 6^x$, x = ...

(53) If two dice are tossed, what are the odds that the sum of the faces is 8? .....

(54) The midpoint of the line segment with endpoints $(1, -\frac{1}{2})$ and $(\frac{1}{3}, 2)$ is .....(.....,.....).....

(55) A 28-acre field of potatoes is harvested. It yields 20 bushels to the acre. The farmer uses bags that hold two and one half bushels each for the potatoes. How many sacks of potatoes does the farmer harvest? .....

(56) Find the volume of a right circular cylinder with radius seven and height fourteen. (Use pi = 22/7.) .....

(57) If x and y vary indirectly and x = 11 when y = 18, find x when y = 33. .....

(58) The largest value of $f(x) = 2x - \frac{3x^2}{4} + 1$ is .....

(59) Change 42, base five, to base three. ....., base three.

*(60) 55003520 ÷ 62504 = ...

(61) $(3 - i)^2 (i - 1) = ai + b$ and a = ...

(62) The slope of the line tangent to the curve $y = \frac{x}{6} - \frac{4x^2}{5} + 3$ at x = 5 is .....

(63) The discriminant of $5x + \frac{2x^2}{5} = \frac{5}{3}$ is .....

(64) The second derivative of $f(x) = \frac{7x^{-2}}{6} - \frac{4x}{3} + 2$ is .....

(65) If $f(x) = 3x^4 - 5$ and $g(x) = -1$, $f(g(x)) =$ .....

(66) $\lim_{\substack{x \to 2 \\ x \to 2}} \frac{x^2 - 2x + 3}{x^2 - 7} =$ .....

(67) Evaluate the determinant $A = \begin{vmatrix} 3 & 1 & 0 \\ -1 & 2 & 2 \\ 1 & 0 & 1 \end{vmatrix}$; .....

(68) $\int_{-2}^{4} \frac{3x^2}{2} =$ .....

(69) $\sqrt{9025} =$ .....

*(70) 360 gallons = ... cubic inches.

The University of Texas Interscholastic League

Note: If error is found in this key, grad
state office will appreciate a report

Key to Number Sense Contest KK-1

1. 84833
2. 82475
3. 369
4. 3392
5. 125
6. 77
7. 22500
8. $16.90
9. 201700
*10. 102980-113820
11. 57
12. 36 inches
13. 18
14. 3060
15. 8723
16. 6 44/45 or 314/45
17. 20.9
18. 181
19. -1/18
*20. 74233-82047
21. 99/56 or 1 43/56
22. 1033, base eight
23. 28%
24. 3
25. 4/5 or .8
26. 3
27. 6
28. 5
29. 7 1/2 or 7.5 or 15/2
*30. 706515 or 780885
31. 3/4
32. 23 pecks
33. 15/2 or 7 1/2 or 7.5
34. 625, base seven
35. 2 elements
36. 5/6
37. 500
38. 7
39. 20
*40. 570-630
41. $4\sqrt{3}$
42. 8
43. 3/2 or 1 1/2 or 1.5
44. 5700000
45. 17/27
46. 6
47. -4/9
48. -4/5
49. 50
*50. 361-399
51. 20736 cu. in.
52. 12
53. -8/45
54. 41/45
55. 25/102
56. 12 gallons
57. 1
58. 6
59. 1/2
*60. 58995-65205
61. 49
62. 56
63. 5/7
64. 60
65. 4/5
66. 84
67. 8769
68. 64
69. 52
*70. 3591-3969
71. 1/20 or .05
72. 137
73. 4/3 or 1 1/3
74. 77
75. 20
76. 5/3
77. (3, -3)
78. 192
79. -10
*80. 327712-362208

Key to Number Sense Contest KK-2

1. 94509
2. 41358
3. 5236
4. 639
5. 28900
6. 51
7. 31/38
8. 304
9. 34
*10. 99180-109620
11. 70
12. 220
13. $266.00
14. $125.50
15. 12
16. 3120
17. 21775
18. 5258
19. 3 31/35 or 136/35
*20. 31160-34440
21. 38
22. 7.29
23. 77
24. -4
25. 146
26. 160
27. 18
28. 271, base eight
29. 196 pecks
*30. 324216-358344
31. 1
32. 2
33. 390 milliliters
34. 80
35. 9
36. 19/30
37. 1334, base five
38. $8.40
39. 33/37
*40. 2679-2961
41. 10
42. 5/36
43. 1/6
44. 6142
45. 12
46. $\sqrt{5}$
47. 284
48. 8/17
49. 3/4 or .75
*50. 2280-2520
51. -3
52. 6
53. -3/5 or -.6
54. 3
55. 19/40
56. 25/48
57. 3/8 or .375
58. 8640 cu. in.
59. 3
*60. 18468-20412
61. 4/11
62. $\sqrt{3}$
63. 10
64. 2520
65. 2
66. 126
67. 6438
68. 1/3
69. 54
*70. 1045-1155
71. 140
72. -1/2
73. -20
74. 8
75. 8/3 or 2 2/3
76. 11/221
77. 97
78. -12x
79. $\begin{bmatrix} 6 \\ 9 \end{bmatrix}$
*80. 684-756

Key to Number Sense Contest KK-3

1. 113609
2. 428537
3. 1024
4. 7245
5. 57
6. 84
7. 620
8. 15625
9. 49/24 or 2 1/24
*10. 24225-26775
11. 6
12. 4818
13. 7/4 or 1 3/4
14. 27/16 or 1 11/16
15. 302
16. 54279
17. 0.075 kg. or 3/40 kg.
18. 96
19. 126/11 or 11 5/11
*20. 335787-371133
21. 652
22. -2 + 7 or -2 - 7
23. 1.36
24. 5/12
25. 7/15
26. 2013, base five
27. 31/17
28. 1
29. 12
*30. 40755-45045
31. 477
32. -2
33. 4
34. 52
35. 2750
36. 46
37. 5
38. 37944
39. -1
*40. 34086-37674
41. 9
42. 44
43. 1122, base three
44. $655.20
45. 1024, base seven
46. 32
47. 49/33
48. 17
49. $\sqrt{41}$
*50. 627-693
51. 4
52. 3
53. 65 mph
54. 4/9
55. 1/16
56. 68
57. 5/3 or 1 2/3
58. 330
59. 2/3
*60. 66595-73605
61. 776, base eight
62. 1/4 or .25
63. -10/3 or -3 1/3
64. 26
65. 240
66. 1/5 or .2
67. 8/33
68. 19
69. (5/3, 3/4) or (1 2/3, 3/4)
*70. 18734-20706
71. 2
72. 20
73. 3
74. $36x^2$
75. 25/3 or 8 1/3
76. 58
77. 99
78. 5
79. -15/2 or -7 1/2 or -7.5
*80. 2432000-2688000

Key to Number Sense Contest KK-4

1. 9772
2. 33653
3. 5335
4. 39
5. 3/4 or .75
6. 1296
7. 1/3
8. 18225
9. 3666
*10. 116489-128751
11. 17 1/2 or 17.5 or 35/2
12. 15
13. 2805
14. 6017
15. 312
16. 22.3
17. -8/21
18. 6
19. 30
*20. 5434-6006
21. 59
22. 7.365
23. 3
24. 450, base six
25. 25 1/2 or 25.5 or 51/2
26. $.91
27. 29/45
28. 2209
29. 42
*30. 249052-275268
31. 5
32. 23
33. 1/6
34. 1
35. -4/3 or -1 1/3
36. -6
37. 53502
38. 1/7
39. 107
*40. 199500-220500
41. -2/7
42. 4
43. 2 29
44. (-41/10, 1/12) or (-4.1, 1/2) or (-4 1/10, 1/12)
45. 84
46. 60
47. 31/11
48. 67
49. 15
*50. 3534-3906
51. 120
52. $528.90
53. 18
54. 1
55. 65, base eight
56. 7/18
57. 7/2 or 3 1/2 or 3.5
58. $\sqrt{26}$
59. 33, base four
*60. 741-819
61. -2/3
62. 45000
63. 3
64. 3
65. 8
66. 216
67. 1/2 or .5
68. 4851
69. -1/3
*70. 7885-8715
71. 19
72. 15/16
73. 148
74. 8x-4
75. -5/2 or -2 1/2 or -2.5
76. $\begin{bmatrix} 0\text{-}13 \\ 7\text{-}4 \end{bmatrix}$
77. 244
78. $(4, 2\pi/3)$
79. 3/7
*80. 8360-9240 square rods

Key to Number Sense Test KK-A

1. 81714
2. 2996
3. 1904
4. 22/3 or 7 1/3
5. 87
6. 3680
7. 25%
8. 2
9. 50625
*10. 43871-48489
11. 5/8
12. 63
13. 4169
14. 6400 sq. rd.
15. 1/3
16. 78.42
17. -61
18. 47.5 or 47 1/2 or 95/2
19. 10
*20. 265848-293832
21. 35
22. 1575
23. 61.6 or 61 3/5 or 308/5
24. 25
25. 127
26. 5
27. 1
28. 105
29. 216, base nine
*30. 2305935-2548665
31. 49
32. 33 pts.
33. 59/64
34. 2
35. 39627
36. 14
37. -2
38. 4/5 or .8
39. 0
*40. 817-905
41. 4002, base five
42. 8976 feet
43. -3/5 or -.6
44. 12%
45. 1/18
46. 5040
47. 64.5 or 64 1/2 or 129/2
48. 36/37
49. 450000
*50. 437-483
51. 0
52. 132
53. 60, base seven
54. 16
55. (-4/5, 5/9) or (-.8, 5/9)
56. 616
57. 392 qt.
58. $40x^3y^2$
59. 3
*60. 16511-18249
61. -9/20 or -.45
62. -3
63. 10/17
64. -31
65. 3/2 or 1 1/2 or 1.5
66. 1
67. $36x^{-5}$
68. 2/5 or .4
69. 35
*70. 1254-1386

Key to Number Sense Test KK-B

1. 96490
2. 2352
3. 2083
4. 2989
5. 1260
6. 180
7. 625
8. 69
9. 55225
*10. 690270-762930
11. 6743
12. 23/12 or 1 11/12
13. 57
14. .6% or 3/5%
15. 76 pecks
16. 9207
17. 56 3/4 or 56.75
18. 154
19. 7/66
*20. 50040756-55308204
21. 2220, base three
22. 1850
23. $3.36
24. 8
25. 19/20
26. 9
27. 65 elements