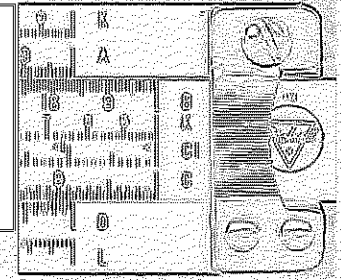
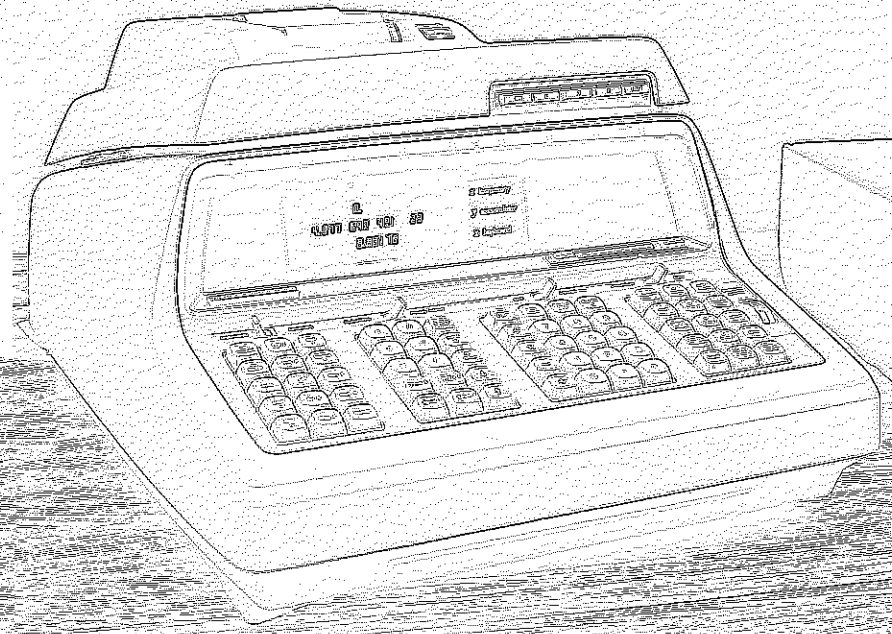
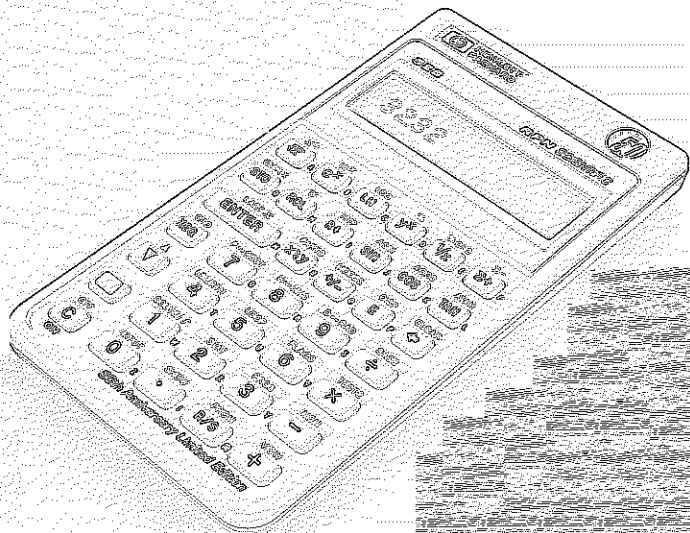
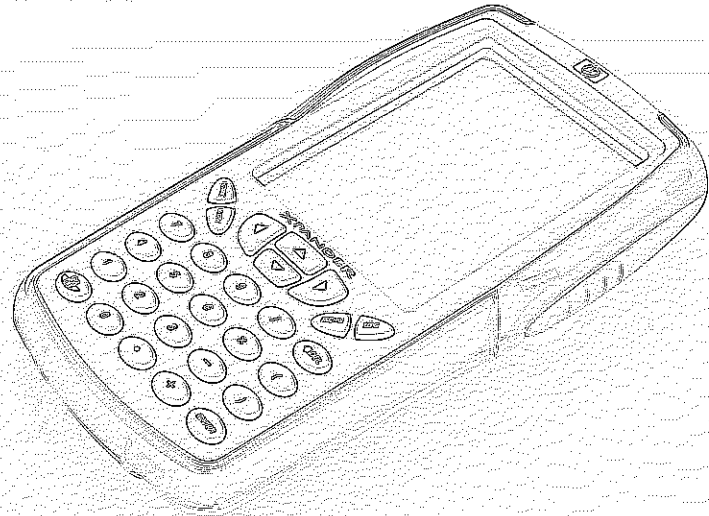
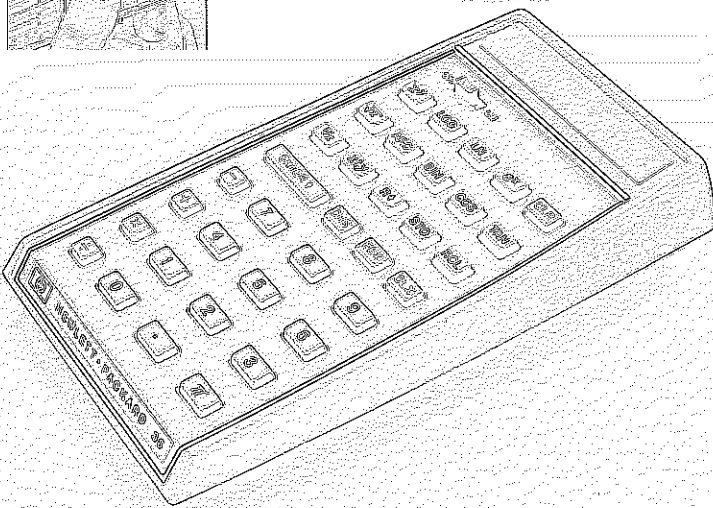
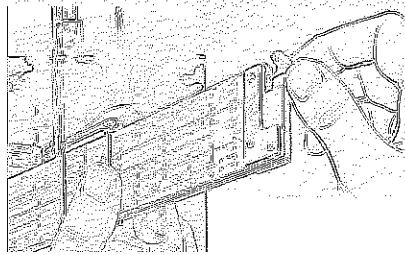
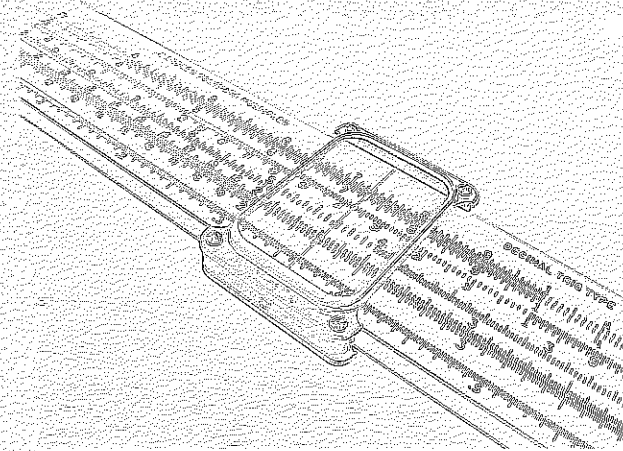
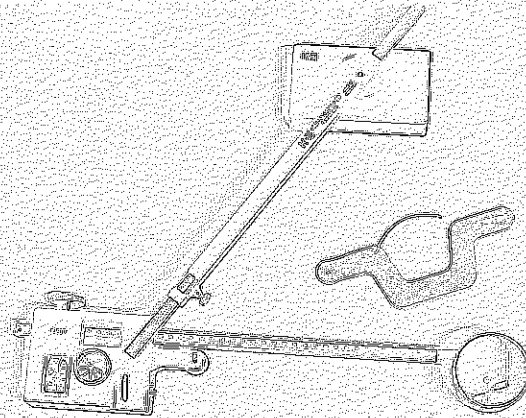
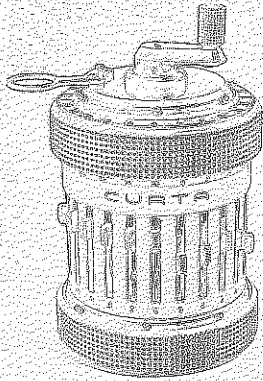


Texas Competitive Mathematics
Web - <http://www.texasmath.org>
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1968-69 UIL Number Sense
(13 pages)



The University of Texas Interscholastic League

Number Sense Test, Series BB-1

Contestant's Number.....

Contestant's Score.....

**Read Directions Carefully
Before Beginning Test**

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Stop—Wait for Signal

- (1) $136 + 244 + 107 =$
- (2) $136 - 294 + 187 =$
- (3) $13 + 15 + 27 + 94 + 62 =$
- (4) $46 \times 19 =$
- (5) $39 \times 21 =$
- (6) $\sqrt{289} =$
- (7) $84 \div 13 =$
- (8) $1\frac{1}{8} - 3\frac{7}{8} =$
- (9) $1\frac{1}{8} \div 3\frac{3}{4} =$
- (10) $81 \div 6 =$
- (11) $12 \times 4\frac{2}{3} =$
- (12) $\frac{1}{3} + \frac{1}{4} + 1/7 =$
- (13) Change 34 in base five to base ten.
- (14) Change 23 in base six to base four.
- (15) What common fraction is $13\frac{1}{3}\%$?
- * (16) Find the average: 13, 26, 42, 18
- (17) How many positive prime divisors does 24 have?
- (18) $6^4 =$
- (19) How many seconds in 2 hours? sec.
- (20) If 5 apples cost 45¢, how much should a dozen cost?
- (21) An automobile travels at a rate of 65 miles per hour. How far does it travel in 3 hours? miles.
- (22) Write $\frac{1}{8}$ as a percentage. %.
- (23) What is the sum of the positive integral divisors of 16?
- (24) $13 \times 9 =$
- (25) What is the area of a triangle whose base is 4 and whose altitude is 3?
- (26) What is the length of the tangent from a point 5 inches from the center of a circle with radius 2 inches? in.
- (27) If 80 kilometers per hour is equivalent to 50 miles per hour, how many miles per hour is 120 kph? mph.
- (28) What is the largest prime divisor of 102?
- (29) What is the area of a square whose perimeter is 8?
- (30) Find the greatest common divisor of 36, 15, 42
- (31) Find the least common multiple of 18, 30
- (32) Multiply 13 in base four by 3 in base four and give the answer in base four.
- (33) Add 13 in base four to 23 in base four and give the answer in base four.
- (34) What is the perimeter of a square of area 9?
- (35) Solve for X: $9^x = 27$
- (36) What is the area of a square whose diagonal is 9?
- (37) The interest on \$200 for 60 days at 12% is how many dollars?
- (38) What is the hypotenuse of a right triangle whose sides are 3 and 6?
- (39) How many dollars is 300 pesos at $12\frac{1}{2}$ pesos per dollar?
- (40) If 80 kph equals 50 mph, how many kilometers per hour is 65 miles per hour? kph.
- (41) At $12\frac{1}{2}$ pesos per dollar, how many pesos is 28 dollars? pesos.
- (42) $\frac{1}{2} \div \frac{1}{8} =$
- (43) $3\frac{1}{2} \div 2\frac{1}{8} =$
- * (44) $\frac{938}{52} =$
- (45) A bus travels 155 miles in 2 hours and 30 minutes. How fast does it travel? mph.
- (46) $.024 \div .0008 =$
- (47) $38 \times 42 =$
- (48) What is the largest root of $X^2 + 3X - 4 = 0$?
- (49) Change to a common fraction: $12\frac{1}{2}\%$

- (50) What is the 8th term in this progression: 1, 4, 7, 10, ...?
- (51) How much time in minutes is there between 11:45 a.m. and 4:30 p.m.?
- (52) What is the simple interest rate if \$100 earns 50¢ interest in 60 days?
- * (53) 35% of 936 =
- (54) 120% of 16 =
- (55) What is the sum of the roots of $X^2 - 15X + 29 = 0$?
- (56) _____% of 16 = 12.
- (57) Solve for X: $X + Y = 4$, $X - Y = 3$.
- (58) What is the coefficient of a^2b^2 in the binomial expansion of $(a + b)^4$?
- (59) $4^{-2} =$
- (60) If the ratio of 2 to 5 is the same as the ratio of X to 7, what is X?
- (61) What is the product of the roots of $X^2 - 15X + 30 = 0$?
- (62) If $f(X) = X^2 - 5$, what is $f(3)$?
- (63) $(64)^{\frac{1}{2}} =$
- (64) What is the diameter of a circle whose area is 4π ?
- (65) If $X = -4$, what is $|X|$?
- (66) What is the area of a circle whose circumference is 4π ?
- (67) How many 4-digit numbers can be formed from the digits 1, 2, 3, 4, if no digit is repeated in a number?
- (68) How many ways can 3 people be seated in 4 chairs?
- (69) How many different committees of 3 can be selected from a group of 6 men?
- (70) If two coins are tossed simultaneously, what is the probability that both will fall heads?
- (71) $23 + 44 + 45 + 56 + 67 =$
- (72) $234 + 456 + 789 + 101 =$
- (73) $1234 + 4567 + 5678 =$
- (74) $(4)^{-3/2} =$
- * (75) How many gallons of water in a tank 24 feet by 31 feet by 10 feet, if there are $7\frac{1}{2}$ gallons to the cubic foot?
- (76) What is the slope of the straight line through the points (1, 2) and (2, 4) in the plane?
- (77) What is the slope of the straight line whose equation is $Y = 3X + 7$?
- (78) What is the slope of a line perpendicular to the line whose equation is $Y = 3X + 7$?
- (79) What is the distance between the points (1, 2) and (2, 4) in the plane?
- (80) What is the radius of the circle whose equation is $X^2 + Y^2 = 16$?

The University of Texas Interscholastic League

Number Sense Test, Series BB-2

Contestant's Number.....

Contestant's Score.....

**Read Directions Carefully
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Person conducting contest should explain these directions carefully to the contestants.

Stop—Wait for Signal

- | | |
|--|--|
| (1) $195 + 213 + 112 =$ | (25) Add 24 in base five to 33 in base five and give the answer in base five. |
| (2) $213 - 195 + 327 =$ | (26) $14 \times 7 =$ |
| (3) $32 + 9 + 81 + 15 + 26 =$ | (27) At $12\frac{1}{2}$ pesos per dollar, how many pesos is 36 dollars? pesos. |
| (4) $28 \times 32 =$ | (28) $\frac{2}{3} \div \frac{1}{9} =$ |
| (5) $37 \times 43 =$ | (29) Change 73 in base eight to base ten. |
| (6) $\sqrt{324} =$ | (30) Find the greatest common divisor of 42, 36, 18 |
| (7) $93 \div 15 =$ | (31) Change 42 in base five to base seven. |
| (8) If 3 shirts cost \$9.90, how much should a box of 6 cost? \$..... | (32) $72 \div 6 =$ |
| (9) What is the area of a triangle whose base is 6 and whose altitude is 5? | (33) Find the least common multiple of 30, 42. |
| * (10) Find the average: 6, 8, 4, 15, 9, 7 | (34) $1\frac{1}{8} \div 2\frac{3}{8} =$ |
| (11) $3\frac{1}{8} \div 4\frac{2}{7} =$ | (35) $.00144 \div .00012 =$ |
| (12) $25 \times 5\frac{2}{5} =$ | (36) How many seconds in $1\frac{1}{2}$ hours? sec. |
| (13) $5^4 =$ | (37) $2\frac{1}{2} - 3\frac{1}{8} =$ |
| (14) What is the largest prime divisor of 156? | (38) Write $\frac{3}{8}$ as a percentage. %. |
| (15) What is the area of a square whose diagonal is $2\sqrt{2}$? | (39) If 80 kph is equivalent to 50 mph, then 100 kph is equivalent to how many mph? mph. |
| (16) Multiply 25 in base six by 4 in base six, and give the answer in base six. | (40) A bus travels at a rate of 62 miles per hour. How far does it travel in 2 hours and 30 minutes? miles. |
| (17) What is the area of a square whose perimeter is 9? | (41) If 80 kilometers per hour equals 50 miles per hour, how many kph is 40 mph? kph. |
| (18) Solve for X: $16^x = \frac{1}{4}$ | * (42) $815 \times 49 =$ |
| (19) The interest on \$500 for 60 days at 6% is how many dollars? \$..... | (43) What is the length of the tangent from a point 6 inches from the center of a circle with radius 3 inches? in. |
| (20) What is the perimeter of a square whose area is 13? | (44) $46 \times 54 =$ |
| (21) What is the hypotenuse of a right triangle whose sides are 4 and 6? | (45) A truck travels 180 miles in 3 hours and 20 minutes. How fast does it travel? mph. |
| (22) How many dollars is 200 pesos at $12\frac{1}{2}$ pesos per dollar? \$..... | (46) What is the largest root of $X^2 - 6X + 8 = 0$? |
| (23) What common fraction is $83\frac{1}{3}\%$? | (47) Change 2.5% to a common fraction. |
| (24) $\frac{1}{2} + \frac{1}{3} + \frac{1}{6} =$ | (48) What is the sum of the positive integral divisors of 18? |

- (49) What is the 10th term in this progression: 1, 3, 5, 7, 9, ...?

 4236
- * (50) $\frac{\quad}{24} = \dots\dots\dots$
- (51) How many positive prime divisors does 42 have?
- (52) How much time, in minutes, is there between 9:32 a.m. and 4:15 p.m.?
- (53) What is the simple interest rate if \$200 earns 50¢ interest in 60 days?
- (54) 125% of 18 =
- (55) What is the sum of the roots of $X^2 - 18 + 54 = 0$?
- (56)% of 24 = 16.
- (57) Solve for X: $X + Y = 4$
 $2X + Y = 2$

- (58) What is the coefficient of ab^3 in the binomial expansion of $(a + b)^4$?
- (59) $(\frac{1}{2})^{-5} = \dots\dots\dots$
- (60) If the ratio of 2 to five is the same as the ratio of 7 to X, what is X?
- (61) What is the product of the roots of $X^2 - 12X + 39 = 0$?
- (62) If $f(X) = 2X^2 + 4$, what is $f(2)$?
- (63) $(729)^{1/3} = \dots\dots\dots$
- (64) What is the diameter of a circle whose area is 25π ?
- (65) If $X = -17$, what is $|X|$?
- (66) What is the area of a circle whose circumference is 6π ?
- (67) $87 + 76 + 65 + 54 + 43 = \dots\dots\dots$
- (68) $876 + 766 + 655 = \dots\dots\dots$
- (69) $7867 + 7666 + 6578 = \dots\dots\dots$
- (70) How many 3-digit numbers can be formed from the digits 1, 2, 3, if no digit is repeated in a number?
- (71) How many ways can 3 people be seated in 5 chairs?
- (72) How many committees of 3 can be selected from 5 people?
- (73) If two coins are tossed, what is the probability that one will come up heads and one tails?
- * (74) An excavation 28 feet by 18 feet by 8 feet was made. How many cubic feet of material were removed? cu. ft.
- (75) $(\frac{1}{8})^{-1/3} = \dots\dots\dots$
- (76) What is the slope of the line through the points (2, 4) and (5, 9) in the plane?
- (77) What is the slope of the line whose equation is $2X + Y = 4$?
- (78) What is the slope of a line perpendicular to the line whose equation is $2X + Y = 4$?
- (79) What is the distance between the points (2, 4) and (3, 5) in the plane?
- (80) What is the radius of the circle whose equation is $X^2 + Y^2 = 25$?

The University of Texas Interscholastic League

Number Sense Test, Series BB-3

Contestant's Number.....

Contestant's Score.....

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Stop—Wait for Signal

- (1) $199 + 101 + 237 =$
- (2) $191 - 237 + 313 =$
- (3) $19 + 12 + 23 + 37 + 73 =$
- (4) $47 \times 53 =$
- (5) $19 \times 27 =$
- (6) $\sqrt{361} =$
- (7) $63 \div 11 =$
- (8) If 4 shirts cost \$9.90, how much should a box of 6 cost? \$
- (9) What is the area of a triangle whose base is 5 and whose altitude is 3?
- (10) What is the area of a square whose perimeter is 10?
- (11) $112 \times 25\frac{1}{4} =$
- (12) Multiply 32 is base five by 4 in base five and give the answer in base five.
- (13) What is the perimeter of a square whose area is 36?
- (14) Solve for X: $(1/9)^X = 27$
- (15) The interest on \$150 for 60 days at 4% is how many dollars? \$
- (16) What is the area of a square whose diagonal is 13?
- (17) Write $\frac{3}{4}$ as a percentage. %.
- (18) $4\frac{1}{3} \div 4\frac{7}{8} =$
- (19) If 80 kph is equivalent to 50 mph, then 60 kph is equivalent to how many mph?
- (20) $144 \div 24 =$
- (21) $27 \times 8 =$
- * (22) Find the average: 423, 326.
- (23) What common fraction is 41%?
- (24) $3\frac{1}{3} - 4\frac{2}{7} =$
- (25) $\frac{1}{2} + \frac{1}{4} = \frac{1}{8} =$
- (26) $4^5 =$
- (27) What is the largest prime divisor of 114?
- (28) What is the length of a tangent from a point 4 inches from the center of a circle of radius 2 inches? in.
- (29) What is the hypotenuse of a right triangle whose sides are 5 and 6?
- (30) Find the greatest common divisor of 60, 28, 48.
- (31) How many dollars is 150 pesos at $12\frac{1}{2}$ pesos per dollar? \$.....
- (32) If 80 kilometers per hour equals 50 miles per hour, how many kph is 30 mph? kph.
- (33) Find the least common multiple of 28, 60.
- (34) At $12\frac{1}{2}$ pesos per dollar, how many pesos is 20 dollars? pesos.
- (35) $3/4 \div 3/16 =$
- (36) What is the sum of the positive integral divisors of 20?
- (37) $1\frac{3}{5} \div 3\frac{1}{5} =$
- (38) $.096 \div .0004 =$
- (39) A train travels 126 miles in 2 hours and 15 minutes. How fast does it travel? mph.
- (40) $65 \times 75 =$
- * (41) $29 \times 438 =$
- (42) What is the 8th term in this progression: 1, 5, 9, 13, ...?
- (43) How many seconds in 3 hours? sec.
- (44) Change 34 in base six to base ten.
- (45) How many positive prime divisors does 56 have?
- * (46) $\frac{847}{16} =$
- (47) Change 34 in base five to base two.
- (48) What is the largest root of $X^2 - 9X + 20 = 0$?
- (49) Change .2% to a common fraction.
- (50) How many minutes between 8:19 a.m. and 11:14 a.m.? min.

- (51) What is the simple interest rate if \$300 earns \$1 interest in 60 days? %.
- (52) A truck travels at a rate of 54 miles per hour for 3 hours and 20 minutes. How far does it travel? miles.
- (53) 150% of 13 =
- (54) What is the sum of the roots of $X^2 + X + 1 = 0$?
- (55) % of 16 = 56.
- (56) Solve for X: $2X - Y = 3$
 $X + Y = 6$

- (57) What is the coefficient of a^3b^2 in the binomial expansion of $(a + b)^5$?
- (58) $(4)^{-3} =$
- (59) If the ratio of 4 to five is the same as the ratio of X to 8, what is X?
- (60) What is the product of the roots of $X^2 - 9X + 21$?
- (61) If $f(x) = 2X^3 - 9$, what is $f(2)$?
- (62) $(343)^{1/3} =$
- (63) What is the diameter of a circle whose area is 17π ?
- (64) If $X = -5$, what is $|X|$?
- (65) What is the area of a circle whose circumference is 16π ?
- (66) $32 + 47 + 89 + 91 + 67 =$
- (67) $324 + 789 + 916 + 732 =$
- (68) $3247 + 8991 + 6732 =$
- (69) How many 5 digit numbers can be formed from the digits 1, 2, 3, 4, 5, if no number is repeated in a number?
- (70) How many ways can 4 people be seated in 5 chairs?
- (71) Add 37 in base eight to 43 in base eight, and give the answer in base eight.
- (72) How many committees of 4 can be formed from a group of 5 people?
- (73) If three coins are tossed simultaneously, what is the probability that all three come up heads?
- (74) $(27)^{-4/3} =$
- (75) What is the slope of the line through the two points (2, 3) and (4, 1) in the plane?
- * (76) At 87¢ per square foot, how much does carpeting for a room 16 feet by 20 feet cost? \$
- (77) What is the slope of the line whose equation is $X + 2Y = 4$?
- (78) What is the slope of a line perpendicular to the line whose equation is $X + 2Y = 3$?
- (79) What is the distance between the two points (2, 4) and (5, 8) in the plane?
- (80) What is the radius of the circle whose equation is $X^2 + Y^2 = 144$?

The University of Texas Interscholastic League

Number Sense Test, Series BB-4

Contestant's Number.....

Contestant's Score.....

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Stop—Wait for Signal

- (1) $423 + 107 + 229 =$
- (2) $492 - 108 + 316 =$
- (3) $49 + 21 + 8 + 83 + 31 =$
- (4) $56 \times 64 =$
- (5) $37 \times 53 =$
- (6) $\sqrt{441} =$
- (7) $74 \div 13 =$
- (8) If 4 pairs of sox cost \$5.50, how much should a dozen cost?
\$
- (9) What is the altitude of a triangle whose base is 4 and whose
area is 6.
- (10) $1/4 + 1/16 + 1/8 =$
- (11) How many seconds in $3/4$ of an hour? sec.
- (12) $39 \times 7 =$
- (13) If 80 kph is equivalent to 50 mph, then 20 mph is equivalent
to how many kph? kph.
- (14) $4\% - 5\% =$
- (15) $2\% \div 5\% =$
- (16) $3^6 =$
- (17) What is the largest prime divisor of 87?
- (18) What is the perimeter of a square whose area is 9?
- (19) Multiply 43 in base seven by 5 in base seven and give the
answer in base seven.
- (20) What is the area of a square whose perimeter is 14?
- (21) Solve for X: $4^X = 32$
- (22) What is the area of a square whose diagonal is 14?
- (23) What is the length of the tangent from a point 5 inches
from the center of a circle of radius 3 inches? in.
- (24) What common fraction is $18\% ?$
- (25) Write 3% as a percentage.
- (26) The interest on \$300 for 60 days at 2% is how many dol-
lars? \$
- (27) Change 21 in base three to base ten.
- (28) What is the hypotenuse of a right triangle whose sides are
2 and 4?
- (29) How many dollars is 350 pesos at $12\frac{1}{2}$ pesos per dollar?
\$
- (30) $84 \times 4\frac{1}{7} =$
- (31) Change 22 in base six to base two.
- (32) Find the greatest common divisor of 36, 45, 54.
- (33) If 80 kilometers per hour equals 50 miles per hour, how
many mph is 70 kph? mph.
- (34) $256 \div 32 =$
- (35) Find the least common multiple of 36, 45.
- (36) At $12\frac{1}{2}$ pesos per dollar, how many pesos is 44 dollars?
..... pesos.
- * (37) Find the average: 313, 65, 179.
- (38) What is the sum of the positive integral divisors of 24?
.....
- (39) $5/6 \div 11/12 =$
- (40) $.0132 \div .003 =$
- (41) $1\% \div 3\% =$
- (42) $87 \times 93 =$
- (43) What is the largest root of $X^2 - 4X - 21 = 0?$
- (44) The number of positive prime factors of 72 is
- (45) Change 66% to a fraction.
- (46) What is the 9th term in this progression: 2, 7, 12, 17, ...?
.....
- * (47) $243 \times 437 =$
- (48) How many minutes between 8:37 a.m. and 11:45 a.m.?
..... min.
- (49) What is the simple interest rate if \$300 earns \$1.50 inter-
est in 60 days? %.

- (50) 125% of 22 =
- * (51) $\frac{4875}{49} =$
- (52) What is the sum of the roots of $X^2 + 12X - 37 = 0$?
- (53) A motorcycle travels 165 miles in 3 hours and 40 minutes. How fast does it travel? mph.
- (54) % of 24 = 36.
- (55) Solve for X: $2X - 3Y = 4$
 $X - Y = 1$

- (56) What is the coefficient of a^2b^3 in the binomial expansion of $(a + b)^5$?
- (57) Add 26 in base nine to 45 in base nine, and give the answer in base nine.
- (58) $3^{-4} =$
- (59) If the ratio of 3 to 5 is the same as the ratio of X to 20, what is X?
- (60) A train travels 56 miles per hour for 2 hours and 15 minutes. How far does it travel? miles.
- (61) What is the product of the roots of $X^2 - 8X + 13 = 0$?
- (62) If $f(X) = 4 - 3X^2$, what is $f(3)$?
- (63) $(216)^{1/3} =$
- (64) What is the diameter of a circle whose area is 29π ?
- (65) If $X = -9$, what is $|X|$?
- (66) What is the area of a circle whose circumference is 9π ?
- (67) $98 + 37 + 59 + 63 + 88 =$
- (68) $983 + 759 + 638 + 898 =$
- (69) $9837 + 5963 + 8898 =$
- (70) How many 4 digit numbers can be formed from the 4 digits 3, 4, 5, 6, if no digit is repeated in a number?
- (71) How many ways can 2 people be seated in 5 chairs?
- (72) How many committees of 2 can be formed from a group of 5 people?
- (73) If three pennies are tossed simultaneously, what is the probability that 2 will come up heads and one tails?
- (74) $(1/9)^{-3/2} =$
- * (75) At 62¢ per square foot, how much does vinyl tile cost for a room 12 feet by 20 feet? \$
- (76) What is the slope of the line through the two points (3, -4), and (2, 3) in the plane?
- (77) What is the slope of the line whose equation is $2X + 3Y = 4$?
- (78) What is the slope of a line perpendicular to the line whose equation is $2X + 3Y = 4$?
- (79) What is the distance between the points (3, 1) and (6, 5) in the plane?
- (80) What is the radius of the circle whose equation is $X^2 + Y^2 = 36$?

The University of Texas Interscholastic League

Number Sense Test, Series BB-5

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) $127 + 826 + 213 =$ | (26) Change 81 in base nine to base ten. |
| (2) $213 - 826 + 413 =$ | (27) $512 \div 64 =$ |
| (3) $21 + 38 + 26 + 41 + 32 =$ | (28) Change 44 in base six to base two. |
| (4) $75 \times 85 =$ | (29) Find the greatest common divisor of 24, 32, 40. |
| (5) $49 \times 26 =$ | (30) $2\% \div 8\% =$ |
| (6) $\sqrt{484} =$ | (31) $225 \times 2\% =$ |
| (7) $92 \div 17 =$ | (32) Find the least common multiple of 24, 32. |
| (8) What is the altitude of a triangle whose base is 5 and whose area is $7\frac{1}{2}$? | * (33) $\frac{963}{73} =$ |
| (9) If 80 kph is equivalent to 50 mph, then 30 mph is equivalent to how many kph? kph. | (34) What is the sum of the positive integral divisors of 30? |
| (10) $\frac{1}{3} + \frac{1}{5} + \frac{1}{7} =$ | (35) What is the hypotenuse of a right triangle whose sides are 2 and 5? |
| (11) What is the largest prime divisor of 89? | (36) How many seconds in $\frac{1}{3}$ of an hour? sec. |
| (12) What is the diagonal of a square whose area is 16? | (37) How many dollars is 400 pesos at $12\frac{1}{2}$ pesos per dollar? \$ |
| (13) What common fraction is $22\frac{2}{9}\%$? | (38) If 80 kilometers per hour equals 50 miles per hour, 60 kph is how many mph? mph. |
| (14) Multiply 47 in base eight by 5 in base eight and give the answer in base eight. | (39) At $12\frac{1}{2}$ pesos per dollar how many pesos is 42 dollars? pesos. |
| (15) $2^8 =$ | (40) $\frac{4}{5} \div \frac{2}{25} =$ |
| (16) If 5 movie tickets cost \$6.75, how much will tickets cost a party of eight people? \$ | (41) Add 43 in base seven to 35 in base seven and give the answer in base seven. |
| (17) Write $\frac{5}{4}$ as a percentage. | (42) $1\frac{1}{4} \div 1\frac{9}{16} =$ |
| (18) What is the area of a square with perimeter 18? | (43) $.0135 \div .003 =$ |
| (19) Solve for X: $27^x = 81$ | (44) $83 \times 97 =$ |
| (20) The interest on \$400 for 120 days at 9% is how many dollars? \$ | (45) A car travels 210 miles in 3 hours and 20 minutes. How fast does it travel? mph. |
| (21) What is the perimeter of a square whose area is 25? | (46) What is the largest root of $X^2 - X - 12 = 0$? |
| (22) $2\frac{1}{4} - 4\% =$ | * (47) $436 \times 11\frac{1}{9} =$ |
| (23) What is the length of the tangent from a point 7 inches from the center of a circle of radius 4 inches? in. | (48) Change $28\frac{4}{7}\%$ to a fraction. |
| (24) $49 \times 6 =$ | (49) What is the 15th term in this progression: 1, 5, 9, 13, ...? |
| * (25) Find the average: 1, 2, 3, 4, 5, 6, 7, 8. | |

- (50) $133\frac{1}{3}\%$ of 17 =
- (51) The number of positive prime factors of 99 is
- (52) How many minutes between 2:39 p.m. and 6:13 p.m.? min.
- (53) What is the simple interest rate if \$200 earns \$4 interest in 6 months? %.
- (54) What is the sum of the roots of $X^2 + 13X + 42 = 0$?
- (55) % of 18 = 45
- (56) Solve for X: $2X - 2Y = 3$
 $X + Y = 4$

- (57) What is the coefficient of ab^4 in the binomial expansion of $(a + b)^5$?
- (58) $(-4)^{-3} =$
- (59) If the ratio of 3 to 4 is the same as the ratio of X to 12, what is X?
- (60) What is the product of the roots of $X^2 + 4X - 9 = 0$
- (61) $(625)^{1/4} =$
- (62) What is the diameter of a circle whose area is 36π ?
- (63) If $X = -7$, what is $|X|$?
- (64) A motorcycle travels 45 miles per hour for 3 hours and 40 minutes. How far does it travel? miles.
- (65) If $f(X) = 2X^2 - X + 2$, what is $f(-2)$?
- (66) What is the area of a circle whose circumference is 11π ?
- (67) $43 + 57 + 89 + 67 + 73 =$
- (68) $435 + 789 + 677 + 343 =$
- (69) $4357 + 8967 + 7734 =$
- (70) How many ways can 5 different books be placed in a bookshelf?
- (71) How many ways can four people be seated in 6 chairs?
- (72) How many committees of 4 can be formed from a group of 6 people?
- * (73) At \$1.35 per square foot, how much does carpeting for a room 20 feet by 15 feet cost? \$
- (74) If 3 pennies are tossed simultaneously, what is the probability that either all come up heads or all come up tails?
- (75) $(125)^{-2/3} =$
- (76) What is the slope of the line through the points (3, 4) and (5, 7) in the plane?
- (77) What is the slope of the line $3x + 6y = 4$?
- (78) What is the slope of a line perpendicular to the line $3X + 6y = 4$?
- (79) What is the distance between the points (3, 4) and (5, 7) in the plane?
- (80) What is the radius of the circle whose equation is $X^2 + y^2 - 49 = 0$?

The University of Texas Interscholastic League

Number Sense Test, Series BB-6

Contestant's Number.....

Contestant's Score.....

**Read Directions Carefully
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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

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|--|--|
| <p>(1) $326 + 109 + 445 =$</p> <p>(2) $109 - 326 + 445 =$</p> <p>(3) $10 + 9 + 32 + 64 + 45 =$</p> <p>(4) $84 \times 96 =$</p> <p>(5) $33 \times 47 =$</p> <p>(6) $\sqrt{529} =$</p> <p>(7) $84 \div 19 =$</p> <p>(8) What is the area of a triangle whose base is 7 and whose altitude is 5?</p> <p>(9) If 80 kph is equivalent to 50 mph then 25 kph is equivalent to how many mph? mph.</p> <p>(10) Write $\frac{6}{5}$ as a percentage.</p> <p>(11) $2\% - 4\frac{1}{4} =$</p> <p>(12) What is the sum of the positive integral divisors of 42?</p> <p>(13) $2\% \div 3\% =$</p> <p>(14) What is the largest prime divisor of 136?</p> <p>(15) What is the area of a square whose perimeter is 3?</p> <p>(16) If 3 cokes cost 19¢, how much will 15 cost? ¢.</p> <p>(17) $288 \div 24 =$</p> <p>(18) $57 \times 8 =$</p> <p>(19) What is the perimeter of a square whose area is $\frac{1}{4}$?</p> <p>(20) Solve for X: $125^x = 1/25$</p> <p>(21) The interest on \$200 for 90 days at 4% is how many dollars? \$.....</p> <p>(22) Multiply 45 in base six by 4 in base six and give the answer in base six.</p> <p>* (23) Find the average score if 17 test scores add up to 1042.</p> <p>(24) $78 \times 2\% =$</p> <p>(25) What common fraction is $28 \frac{4}{7}\%$?</p> | <p>(26) $\frac{1}{3} + \frac{1}{6} + \frac{1}{9} =$</p> <p>(27) Change 27 in base eight to base ten.</p> <p>(28) $7^3 =$</p> <p>(29) What is the length of the tangent from a point 6 inches from the center of a circle of radius 5 inches? in.</p> <p>(30) Find the greatest common divisor of 60, 36, 84.</p> <p>(31) Change 23 in base four to base three.</p> <p>(32) What is the area of a square whose diagonal is 12?</p> <p>(33) Find the least common multiple of 60, 36, 72.</p> <p>* (34) $\frac{5267}{26} =$</p> <p>(35) What is the hypotenuse of a right triangle whose sides are 4 and 7?</p> <p>(36) How many dollars is 500 pesos at $12\frac{1}{2}$ pesos per dollar? \$.....</p> <p>(37) Add 54 in base six to 35 in base six and give the answer in base six.</p> <p>(38) $103 \times 896 =$</p> <p>(39) If 80 kilometers per hour equals 50 miles per hour, then 70 mph equals how many kph? kph.</p> <p>(40) At $12\frac{1}{2}$ pesos per dollar, how many pesos is 26 dollars? pesos.</p> <p>(41) $\frac{2}{3} \div \frac{4}{9} =$</p> <p>* (42) $537 \times 13 =$</p> <p>(43) How many seconds in $1\frac{1}{2}$ hours? sec.</p> <p>(44) $2\frac{1}{2} \div 5\% =$</p> <p>(45) The number of positive prime factors of 87 is</p> <p>(46) $.0205 \div .005 =$</p> <p>(47) A car travels at 63 miles per hour for 3 hours and 20 minutes. How far does it travel? miles.</p> <p>(48) $98 \times 82 =$</p> <p>(49) What is the largest root of $X^2 - 13X + 42 = 0$?</p> |
|--|--|

- (50) Change $44\frac{4}{9}\%$ 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 $7\frac{1}{2}$ 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) $(\frac{1}{81})^{-3/4} =$
- (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 $X^2 + Y^2 - 121 = 0$?

The University of Texas Interscholastic League

NOTE: If error is found in this Key, grade by the correct answer. Also, please report any error to the State Office, Box 8028, University Station, Austin 78712.

Key to Number Sense TEST SERIES BB-1	Key to Number Sense TEST SERIES BB-2	Key to Number Sense TEST SERIES BB-3	Key to Number Sense TEST SERIES BB-4	Key to Number Sense TEST SERIES BB-5	Key to Number Sense TEST SERIES BB-6
1. 467	1. 240	1. 577	1. 759	1. 169	1. 298
2. 229	2. 743	2. 104	2. 700	2. 1169	2. 228
3. 211	3. 103	3. 124	3. 192	3. 158	3. 100
4. 874	4. 896	4. 2491	4. 384	4. 6375	4. 804
5. 819	5. 1991	5. 513	5. 1961	5. 1351	5. 1351
6. 17	6. 18	6. 19	6. 21	6. 22	6. 23
7. 6/13	7. 6/15	7. 5/8 1/1	7. 5/9 1/3	7. 4 8/17	7. 4 8/19
8. 2 5/24	8. \$19.80	8. \$14.85	8. \$16.50	8. 48 kph	8. 17 1/2
9. 4/9	9. 15 7/5-8.58	9. 7 1/2	9. 3	9. 7 1/105	9. 15 5/8
10. 13 1/2	10. 7/9	10. 6 1/4	10. 7/16	10. 120	10. 120
11. 56	11. 2828	11. 2700 sec.	11. 2700 sec.	11. 89	11. 13/20
12. 61/84	12. 135	12. 233	12. 273	12. 4√2	12. 96
13. 19	13. 625	13. 24	13. 32 kph	13. 2/9	13. 13/17
14. 33	14. 13	14. 3/2	14. 1	14. 303	14. 17
15. 2/15	15. 4	15. 1	15. 5/12	15. 256	15. 9/16
16. 23.51-25.99	16. 152	16. 84 1/2	16. 729	16. \$10.80	16. 95 cents
17. 2	17. 5 1/16	17. 75%	17. 29	17. 125%	17. 12
18. 1296	18. 1/2	18. 8/9	18. 12	18. 20 1/4	18. 456
19. 7200 sec.	19. \$5	19. 37 1/2 mph	19. 311	19. 4/3	19. 2
20. \$1.08	20. 4√13	20. 6	20. 12 1/4	20. 12	20. 2
21. 195 miles	21. 2√13	21. 216	21. 5/2	21. 20	21. 2
22. 90%	22. 5/16	22. 355-8-393.2	22. 98	22. -2 7/20	22. 312
23. 31	23. \$16	23. 5/12	23. 4 inches	23. V√3 inches	23. 58-64
24. 117	24. 1/30	24. 7/8	24. 3/16	24. 294	24. 208
25. 6	25. 11/2	25. 1024	25. 60%	25. 4.73	25. 2/7
26. 6	26. 98	26. 19	26. \$1	26. 73	26. 11/18
27. 75 inches	27. 460 pesos	27. 2√3 inches	27. 7	27. 8	27. 23
28. 17	28. 6	28. 29	28. 9√5	28. 11100	28. 343
29. 4	29. 59	29. V 01	29. \$98	29. 8	29. 8
30. 3	30. 6	30. 4	30. \$48	30. 3/10	30. 12
31. 90	31. 31	31. \$12	31. 1110	31. 630	31. 102
32. 111	32. 18	32. 48 kph	32. 0	32. 96	32. 72
33. 102	33. 210	33. 420	33. 43.75 mph	33. 12.5-13.9	33. 360
34. 12	34. 1/2	34. 2√2 pesos	34. 80	34. 72	34. 192.6-212.8
35. 3/2	35. 12	35. 4	35. 320 pesos	35. V 29	35. V 65
36. 48 1/2	36. 5400 sec.	36. 42	36. 37	36. 1900 sec.	36. \$40
37. \$4	37. 7/10	37. 1/2	37. 10-195	37. \$32	37. 133
38. 3√5	38. 40%	38. 240	38. 60	38. 37 1/2	38. 87.67-96903
39. \$24	39. 62 1/2 mph	39. 56 mph	39. 10/11	39. 595 pesos	39. 112 kph
40. 104 kph	40. 155 miles	40. 4875	40. 4 1/2	40. 10	40. 325 pesos
41. 350 pesos	41. 64 kph	41. 12067-13337	41. 18/25	41. 11 1/2	41. 1 1/2
42. 4	42. 37938-41932	42. 29	42. 8091	42. 4/5	42. 6632-7330
43. 1 1/2	43. 10800 sec.	43. 10800 sec.	43. 2	43. 4.5	43. 4800 sec.
44. 17-19	44. 9484	44. 22	44. 2	44. 8051	44. 7/17
45. 62 mph	45. 54 mph	45. 2	45. 2/3	45. 63 mph	45. 4
46. 1596	46. 50.3-55.6	46. 10011	46. 42	46. 4	46. 4.1
47. 1896	47. 1/40	47. 10011	47. 100.881-111.501	47. 4692-5087	47. 210 miles
48. 1/8	48. 30	48. 5	48. 188	48. 9/7	48. 8036
49. 1/2	49. 1/500	49. 175 min.	49. 3%	49. 57	49. 7
50. 225 min.	50. 1/500	50. 27 5/5	50. 27 5/5	50. 22 2/3	50. 4/9
51. 225 min.	51. 94.5-104.5	51. 94.5-104.5	51. 94.5-104.5	51. 2	51. 63
52. 3%	52. 403 min.	52. 180 miles	52. 12	52. 214 min.	52. 66
53. 311-344	53. 1 1/2%	53. 19 1/2	53. 45 mph	53. 4%	53. 4 1/2 hrs.
54. 19.2	54. 22.5	54. 1	54. 150%	54. -13	54. 60%
55. 18	55. 350%	55. 3	55. 1	55. 250%	55. 20/4
56. 75%	56. 66 2/3%	56. 10	56. 10	56. 2 3/4	56. 9
57. 3 1/2	57. 2	57. 10	57. 72	57. 5	57. 233 1/3%
58. 6	58. 4	58. 1/64	58. 1/81	58. -1/64	58. 2
59. 1/16	59. 32	59. 6 2/5	59. 12	59. 9	59. 9
60. 2 4/5	60. 17 1/2	60. 21	60. 126 miles	60. 9	60. 16
61. 30	61. 30	61. 7	61. 13	61. 5	61. 15
62. 4	62. 12	62. 12	62. 6	62. 12	62. 14
63. 4	63. 9	63. 2√17	63. 6	63. 7	63. 33
64. 4	64. 10	64. 5	64. 2√29	64. 105 miles	64. 4
65. 4	65. 17	65. 64 π	65. 12	65. 12	65. 4√11
66. 4 π	66. 9 π	66. 326	66. 20 1/4 π	66. 30 1/4 π	66. 13
67. 24	67. 325	67. 2761	67. 345	67. 329	67. 253
68. 24	68. 2297	68. 18970	68. 3278	68. 2244	68. 2509
69. 20	69. 22111	69. 180	69. 24098	69. 21058	69. 16411
70. 1/4	70. 6	70. 180	70. 24	70. 120	70. 24
71. 235	71. 60	71. 102	71. 24	71. 360	71. 120
72. 1580	72. 10	72. 5	72. 3/8	72. 39	72. 397-440 gal.
73. 1479	73. 1/2	73. 1/8	73. 3/8	73. \$384.75-\$425.25	73. 6
74. 1/8	74. 3838-4242 cu. ft.	74. 1/81	74. 1/81	74. 1/4	74. 1/2
75. 53,010-58,590 gal.	75. 4	75. 1	75. \$141.36-\$156.24	75. 1/25	75. 27
76. 2	76. 1 9/3	76. 1	76. 2/3	76. 1 1/2	76. -1/4
77. 3	77. 2	77. -1/2	77. 3/2	77. -1/2	77. 4 1/2
78. -1/3	78. 19	78. 5	78. 5	78. +2	78. 2 1/2
79. V 5	79. V 2	79. 5	79. 5	79. V 13	79. V 29
80. 4	80. 5	80. 12	80. 6	80. 7	80. 11