

Name _____

Tie Breaker: Points scored on Stated and Geometry Problems
 + _____ + _____ + _____

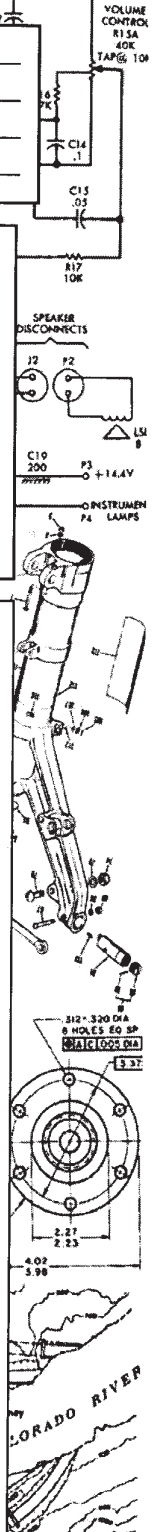
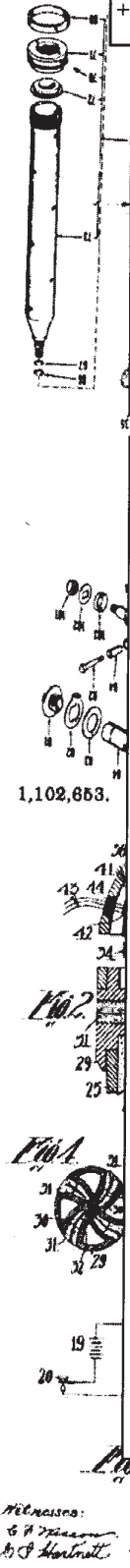
5x (Last Problem Attempted) + _____ + _____ + _____
 7x (Number Incorrect) - _____ - _____ - _____
 2x (Number Incorrect SDs) - _____ - _____ - _____
 TOTAL SCORE _____

UIL Calculator Applications

Test 10G

(District Week 2)

- DO NOT OPEN THE TEST UNTIL INSTRUCTED TO BEGIN**
- I. Calculator Applications rules and scoring—See UIL Constitution
 - II. How to write the answers
 - A. For all problems except stated problems as noted below—write three significant digits.
 1. Examples (* means correct but not recommended)
 Correct: 12.3, 123, 123.*, 1.23x10*, 1.23x10^{0*}
 1.23x10¹, 1.23x10⁰¹, .0190, 0.0190, 1.90x10⁻²
 Incorrect: 12.30, 123.0, 1.23(10)², 1.23·10², 1.230x10²,
 1.23*10², 0.19, 1.9x10⁻², 19.0x10⁻³, 1.90E-02
 2. Plus or minus one digit error in the third significant digit is permitted.
 - B. For stated problems
 1. Except for integer, dollar sign, and significant digit problems, as detailed below, answers to stated problems should be written with three significant digits.
 2. Integer problems are indicated by (integer) in the answer blank. Integer problems answers must be exact, no plus or minus one digit, no decimal point or scientific notation.
 3. Dollar sign (\$) problems should be answered to the exact cent, but plus or minus one cent error is permitted. Answers must be in fixed notation. The decimal point and cents are required for exact-dollar answers.
 4. Significant digit problems are indicated by underlined numbers and by (SD) in the answer blank. See the UIL Constitution and Contest Manual for details.
 - III. Some symbols used on the test
 - A. Angle measure: rad means radians; deg means degrees.
 - B. Inverse trigonometric functions: arcsin for inverse sine, etc.
 - C. Special numbers: π for 3.14159 ...; e for 2.71828 ...
 - D. Logarithms: Log means common (base 10); Ln means natural (base e); exp(u) means e^u.



Witnesses:
 G. A. ...
 A. C. ...

10G-1. $4.5 + 1.87 - 6.22$ ----- 1= _____

10G-2. $55.7/90.1 + 0.481 - 0.618$ ----- 2= _____

10G-3. $(-0.953 - 0.25 + 0.55 + 0.245)/(-0.733)$ ----- 3= _____

10G-4. $\frac{(6060 - 2550)}{\{(4.59)/(9.76)\}} + (7010 - 4720)$ ----- 4= _____

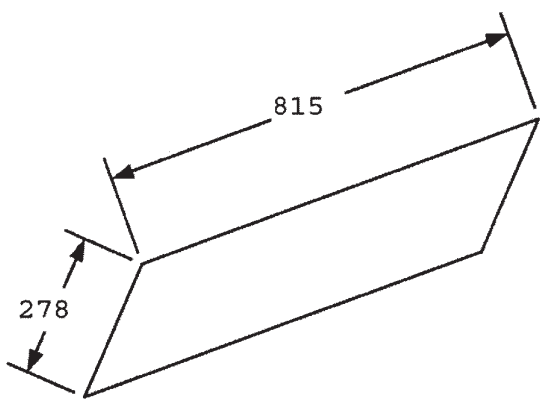
10G-5. $\frac{\{(-9.81 - 8.42 + 8.66)/(0.829)\}}{\{(4.37)(3.3)/(\pi)\}}$ ----- 5= _____

10G-6. Two consecutive integers sum to 145. What is their product? ----- 6= _____ integer

10G-7. How many seconds are in a week? ----- 7= _____

10G-8. The American Recovery and Reinvestment Act of 2009 appropriated approximately \$1.17 trillion. If the total population of the United States in 2009 was 306 million, what was the per capita share of these funds? ----- 8= \$ _____

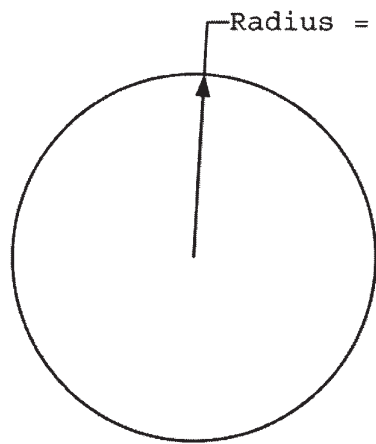
10G-9. PARALLELOGRAM



Perimeter = ?

10G-9 = _____

10G-10. CIRCLE



Radius = 4.08

Area = ?

10G-10 = _____

10G-11. $\frac{(4530 + 807)}{(0.101 - 0.137)} + \frac{(-13600 + 29900)}{(2.57 - 2.46)}$ ----- 11= _____

10G-12. $\frac{(0.0102)(-0.0977) - (0.0212 + 0.0205)(-0.0302)}{(-0.00549 + 0.0113 + 0.00811)(-0.0697)}$ ----- 12= _____

10G-13. $\frac{(5.58)(430 - 101)\{-12.3 - (-3.96)(2.74)\}}{(-1.19 + 1.15)(7.29 - 19.7)}$ ----- 13= _____

10G-14. $\frac{299 + 84.8 - 92.7}{(0.416)(9.6)} - \frac{(13600)(8.42 \times 10^{-4} + 3.46 \times 10^{-4})}{0.94 + 0.242 - 0.303}$ ----- 14= _____

10G-15. $\frac{1.48 \times 10^5 + 1.73 \times 10^6 - (79600 + 1.99 \times 10^5)(1.84 - \pi)}{(-652)(-0.105)(-0.954)(476 - 1340 + 3120)}$ ----- 15= _____

10G-16. A snood player shoots one snood per second. If he finishes all 50 levels of the "puzzle" game in 62 min, what is the average number of shots per level? There is an 8 second pause between levels. ----- 16= _____ shots

10G-17. Hutchins Avenue in Ballinger, Texas is 1.75 mi long and 48 ft wide. If the street pavement is 5 in thick, how many "12-yard" capacity truckloads were needed to deliver the pavement? A "yard" is actually a cubic yard. ----- 17= _____

10G-18. What is the percent difference in two measurements of the speed of light, 299,792,458 m/s and 299,710,000 m/s? --- 18= _____ % (SD)

10G-19. RIGHT TRIANGLE

Area = 52,000

10G-19 = _____

10G-20. RIGHT TRIANGLE

10G-20 = _____

10G-21. $\left[\frac{(0.914)(0.772)}{\pi} + 0.176 \right]^2 + \sqrt{3.59 \times 10^{-6}}$ ----- 21= _____

10G-22. $\frac{-0.179 + 1/(\pi)}{1/(0.196) + 7.69} + \frac{1}{(-31.3)}$ ----- 22= _____

10G-23. $(0.0744)(3.63)\sqrt{(-0.363)^2/0.112} + 1/\sqrt{\pi + 3.26}$ ----- 23= _____

10G-24. $\frac{\sqrt{0.0372 + 0.0215 + (0.00157)/(0.0874)}}{0.0111 + 0.00826}$ ----- 24= _____

10G-25. $[-41.9 + \sqrt{339}]^2 \times [532 + 2630]^2 \times \sqrt{6.74/456}$ ----- 25= _____

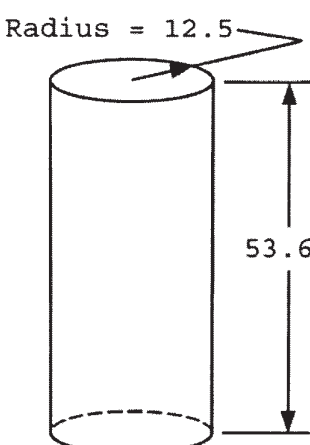
10G-26. Dana is 12 years old and is one-fifth the age of his grandfather. In how many years will Dana be one-third the age of his grandfather? ----- 26= _____ yr

10G-27. Gabe has 16 coins. He has twice as many dimes as quarters, one more penny than quarters, and the number of quarters is one third the sum of the number of nickels and dimes. How much money does he have? ----- 27= \$ _____

10G-28. If Humpty Dumpty hit the ground at a velocity of 18 mph, how tall was the wall he fell off? ----- 28= _____ ft

10G-29.

CYLINDER



Radius = 12.5

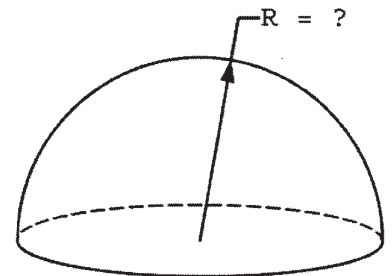
53.6

Volume = ?

10G-29 = _____

10G-30.

HEMISPHERE



R = ?

Total Surface Area = 0.209

10G-30 = _____

10G-31. $\frac{1}{0.00152} + \frac{1}{\sqrt{7.07 \times 10^{-6}}} + \frac{(1.98 + 12.6 - 1.91)^2}{\sqrt{0.567 - 0.373}}$ ----- 31= _____

10G-32. $\sqrt{\frac{1/(838 - 415)}{(127)(1.09 + 0.673)^2}} + (-0.0672)^2(0.315)$ ----- 32= _____

10G-33. $\frac{\sqrt{(30.5)/\{(6.2)/\sqrt{68.4}\}}}{5.37 + (0.992)(1.9)} + \{0.669 + 3.52\}^{1/2}$ ----- 33= _____

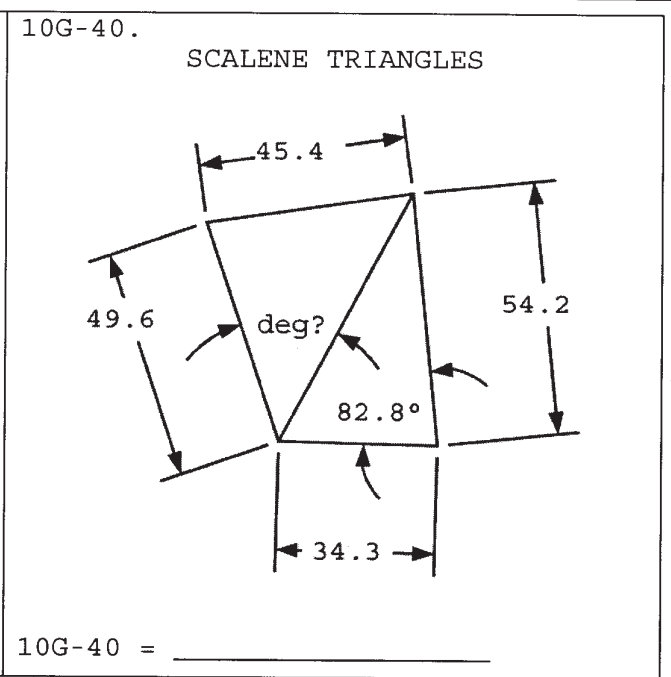
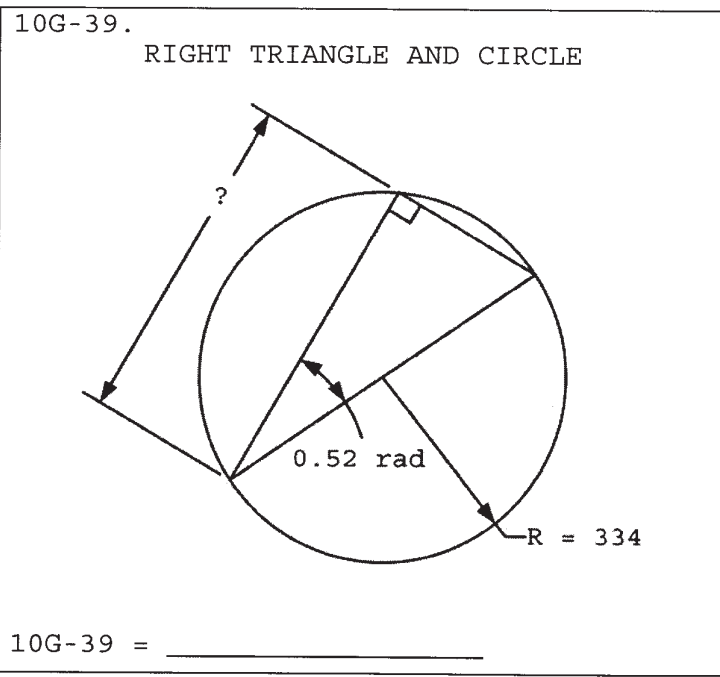
10G-34. $\frac{[0.133/(0.981 + 0.589) + 1/(7.43)]^{1/2}}{(2.86 + 7.06)^2 \times \sqrt{8.9 - (5.98)}}$ ----- 34= _____

10G-35. $\frac{(-0.00796 + 0.0141)^2 - (0.0532 - 0.0058)^2}{\sqrt{(195)(0.614)(223 + 170 - 1100)^2}}$ ----- 35= _____

10G-36. What is $349,441^{-902,521}$? ----- 36= _____

10G-37. Andrea walked 0.88 mi one day. The next day she walked 88% of 0.88 mile. The third day, she walked 88% of the preceding day's distance. How far total will she eventually have walked? ----- 37= _____ mi

10G-38. Walking along the outer circular edge of a rotating merry-go-round, Samantha completes one revolution in 11 sec walking one direction and 21 sec walking the other direction. What is the rotational speed of the merry-go-round? ----- 38= _____ RPM



10G-41. $\frac{10^{-(5.32 - 6.74)}}{0.404 + 0.3}$ ----- 41= _____

10G-42. $-9140 e^{0.107} + (-7050) e^{-0.132}$ ----- 42= _____

10G-43. $(-2.84 \times 10^5) \text{Log} \{ (6.31 \times 10^5) (1.74 + 1/0.497) \}$ ----- 43= _____

10G-44. $(7.65 + 25.9)^{-(0.67 + 0.657)}$ ----- 44= _____

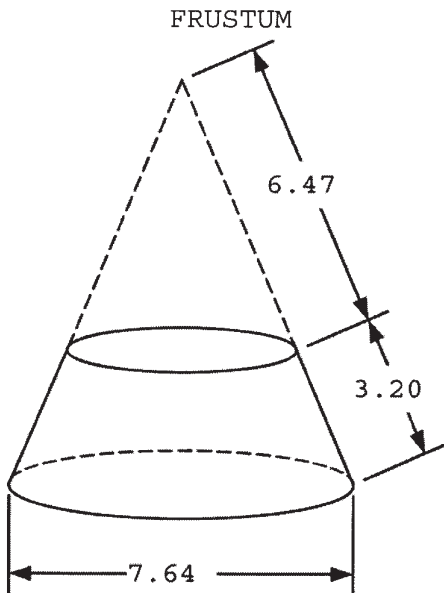
10G-45. (deg) $\sin \left[90^\circ \times \frac{(1.69 \times 10^{-4})}{(5.66 \times 10^{-4})} \right] + \cos \{ 97^\circ - 54.8^\circ \}$ ----- 45= _____

10G-46. Twelve 2.5 inch sized onions are needed for a recipe to feed 18 people. How many 4 inch sized onions are needed to feed 82 people? ----- 46= _____

10G-47. On October 22, 2007, there were 19,951,900 Facebook users in the United States. On Jun 18, 2008 the number grew to 26,481,100, and on January 4, 2009 it was 42,089,200. If the growth is exponential, how many days after January 4, 2009 will the number of US Facebook users reach 100 million? 47= _____ days

10G-48. Solve z if $\pi z^7 + 35z^5 = 100 - 285z$. ----- 48= _____

10G-49.

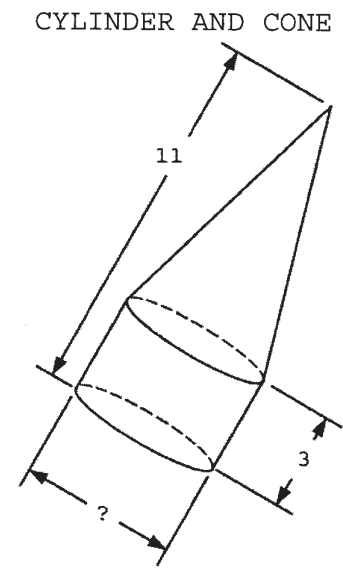


FRUSTUM

Volume = ?

10G-49 = _____

10G-50.



CYLINDER AND CONE

Total Surface Area of Cylinder = Total Surface Area of Cone

10G-50 = _____

10G-51. $10^{+(0.276)} + 10^{-(0.278)} + [10^{(0.893/0.762)} - 10^{(0.147)}]^{1/2}$ 51= _____

10G-52. $\frac{(6.86 - 3.75) e^{(0.17)(2.58)}}{e^{-(6.77 - 3.23)}}$ ----- 52= _____

10G-53. $\frac{\text{Ln}\{(76700)(58600)(22900)\}}{35100 + (3490) \text{Ln}(71300)}$ ----- 53= _____

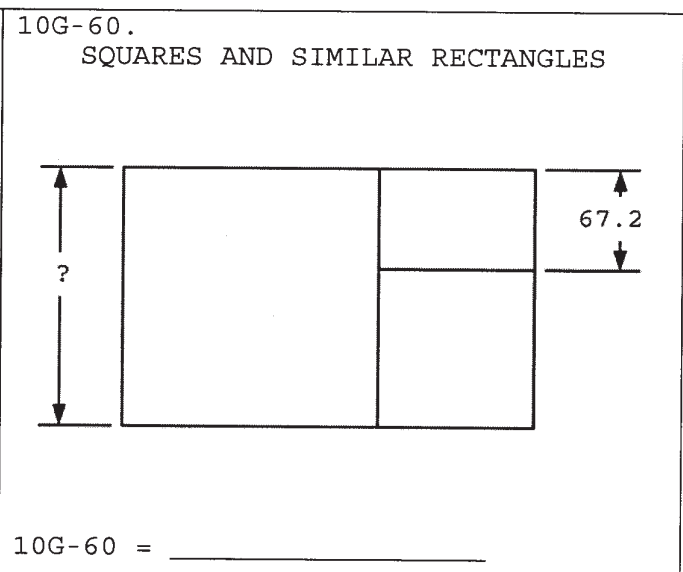
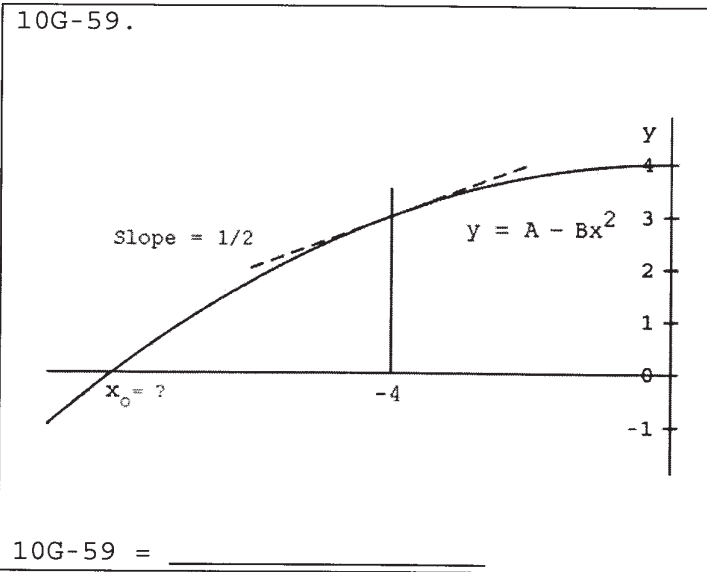
10G-54. $\frac{(-0.138 + 0.669)^{-0.512}}{(0.0842)^{-(0.334 + 0.486)}}$ ----- 54= _____

10G-55. (rad) $\frac{\arctan\{7.97 + (3.77)(0.731)\}}{\arcsin\{(54.4 + 9.87)/249\}}$ ----- 55= _____

10G-56. (rad) Solve for b if $0 < b < 0.3$ and $\int_0^b \sqrt{3 + \sin(5x)} \cos(5x) dx = 0.3$. ----- 56= _____

10G-57. A spherical snowball sublimates such that its rate of volume loss is proportional to its surface area. If its diameter changes from 5 inches to 4 inches in 2 hours, how long would it then take for the snowball to disappear completely? ----- 57= _____ hr

10G-58. Evaluate S_2 if $S = 3RQ$, $R = \begin{bmatrix} 9 & 4 & 6 \\ 4 & -12 & 8 \\ 6 & 8 & 9 \end{bmatrix}$ and $Q = \begin{bmatrix} 8 \\ -3 \\ -1 \end{bmatrix}$. 58= _____



10G-61.
$$\frac{\sqrt{(2.49)^3} \times \{e^{(-3.48)} (-0.0979)\}^3}{\sqrt[3]{e^{(3.59)} \times e^{(-0.403)}}}$$
 ----- 61= _____

10G-62. (rad)
$$\frac{\sin(0.0899)}{\cos(0.0899)} \sqrt{1 - \{\sin(0.971 \times 8.19)\}^2}$$
 ----- 62= _____

10G-63. (rad)
$$\frac{1}{(470)(0.111)} \ln\{(0.327) + (-0.277)\sin(3.78)\}$$
 ----- 63= _____

10G-64.
$$-\frac{1}{(8.6)} + \frac{1}{3(8.6)^3} - \frac{1}{5(8.6)^5} + \frac{1}{7(8.6)^7}$$
 ----- 64= _____

10G-65.
$$\frac{(844)}{(-0.202)} - \frac{(0.75)}{(-0.0332)^2} \ln \left[\frac{(-0.0354)^2 + (6.44 \times 10^{-4})}{(0.998) + \sqrt{4.42}} \right]$$
 ----- 65= _____

10G-66. The end of a 20-ft long dog leash slides along a taut 100-ft long clothesline. What is the height of the clothesline if the roaming area is 3200 ft²? ----- 66= _____ ft

10G-67. A 6 ft long piece of dental floss is pulled tight 1 yard above the ground. It is then relaxed by moving one end 5.3 in towards the other end. Assuming the sagged floss forms a circular arc, how far above the ground is the midpoint of the floss? ----- 67= _____ ft

10G-68. The velocity of a car increases with time at $v(t) = 20t$ mph, where t is in seconds from the time the car began moving. How long before the car is 300 ft from where it began? ----- 68= _____ sec

10G-69. RIGHT TRIANGLES

10G-69 = _____

10G-70. EQUILATERAL AND CONGRUENT ISOSCELES TRIANGLES

10G-70 = _____

10G-1 = 0.150 = 1.50×10^{-1}	10G-11 = -68.1 = -6.81×10^1	10G-21 = 0.162 = 1.62×10^{-1}
10G-2 = 0.481 = 4.81×10^{-1}	10G-12 = -0.271 = -2.71×10^{-1}	10G-22 = -0.0211 = -2.11×10^{-2}
10G-3 = 0.557 = 5.57×10^{-1}	10G-13 = -5360 = -5.36×10^3	10G-23 = 0.688 = 6.88×10^{-1}
10G-4 = 9750 = 9.75×10^3	10G-14 = 54.5 = 5.45×10^1	10G-24 = 14.3 = 1.43×10^1
10G-5 = -2.51 = -2.51×10^0	10G-15 = -15.2 = -1.52×10^1	10G-25 = 6.71×10^8
10G-6 = 5256 integer	10G-16 = 66.6 = 6.66×10^1	10G-26 = 12.0 = 1.20×10^1
10G-7 = 605,000 = 6.05×10^5	10G-17 = 571 = 5.71×10^2	10G-27 = \$1.54
10G-8 = \$3,823.53	10G-18 = -0.028 (2SD) = -2.8×10^{-2}	10G-28 = 10.8 = 1.08×10^1
10G-9 = 2190 = 2.19×10^3	10G-19 = 222 = 2.22×10^2	10G-29 = 26,300 = 2.63×10^4
10G-10 = 52.3 = 5.23×10^1	10G-20 = 28.1 = 2.81×10^1	10G-30 = 0.149 = 1.49×10^{-1}

10G-31 = 1400 = 1.40×10^3	10G-41 = 37.4 = 3.74×10^1	10G-51 = 6.08 = 6.08×10^0	10G-61 = 3.77 = 3.77×10^0
10G-32 = 0.00387 = 3.87×10^{-3}	10G-42 = -16400 = -1.64×10^4	10G-52 = 166 = 1.66×10^2	10G-62 = 0.00887 = 8.87×10^{-3}
10G-33 = 2.93 = 2.93×10^0	10G-43 = -1.81×10^6	10G-53 = 0.000435 = 4.35×10^{-4}	10G-63 = -0.0136 = -1.36×10^{-2}
10G-34 = 0.00278 = 2.78×10^{-3}	10G-44 = 0.00945 = 9.45×10^{-3}	10G-54 = 0.182 = 1.82×10^{-1}	10G-64 = -0.116 = -1.16×10^{-1}
10G-35 = -2.86×10^{-7}	10G-45 = 1.19 = 1.19×10^0	10G-55 = 5.66 = 5.66×10^0	10G-65 = 856 = 8.56×10^2
10G-36 = $4.80 \times 10^{-5}, 003, 012$	10G-46 = 13.3 = 1.33×10^1	10G-56 = 0.190 = 1.90×10^{-1}	10G-66 = 15.0 = 1.50×10^1
10G-37 = 7.33 = 7.33×10^0	10G-47 = 542 = 5.42×10^2	10G-57 = 8.00 = 8.00×10^0	10G-67 = 2.03 = 2.03×10^0
10G-38 = 4.16 = 4.16×10^0	10G-48 = 0.350 = 3.50×10^{-1}	10G-58 = 180 = 1.80×10^2	10G-68 = 4.52 = 4.52×10^0
10G-39 = 580 = 5.80×10^2	10G-49 = 95.1 = 9.51×10^1	10G-59 = -8.00 = -8.00×10^0	10G-69 = 0.0823 = 8.23×10^{-2}
10G-40 = 47.5 = 4.75×10^1	10G-50 = 4.67 = 4.67×10^0	10G-60 = 176 = 1.76×10^2	10G-70 = 5260 = 5.26×10^3