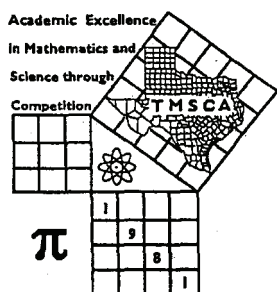


Grader Initials: 5x [Last Problem Attempted] 7x [Number Incorrect] 2x [Number Incorrect Sds] TOTAL SCORE	1st _____ + _____ - _____ - _____	2nd _____ + _____ - _____ - _____	3rd _____ + _____ - _____ - _____
Tie Breaker: Points scored on S & G Problems			
PLACE ID LABEL IN THIS SPACE			



**TMSCA HIGH SCHOOL
 CALCULATOR
 STATE MEET [E]
 MARCH 20, 2010**

GENERAL DIRECTIONS

I. About this test:

- A. You will be given 30 minutes to take this test.
- B. There are 70 problems on this test.

II. How to write the answers:

- A. For all problems except stated problem as noted below write three significant digits.
 - 1. Examples (* means correct, but not recommended)
 - Correct: 12.3, 123, 123.*, 1.23x10*, 1.23x10⁰*, 1.23x10¹, 1.23x10⁰¹, .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. 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. Plus or minus one digit error in the last significant digit is permitted.

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).

IV. Scoring:

- A. All problems answered correctly are worth FIVE points. TWO points will be deducted for all problems answered incorrectly or skipped before the last problem attempted.

10E-1. $-9.12 + 6.26 - 62.2$ ----- 1= _____

10E-2. $(-0.928 + 0.0586) \times (-0.0481) - 0.4$ ----- 2= _____

10E-3. $(3.42 + 3.65 - 1.6)/(5.91) + 0.766$ ----- 3= _____

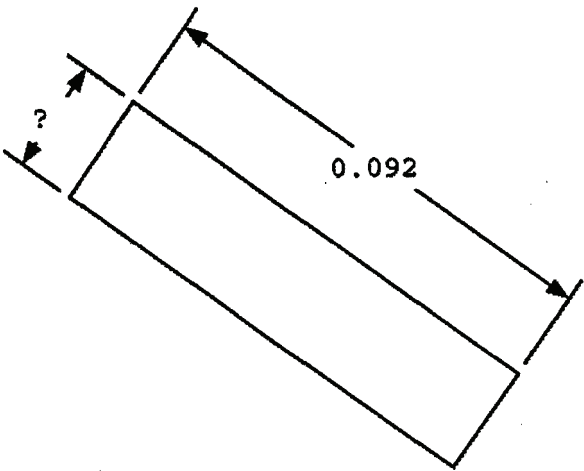
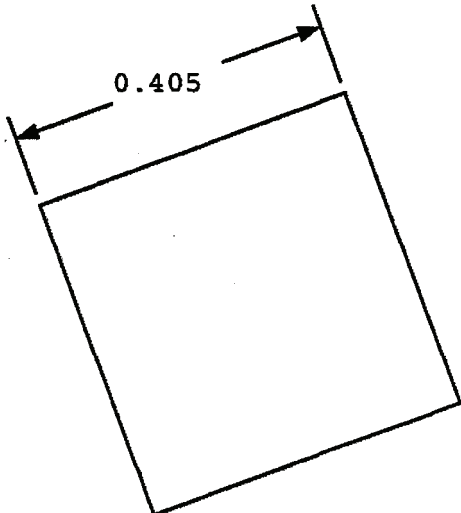
10E-4. $\frac{5600 + 5750 - 2650}{(-0.0465)(0.0273)(0.00467)}$ ----- 4= _____

10E-5. $\frac{\{(-0.333 - 0.0527 + 0.0774)/(0.384)\}}{\{(-0.292)(0.0237)/(0.888)\}}$ ----- 5= _____

10E-6. What negative number equals 7 times its reciprocal? --- 6= _____

10E-7. What is the product of 6 times pi and 10 times the natural logarithm of 100? ----- 7= _____

10E-8. If the world population in 2009 was 6,707,000,000, and the average weight of one person is 140 lbs, what is the total combined weight of all the people in the world? ----- 8= _____ lbs

<p>10E-9. RECTANGLE</p>  <p style="text-align: center;">Perimeter = 0.229</p> <p>10E-9 = _____</p>	<p>10E-10. SQUARE</p>  <p style="text-align: center;">Area = ?</p> <p>10E-10 = _____</p>
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10E-11. $\frac{(3810 + 2260)}{(0.329 - 0.509)} + \frac{(-34600 + 44100)}{(4.93 - 3.16)}$ ----- 11= _____

10E-12. $\frac{(-0.37)(3.3) - (-7.74 + 4.24)(2.21)}{(-5.53 + 12.6 + 4.67)(\pi)}$ ----- 12= _____

10E-13. $\frac{\{(-0.497 + 0.199)(94.1 + 181) + (-93.5)\}(-0.455)}{(-0.426)(0.254 + 1.14)(-0.457)}$ ----- 13= _____

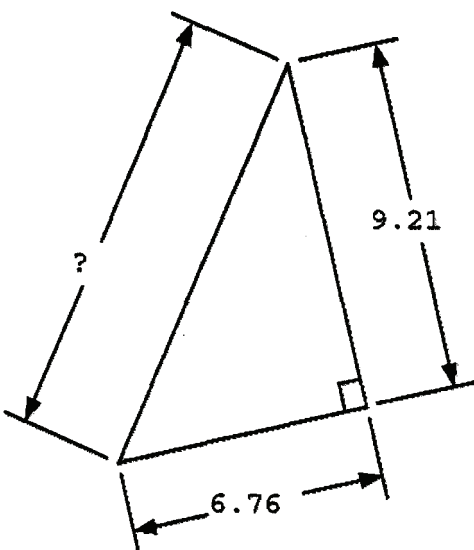
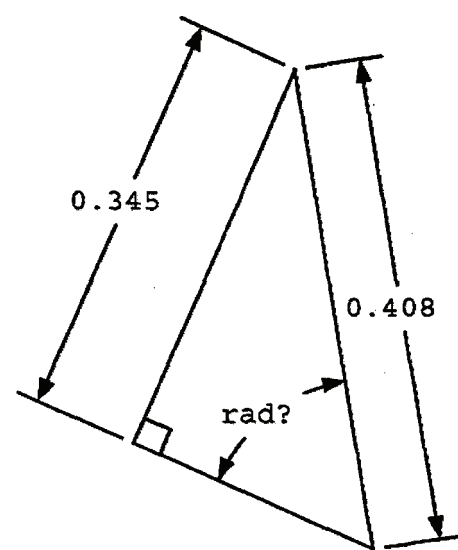
10E-14. $\frac{(46 + 21.3)(4.38 + 5.6)(53.4 - 59.5)}{(-97.6 + 23.9)(-27.8)\{(78.5)/(-62.2)\}}$ ----- 14= _____

10E-15. $\frac{16400 + 1.67 \times 10^5 - (72900 + 73300)(1.21 - \pi)}{(-628)(-8.47)(-7.07)(682 - 514 + 835)}$ ----- 15= _____

10E-16. The world's record weightlifter in 2009 was Hossein Reza Zadeh of Iran who lifted 581 lbs. What is the percent difference between this weight and the weight of a student's backpack, 25 lbs? ----- 16= _____ %

10E-17. A bed sheet cloth is 0.004 in thick. How thick is a folded-up bed sheet if it is folded in half six times? ----- 17= _____ in

10E-18. Rich wants to invest \$25,000 for six years. If he has a total of \$26,500 after three years, what will he have after six years? ----- 18= \$ _____

<p>10E-19. RIGHT TRIANGLE</p>  <p style="text-align: right;">10E-19 = _____</p>	<p>10E-20. RIGHT TRIANGLE</p>  <p style="text-align: right;">10E-20 = _____</p>
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10E-21. $\left[\frac{(0.703)(0.103)}{-6.81} + 0.0106 \right]^2 + \sqrt{2.94 \times 10^{-18}}$ ----- 21= _____

10E-22. $\frac{1}{0.0607 + 0.366} + \frac{1}{0.384 - 0.681} + \frac{1}{(0.248)}$ ----- 22= _____

10E-23. $(-439)(-0.0436) + \sqrt{(296)/(6.66)} + [(0.686)(\pi)]^2$ ----- 23= _____

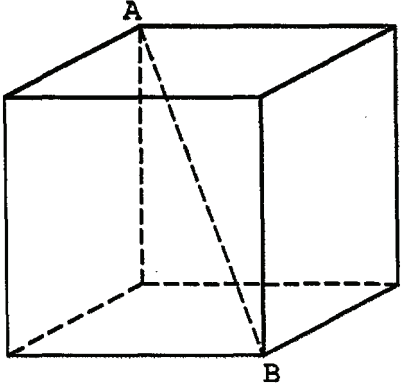
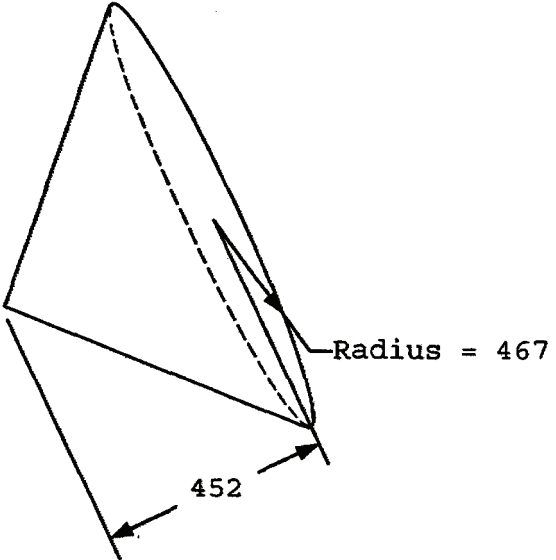
10E-24. $\frac{\sqrt{2.77 + 2.15 + (25.8)/(5.73)}}{-6.18 + 3.42}$ ----- 24= _____

10E-25. $\left[\frac{7.76 + 0.921 + \sqrt{0.988/0.172}}{0.0264 + 0.0186} \right]^2$ ----- 25= _____

10E-26. At a public event, there were 870 girls and 790 boys. How many students were at the event? ----- 26= _____ (SD)

10E-27. The number of cows worldwide grew from 720 million in 1950 to 1.53 billion in 2001. Assuming geometric growth, how many cows are there in 2010? ----- 27= _____

10E-28. It was reported in 2009 that in the US there was one birth every 7 sec, one death every 13 sec and one immigration into the US every 35 sec. What is the percent error in 11 sec, the reported time for the net gain of one person? ----- 28= _____ %

<p>10E-29.</p> <p style="text-align: center;">CUBE</p>  <p style="text-align: center;">AB = 9.08</p> <p style="text-align: center;">Volume = ?</p> <p>10E-29 = _____</p>	<p>10E-30.</p> <p style="text-align: center;">CONE</p>  <p style="text-align: right;">Radius = 467</p> <p style="text-align: center;">452</p> <p style="text-align: center;">Total Surface Area = ?</p> <p>10E-30 = _____</p>
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10E-31. $\frac{1}{0.0036} + \frac{1}{\sqrt{1.78 \times 10^{-5}}} + \frac{(4.42 + 4.49 - 2.55)^2}{\sqrt{2.47 - 2.43}}$ ----- 31= _____

10E-32. $\left[\frac{-7.4}{58.7 + 40.3} + 0.328 \right] \times \left\{ 1160 + (-49.5)^2 - \sqrt{6.80 \times 10^6} \right\}$ ----- 32= _____

10E-33. $\frac{[0.00107 / (0.199 + 0.854) + 1 / (914)]^{1/2}}{(553 + 557)^2 \times \sqrt{526 - (-419)}}$ ----- 33= _____

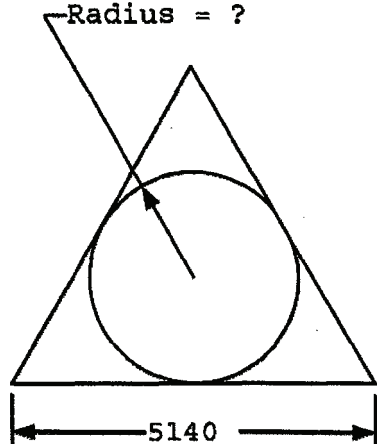
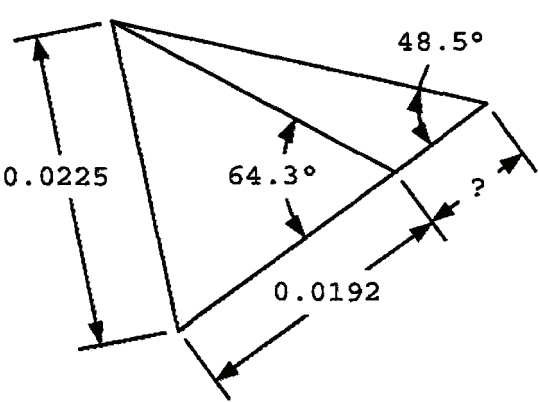
10E-34. $\frac{[(56000 - 10900) (0.317 / 0.597)]^{1/2}}{(0.164)^2 + (0.103 + 0.158)^2 + 0.0454}$ ----- 34= _____

10E-35. $\frac{\left[\frac{\sqrt{26.9 + 41.4}}{(1920)(3280) + (2510)^2} \right]}{\sqrt{59 + 90.4} + (\pi - 2.73)^2}$ ----- 35= _____

10E-36. The volume of the Grand Canyon is 2500 cubic miles. If this volume were spread uniformly over the entire surface of the earth, how thick would the added layer be? ----- 36= _____ in

10E-37. A mother sees her small child running away from her and begins to give chase to catch her. The child was 30 ft away and was moving at 4 ft/s. If the mom can run a mile in 8 min 25 s, how long will it take for her to catch her child? 37= _____ s

10E-38. Two strobes are switched on and are initially "in sync". One flashes 44 times per minute, and the other flashes 64 times per minute. What are the total number of flashes up to and including the instant that there are once again in sync? Include in the count both the initial and final "in sync" flashes. ----- 38= _____ integer

<p>10E-39. EQUILATERAL TRIANGLE AND CIRCLE</p> <p>Radius = ?</p>  <p style="text-align: center;">5140</p> <p>10E-39 = _____</p>	<p>10E-40. SCALENE TRIANGLES</p>  <p>0.0225 64.3° 0.0192 48.5° ?</p> <p>10E-40 = _____</p>
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10E-41. $\frac{10^{-(5.77 - 9.98)}}{-8210 + 8000}$ ----- 41= _____

10E-42. $0.109 e^{0.94} + (0.0495) e^{-0.22}$ ----- 42= _____

10E-43. $-0.162 + (0.801)\ln(0.483 - 0.203)$ ----- 43= _____

10E-44. $(-1.64 \times 10^{-6} + 2.15 \times 10^{-6})^{-(0.666 + 0.949)}$ ----- 44= _____

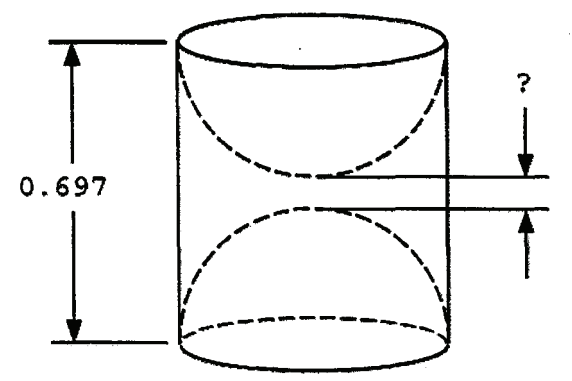
10E-45. (deg) $\frac{\cos\{(44.9^\circ)/(2.48)\}}{\sin\{61.1^\circ - 592^\circ\}}$ ----- 45= _____

10E-46. Rolled fondant is used to ice the top and sides of a cake. If a 12-oz can of fondant is used to ice a 3.5-in tall cake, how many cans will be needed to ice a 9.2-in tall cake of identical shape if the fondant thickness is constant? ----- 46= _____ integer

10E-47. The US Consumer Price Index (CPI) is a measure of the cost of living. The CPI in even numbered years starting in 2000 and ending in 2008 was 2.3, 2, 2, 3.6, and 3.9. Calculate the regression coefficient for the data. ----- 47= _____

10E-48. (rad) For what positive value of k does $5k^5 - 20k^4 + 345k - 100 = \frac{20}{\sin(k/10)}$? ----- 48= _____

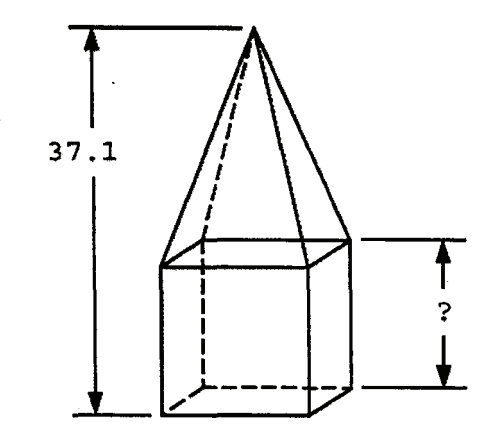
10E-49.
CYLINDER AND HEMISPHERICAL CAVITIES



Total Surface Area = 2.55

10E-49 = _____

10E-50.
CUBE AND SQUARE PYRAMID



Pyramid Volume = $\frac{1}{2}$ [Cube Volume]

10E-50 = _____

10E-51. $10^{+(0.966)} + 10^{-(0.51)} + [10^{(0.237/0.69)} - 10^{(0.186)}]^{1/2}$ --- 51= _____

10E-52. $\frac{1 + e^{+(0.102 + (0.311)(1.33))}}{(6.24 \times 10^{-4})(4.53 - e^{(-0.462)})}$ ----- 52= _____

10E-53. $\frac{\text{Log}\{0.00126 + (0.0403)(0.0366)\}}{8.42 - \text{Log}\{(65.3)/(0.0124)\}}$ ----- 53= _____

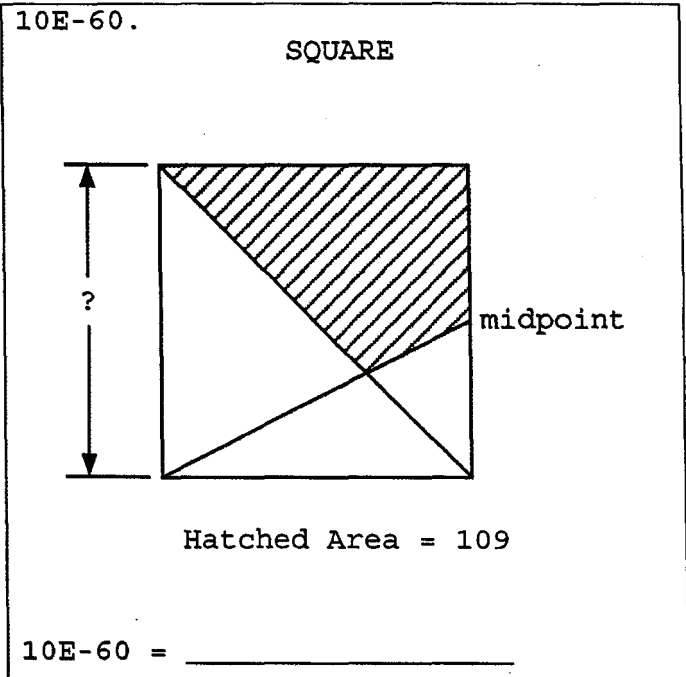
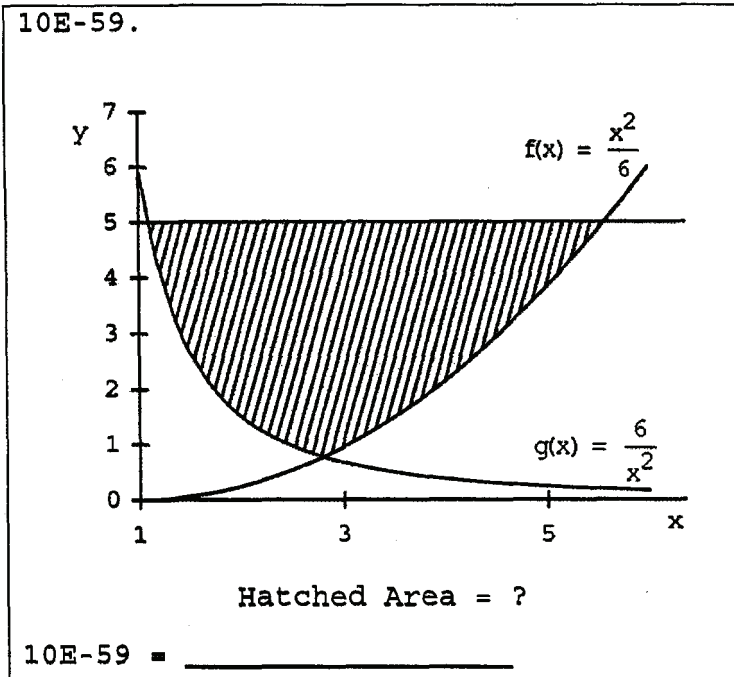
10E-54. $\frac{1}{(0.241)^{(-0.998)}} + (0.815 + 0.286)^{(0.304 - 0.292)}$ ----- 54= _____

10E-55. (rad) $\frac{\arctan\{27.2 + (9.47)(0.71)\}}{\arcsin\{(0.807 + 0.551)/1.69\}}$ ----- 55= _____

10E-56. At what value of x does the slope of the function $g(x) = -4x^2 + 5x - 7$ equal $-5x + 4$? ----- 56= _____

10E-57. A square grows by increasing its perimeter at a rate of 1 in/min. What is the area of the square when the area is growing at a rate of 5 in²/min? ----- 57= _____ in²

10E-58. Solve w if the determinant of $\begin{bmatrix} 7 & w & 4 \\ 5 & -2 & 9 \\ w & 1 & 6 \end{bmatrix} = 17$, and w is negative. ----- 58= _____



10E-61. $\frac{\sqrt{(8.87)^3} \times \{e^{(2.31)(0.253)}\}^3}{\sqrt[3]{e^{(5.86)} \times e^{(\pi)}}}$ ----- 61= _____

10E-62. $(92.8 - 10.5)^2 + (5.27 + 5.5)e^{\ln(23.9)}$ ----- 62= _____

10E-63. (rad) $\frac{1}{(5200)(0.111)} \ln\{(0.0833) + (-0.0357)\sin(1.71)\}$ ----- 63= _____

10E-64. $-\frac{1}{(4.1)} + \frac{1}{3(4.1)^3} - \frac{1}{5(4.1)^5} + \frac{1}{7(4.1)^7}$ ----- 64= _____

10E-65. (rad) $e^{(6.95)} \left[\frac{(56.7)\sin(3.89) - (13.2)\cos(-1.15)}{(-9.94)\sqrt{(56.7)^2 + (13.2)^2}} \right]$ ----- 65= _____

10E-66. Don peels an orange in 40 s, and Daniel peels one in 1 min 12 s. Don starts peeling 800 oranges at 8 AM, and after time t, Daniel joins him and they work together until all oranges are peeled, finishing at 3 PM. What is t? ----- 66= _____ min

10E-67. A machinist vise opens 4 inches and is closed by a screw that advances by 0.3 inches per revolution. If the handle extends 8 inches from the axis of the screw, how far does the tip of the handle travel in closing the vise from full open to full closed? ----- 68= _____ ft

10E-68. An 8 ft cord is sectioned into three pieces to form a right triangle. If the hypotenuse is 3.7 ft, what is the ratio of the lengths of the other two pieces, a number greater than 1? ----- 68= _____

10E-69. ISOSCELES TRAPEZOID

Trapezoid Area = 884

M = midpoint
AM = BM = ?

10E-69 = _____

10E-70. RECTANGLE AND SEMICIRCLE

Shaded Areas = Hatched Area

10E-70 = _____

10E-1 = -65.1 = -6.51×10^1	10E-11 = -28400 = -2.84×10^4	10E-21 = 2.79×10^{-9}
10E-2 = -0.358 = -3.58×10^{-1}	10E-12 = 0.177 = 1.77×10^{-1}	10E-22 = 3.01 = 3.01×10^0
10E-3 = 1.69 = 1.69×10^0	10E-13 = 294 = 2.94×10^2	10E-23 = 30.5 = 3.05×10^1
10E-4 = -1.47×10^9	10E-14 = 1.58 = 1.58×10^0	10E-24 = -1.11 = -1.11×10^0
10E-5 = 103 = 1.03×10^2	10E-15 = -0.0123 = -1.23×10^{-2}	10E-25 = 60600 = 6.06×10^4
10E-6 = -2.65 = -2.65×10^0	10E-16 = -95.7 = -9.57×10^1	10E-26 = 1660 (3SD) = 1.66×10^3
10E-7 = 868 = 8.68×10^2	10E-17 = 0.256 = 2.56×10^{-1}	10E-27 = 1.75×10^9
10E-8 = 9.39×10^{11}	10E-18 = \$28,090.00	10E-28 = 3.96 = 3.96×10^0
10E-9 = 0.0225 = 2.25×10^{-2}	10E-19 = 11.4 = 1.14×10^1	10E-29 = 144 = 1.44×10^2
10E-10 = 0.164 = 1.64×10^{-1}	10E-20 = 1.01 = 1.01×10^0	10E-30 = 1,640,000 = 1.64×10^6

10E-31 = 717 = 7.17x10 ²	10E-41 = -77.2 = -7.72x10 ¹	10E-51 = 10.4 = 1.04x10 ¹	10E-61 = 7.59 = 7.59x10 ⁰
10E-32 = 254 = 2.54x10 ²	10E-42 = 0.319 = 3.19x10 ⁻¹	10E-52 = 1100 = 1.10x10 ³	10E-62 = 7030 = 7.03x10 ³
10E-33 = 1.21x10 ⁻⁹	10E-43 = -1.18 = -1.18x10 ⁰	10E-53 = -0.546 = -5.46x10 ⁻¹	10E-63 = -0.00526 = -5.26x10 ⁻³
10E-34 = 1100 = 1.10x10 ³	10E-44 = 1.45x10 ¹⁰	10E-54 = 1.24 = 1.24x10 ⁰	10E-64 = -0.239 = -2.39x10 ⁻¹
10E-35 = 5.29x10 ⁻⁸	10E-45 = -6.01 = -6.01x10 ⁰	10E-55 = 1.65 = 1.65x10 ⁰	10E-65 = 79.3 = 7.93x10 ¹
10E-36 = 0.804 = 8.04x10 ⁻¹	10E-46 = 7 integer	10E-56 = 0.333 = 3.33x10 ⁻¹	10E-66 = 216 = 2.16x10 ²
10E-37 = 4.65 = 4.65x10 ⁰	10E-47 = 0.827 = 8.27x10 ⁻¹	10E-57 = 100 = 1.00x10 ²	10E-67 = 55.9 = 5.59x10 ¹
10E-38 = 29 integer	10E-48 = 0.941 = 9.41x10 ⁻¹	10E-58 = -2.96 = -2.96x10 ⁰	10E-68 = 5.52 = 5.52x10 ⁰
10E-39 = 1480 = 1.48x10 ³	10E-49 = 0.0795 = 7.95x10 ⁻²	10E-59 = 10.6 = 1.06x10 ¹	10E-69 = 28.7 = 2.87x10 ¹
10E-40 = 0.00826 = 8.26x10 ⁻³	10E-50 = 14.8 = 1.48x10 ¹	10E-60 = 16.2 = 1.62x10 ¹	10E-70 = 3.65 = 3.65x10 ⁰