8

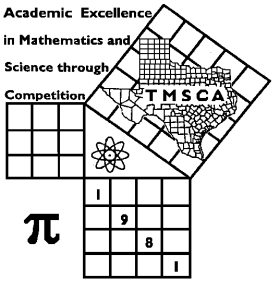
1st Score: _____	2nd Score: _____	3rd Score: _____	
S & G _____	S & G _____	S & G _____	_____. _____
Grader: _____	Grader: _____	Grader: _____	**Final Score**

PLACE LABEL BELOW

Name:_____ School:_____

SS/ID Number:_____ City:_____

Grade: 5 6 7 8 Classification: 1A 2A 3A 4A 5A 6A



TMSCA MIDDLE SCHOOL

CALCULATOR

TEST #9©

JANUARY 28, 2017

GENERAL DIRECTIONS

I. About this test:
- A. You will be given 30 minutes to take this test.
- B. There are 80 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*, $1.23x10^{0}$*, $1.23x10^{1}$, $1.23x10^{01}$, .0190, $1.90x10^{-2}$
     Incorrect: 12.30, 123.0, $1.23(10)^{2}$, $1.23\cdot10^{2}$, $1.230x10^{2}$, $1.23*10^{2}$, 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.

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. FOUR points will be deducted for all problems answered incorrectly or skipped before the last problem attempted.

2016-2017 TMSCA Middle School Calculator Test 9

1. 2450 + 1580 ---------- 1=_____

2. 29 + 37 – 30 ---------- 2=_____

3. 424 – 215 + 259 ---------- 3=_____

4. 13 + 17 + 18 + π ---------- 4=_____

5. 124 + 225 + 99 + 170 ---------- 5=_____

6. 158 – 140 – 29.2 + 40.9 + 135 ---------- 6=_____

7. 2.45 + 3.65 + 1.56 + 2.36 + 1.32 ---------- 7=_____

8. (5.88 + 4.21 – 0.751) – (4.22 + 3.18) ---------- 8=_____

9. 176 x 121 x 100 ---------- 9=_____

10. 114 x 1500 x 237 x 115 ----------10=_____

11. Calculate the range of the set of numbers that includes the square roots of the first ten prime numbers. ----------11=_____

12. The area of a rectangle is 31.89 square feet. If the width is 5.29 feet, calculate the length in feet. ----------12=_____ft.

13. Calculate ninety-two percent of seven percent of one million, one thousand, one hundred. ----------13=_____

14. $(427/275)[438 - 454]$ ----------14=_____

15. $150/[66 \times 173 \times 53]$ ----------15=_____

16. $\left[\frac{142}{28}\right][(64/59) + 0.752]$ ----------16=_____

17. $\{27/65\}\left[\frac{63}{85 + 154}\right]$ ----------17=_____

18. $\left[\frac{(492/895) - (1580/1400)}{0.0327/0.0458}\right]$ ----------18=_____

19. $\frac{[147/(63)]/1.84}{(2.94\times10^{-4} \times 4.44\times10^{-4})(4.13)}$ ----------19=_____

20. $\frac{(\pi)(27/18)(42/17)}{412}$ ----------20=_____

21. $(0.419)[290/246 \times 244/322] - 0.115$ ----------21=_____

22. $\left[\frac{657 + 1000}{167 - 790}\right]\left[\frac{423}{264}\right]$ ----------22=_____

23. $\frac{(\pi)(197/202)(153/175)}{(127/76)}$ ----------23=_____

24. The sides of a triangle are in the ratio of 7:10:15. If the shortest side is actually 23.5 inches, calculate the perimeter of the triangle in inches. ----------24=_____in.

25. The sum of two integers is 497. One integer is 11 more than the other. Calculate the product of the two integers. ----------25=_____INT.

26. In the 2016 Rio Olympic games, Almaz Ayana of Ethiopia, broke the world record in the womens 10,000 meters with a time of 29 minutes 17.45 seconds. Calculate her speed in miles per hour. ----------26=_____mph

27. $(0.253)[(0.00981/0.00558)(531/192)]$ ----------27=_____

28. $\dfrac{(0.249 + 0.949)(0.194 + 0.229)}{(1.74\text{x}10^{11})}$ ----------28=_____

29. $\dfrac{(0.159 - 0.0228)(9.72 + \pi)}{(6.29\text{x}10^{11})}$ ----------29=_____

30. $(\pi)\left[\dfrac{36.1}{(3.93\text{x}10^{-12})}\right]$ ----------30=_____

31. $\dfrac{1}{802} + \dfrac{1}{(677 - 175)}$ ----------31=_____

32. $(13.2)\left[(5.92\text{x}10^{10}) - (2.32\text{x}10^{10})\right]$ ----------32=_____

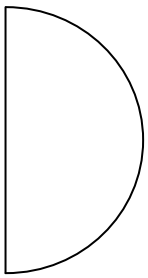
33. $1/(0.00377 - 0.00464) - 1/(-4.15\text{x}10^{-4})$ ----------33=_____

34. $\left[\dfrac{1/3220}{1/3120}\right][4.65\text{x}10^{5}]$ ----------34=_____

35. The sum of three consecutive even integers is 110 more than the smallest integer. Calculate the value of the largest integer. -------35=_____INT.

36. A 2.9 acre lakefront lot on Lake Grandbury sells for $1.6 million. What is the price per square foot? ----------36=$_____

SEMICIRCLE

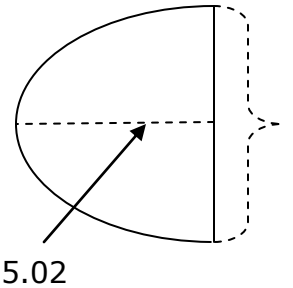


Area = 2355

Perimeter = ?

37=_____

SEMIELLIPSE



Area = ?

38=_____

39. $\left[\frac{173}{39.5}\right](1.94 + 7.06)^4$ ----------39=_____

40. $\frac{(6150 + 23500)^2}{(0.0153 - 0.0181)^3}$ ----------40=_____

41. $(696 + 3170 + 453)^2(1410 + 451)^2$ ----------41=_____

42. $(459)\sqrt{57100 + 96200 + 36700}$ ----------42=_____

43. $\sqrt{700} + \sqrt{695 + 388} - (\pi)\sqrt{449}$ ----------43=_____

44. $(1/\pi)\sqrt[4]{\frac{0.786 + 0.629}{0.307 - 0.17}}$ ----------44=_____

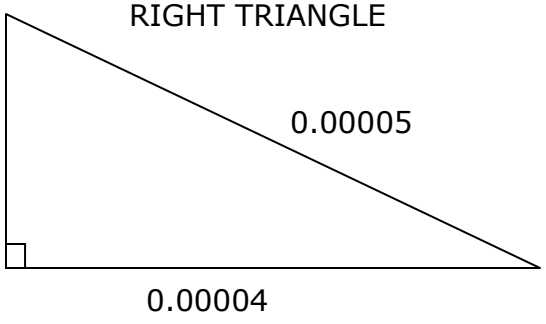
45. $\frac{1}{\sqrt{1060 + 1300 + 2210}} + \left(\frac{1}{\sqrt{2.64}}\right)^4$ ----------45=_____

46. $\sqrt[4]{0.302 - 178/1230} + 1/\sqrt{1320 + 905}$ ----------46=_____

47. Calculate the value of 70707 Base 8 in Base 10. ----------47=_____INT.

48. The pressure in Macs tires is supposed to be at 80 psi. One of the tires loses air to 52 psi. Calculate the percent change from what it is supposed to be to what it is now. ----------48=_____%

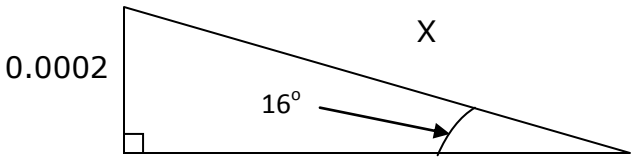
RIGHT TRIANGLE



X = ?

49=_____

RIGHT TRIANGLE



X = ?

50=_____

51. $\dfrac{(0.00712 + 0.00904 - 0.0174)^2}{\sqrt{0.0162 + 0.00542 + 0.017}}$ ----------51=_____

52. $\left[\dfrac{573 - 370 + \sqrt{5.68\text{x}10^7/2350}}{-2.55 + 9.67}\right]^{-5}$ ----------52=_____

53. $\sqrt{\dfrac{1.63\text{x}10^{-9}}{(191)(66.8)}} + \dfrac{(0.426 - 0.38)}{(65000 + 56400)}$ ----------53=_____

54. $(11.8)^2\sqrt{(65.8)/(99.7)} - (97.5 + 37.9)$ ----------54=_____

55. $0.412 + \sqrt{(118)/(247)} - (0.366 + 0.699)^2$ ----------55=_____

56. $\sqrt{\dfrac{(3100)(22800)}{(27700)(62300)}} - 0.18 + 0.165$ ----------56=_____

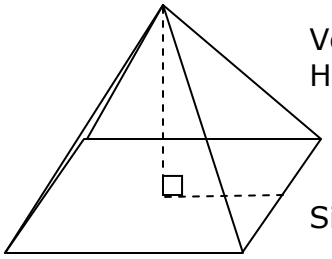
57. $\sqrt{\dfrac{(15.8)(1620)}{(359) + (917)}} - 5.94$ ----------57=_____

58. (rad) cos(5.15) + (21/14.3) ----------58=_____

59. Robert bought a new 2016 pickup for $51,568. He put $10,000 down and received $5000 for his trade in. If he finances the rest at 3.25% interest for 3 years, calculate his monthly payment. -----59=$_____

60. Calculate the sum of the interior angles of a dodecagon. ----------60=_____^{o}

SQUARE BASE PYRAMID

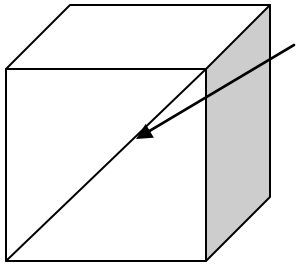


Volume = 2765
Height = 21.32

Side of Base = ?

61=_____

CUBE



Diagonal of Face = 579

Volume = ?

62=_____

63. $\frac{22! + 23!}{10!}$ ----------63=_____

64. (deg) $\frac{\sin(1.1°)}{178}$ ----------64=_____

65. (deg) $(110 - 229)\sin(302°)$ ----------65=_____

66. (rad) $\cos\left[\frac{(11.1)(\pi)}{(190)(14.7)}\right]$ ----------66=_____

67. (deg) $[14.7]\sin(102° - 190°)$ ----------67=_____

68. (rad) $\cos[(7.46 - 4.66)(0.312)]$ ----------68=_____

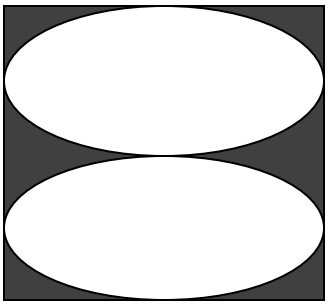
69. (deg) $\frac{\sin(159°)}{\tan(159°)}[123]$ ----------69=_____

70. $(44.9 - 42.7 + 15)^{1/3}$ ----------70=_____

71. Calculate the slope of the line that is perpendicular to the line $0.3y - 5x - 8 = 0$. ----------71=_____

72. Calculate the probability of rolling three doubles in a row on a pair of dice. ----------72=_____

SQUARE AND CONGRUENT ELLIPSES

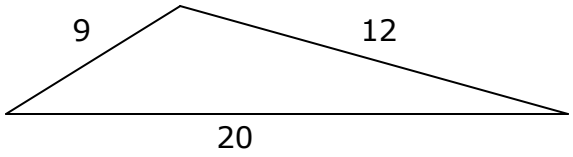


Side of Square = 0.1298

Shaded Area = ?

73=_____

SCALENE TRIANGLE



Area = ?

74=_____

75. $\text{Ln}\left[\frac{121 + 267 + 110}{330 + 272 - 170}\right]$ ----------75=_____

76. $\frac{\text{Log}(3.76\text{x}10^{10} + 7.94\text{x}10^{10})}{26.8}$ ----------76=_____

77. $\text{Log}(19500 + 12700 + 18800)$ ----------77=_____

78. $(108)^{\pi}(0.13)^2(1.92 - 1.54)^4$ ----------78=_____

79. $2 + 4 + 6 + \ldots + 888$ ----------79=_____

80. $1 + 0.879 + (0.879)^2 + \frac{(0.879)^4}{8} - \frac{(0.879)^5}{15}$ ----------80=_____

2016-2017 TMSCA Middle School Calculator Test 9 Answer Key

Page 1

1 = 4030
= 4.03×10^{3}

2 = 36.0
= 3.60×10^{1}

3 = 468
= 4.68×10^{2}

4 = 51.1
= 5.11×10^{1}

5 = 618
= 6.18×10^{2}

6 = 165
= 1.65×10^{2}

7 = 11.3
= 1.13×10^{1}

8 = 1.94
= 1.94×10^{0}

9 = 2.13×10^{6}

10 = 4.66×10^{9}

11 = 3.97
= 3.97×10^{0}

12 = 6.03
= 6.03×10^{0}

13 = 64500
= 6.45×10^{4}

Page 2

14 = −24.8
= -2.48×10^{1}

15 = 0.000248
= 2.48×10^{-4}

16 = 9.31
= 9.31×10^{0}

17 = 0.109
= 1.09×10^{-1}

18 = −0.811
= -8.11×10^{-1}

19 = 2.35×10^{6}

20 = 0.0283
= 2.83×10^{-2}

21 = 0.259
= 2.59×10^{-1}

22 = −4.26
= -4.26×10^{0}

23 = 1.60
= 1.60×10^{0}

24 = 107
= 1.07×10^{2}

25 = 61722 INT.

26 = 12.7
= 1.27×10^{1}

Page 3

27 = 1.23
= 1.23×10^{0}

28 = 2.91×10^{-12}

29 = 2.78×10^{-12}

30 = 2.89×10^{13}

31 = 0.00324
= 3.24×10^{-3}

32 = 4.75×10^{11}

33 = 1260
= 1.26×10^{3}

34 = 451000
= 4.51×10^{5}

35 = 56 INT.

36 = $12.67

37 = 199
= 1.99×10^{2}

38 = 210
= 2.10×10^{2}

Page 4

39 = 28700
= 2.87×10^{4}

40 = -4.00×10^{16}

41 = 6.46×10^{13}

42 = 200000
= 2.00×10^{5}

43 = -7.20
= -7.20×10^{0}

44 = 0.571
= 5.71×10^{-1}

45 = 0.158
= 1.58×10^{-1}

46 = 0.651
= 6.51×10^{-1}

47 = 29127 INT.

48 = - 35.0
= -3.50×10^{1}

49 = 0.00003
= 3.00×10^{-5}

50 = 0.000726
= 7.26×10^{-4}

2016-2017 TMSCA Middle School Calculator Test 9 Answer Key

Page 5

51 = 7.82×10^{-6}

52 = 3.09×10^{-9}

53 = 7.36×10^{-7}

54 = −22.3
= -2.23×10^{1}

55 = −0.0310
= -3.10×10^{-2}

56 = 0.187
= 1.87×10^{-1}

57 = −1.46
= -1.46×10^{0}

58 = 1.89
= 1.89×10^{0}

59 = $1114.82

60 = 1800
= 1.80×10^{3}

Page 6

61 = 19.7
= 1.97×10^{1}

62 = 6.86×10^{7}

63 = 7.43×10^{15}

64 = 0.000108
= 1.08×10^{-4}

65 = 101
= 1.01×10^{2}

66 = 1.00
= 1.00×10^{0}

67 = −14.7
= -1.47×10^{1}

68 = 0.642
= 6.42×10^{-1}

69 = −115
= -1.15×10^{2}

70 = 2.58
= 2.58×10^{0}

71 = - 0.0600
= $- 6.00 \times 10^{-2}$

72 = 0.00463
= 4.63×10^{-3}

Page 7

73 = 0.00362
= 3.62×10^{-3}

74 = 31.7
= 3.17×10^{1}

75 = 0.142
= 1.42×10^{-1}

76 = 0.413
= 4.13×10^{-1}

77 = 4.71
= 4.71×10^{0}

78 = 861
= 8.61×10^{2}

79 = 198000
= 1.98×10^{5}

80 = 2.69
= 2.69×10^{0}

TMSCA 16-17 MS CA Test #9 Solutions to Word and Geometry Problems

11. $\sqrt{29} - \sqrt{2}$

12. $\frac{31.89}{5.29}$

13. .92(.07)(1,001,100)

24. $\frac{7}{23.5} = \frac{32}{x}\ so\ x = \frac{23.5(32)}{7}$

25. $x + x + 11 = 247$ Solving for x; x = 243. X+11 = 254. (243)(254) = 61722

26.
$\left(\frac{10000m}{29\frac{17.45}{60\ min}}\right)\left(\frac{60min}{1\ hr}\right)\left(\frac{1\ km}{1000m}\right)\left(\frac{1\ mi}{1.61\ km}\right)$

35. Smallest integer is n, next one is n+2, largest is n+4.
$3n + 6 = n + 110;$
$n = 52\ so\ the\ largest\ number\ is\ 52 + 4.$

36. $\left(\frac{\$1600000}{2.9\ acres}\right)\left(\frac{640\ acres}{1\ sq,mile}\right)\left(\frac{1\ sq.mile}{5280^2\ ft}\right)$

37. $\frac{\pi r^2}{2} = 2355\ \ so\ r = \sqrt{\frac{2355(2)}{\pi}}$
Perimeter = $\pi r + 2r = r(\pi + 2)$
$= \sqrt{\frac{2355(2)}{\pi}}(\pi + 2)$

38. A = πab where *a* and *b* are half of the major and minor axes.
Since this is half of an ellipse, we will divide by 2.
$A = \frac{\pi(15.02)\left(\frac{17.8}{2}\right)}{2}$

47. $7(8^4) + 7(8^2) + 7(8^0)$

48. On RPN calculator, 80 enter, 52, %change

49. $\sqrt{.00005^2 - .00004^2}$
Or you may recognize this as a familiar Pythagorean triple.

50. $\frac{sin16}{1} = \frac{.0002}{x}$ so

$x = \frac{.0002}{sin16}$

59. \$51568-\$15,000 = \$36568 for principle loan.
$\frac{36568(.0325)(3)\ +\ 36568}{36\ months}$

60. $180(n - 2)$. A dodecagon has twelve sides, so 180(12-2)

61. V = $\frac{1}{3}x^2h$;
2765 = $\frac{1}{3}x^2(21.32)$
$x = \sqrt{\frac{2765(3)}{21.32}}$

62. Edge of cube = $\frac{579}{\sqrt{2}}$
V = $e^3 = \left(\frac{579}{\sqrt{2}}\right)^3$

71. $\frac{-.3}{5}$

72. $\left(\frac{1}{6}\right)\left(\frac{1}{6}\right)\left(\frac{1}{6}\right)$

73. Area of square minus area of two ellipses. Half of the major axis is .1298/2. Half of the minor axis is .1298/4.
Area of square: $.1298^2$
Area of one ellipse:
$\left(\frac{.1298}{2}\right)\left(\frac{.1298}{4}\right)\pi$

$.1298^2 - 2\left[\left(\frac{.1298}{2}\right)\left(\frac{.1298}{4}\right)\pi\right]$

74. Semi-perimeter = 20.5
20.5-9 = 11.5
20.5-12 = 8.5
20.5 – 20 = .5
A = $\sqrt{20.5(11.5)(8.5)(.5)}$