8

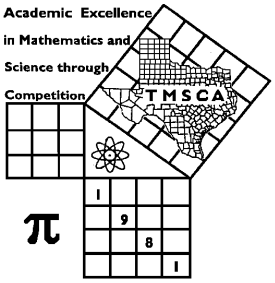
1st Score: _____	2nd Score: _____	3rd Score: _____	
S & G _____	S & G _____	S & G _____	_____. _____
Grader: _____	Grader: _____	Grader: _____	**Final Score**

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 #4©

NOVEMBER 12, 2016

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 4

1. 951 + 3470 ---------- 1=_____

2. 7 – 3 + 26 ---------- 2=_____

3. –34 + 55 – 143 ---------- 3=_____

4. 14 – 38 – 25 – 11 ---------- 4=_____

5. 1300 + 5790 – 3650 – 4090 ---------- 5=_____

6. 121 – 55.7 – 156 + 49.8 + 126 ---------- 6=_____

7. (–5.21 – 5.6) + (4.49 – 0.78 – 5.19) ---------- 7=_____

8. –0.935 – 0.371 + 0.839 – 0.519 – 0.107 ---------- 8=_____

9. 291 x 141 x 217 ---------- 9=_____

10. 4010 x 36.3 x 958 x 1730 ----------10=_____

11. Calculate the mode of the following list of numbers. Ten, five, the square root of 10, 5 squared, the cubed root of 125 and the square root of 25. ----------11=_____

12. Gina has five 2-pound bags of candy. If she divides the candy equally into 50 bags, calculate how many ounces will be in each bag. ----------12=_____oz.

13. The area of a circle is 542 square inches. If the circumference of this circle is doubled, calculate the area of the new circle in square inches. ----------13=_____sq. in.

14. $(26/95)[89 - 56]$ ----------14=_____

15. $-371/[538 \times 126 \times 192]$ ----------15=_____

16. $\{(538)(132 - 564)(255)\} - 5.53 \times 10^{7}$ ----------16=_____

17. $\{85/23\}\left[\frac{25}{112 + 71}\right]$ ----------17=_____

18. $\left[\frac{(4590/7190) - (3320/9290)}{91.7/231}\right]$ ----------18=_____

19. $\left[\frac{40/266}{72/187}\right]\{8.63 \times 10^{-4} + 1.81 \times 10^{-4} - 0.00103\}$ ----------19=_____

20. $\frac{148}{(18 - 83)} - \frac{(141 - 156)}{76}$ ----------20=_____

21. $\frac{(\pi)(39/15)(20/35)}{175}$ ----------21=_____

22. $\frac{(5730 \times 5180)/6040}{(3820 \times 0.131) + 229}$ ----------22=_____

23. $\left[\frac{1170 + 1710}{1590 - 621}\right]\left[\frac{866}{329}\right]$ ----------23=_____

24. The Warriors made 23 of 28 free throws in their basketball game. Calculate the percentage of free throws that were not made . -----24=_____%

25. Two angles are complementary. The first angle measures 72.6°. Calculate the measure of the other angle. ----------25=_____°

26. The highest place on earth, Mt. Everest, is 29,029 feet above sea level. The lowest, The Mariana Trench, is 36,070 feet below sea level. Calculate the number of miles between the highest point and the lowest point. ----------26=_____mi.

27. $(29)[(0.00152/0.011)(0.475/0.0636)]$ ----------27=_____

28. $[5840 - (4500 + 5460)] + [(-0.614)(5890 - 1370)]$ --------28=_____

29. $\dfrac{(95.3 + 64.9)(369 + 232)}{(8.67 \times 10^{10})}$ ----------29=_____

30. $[254]\left[\dfrac{1/0.0139}{1/0.0304}\right]$ ----------30=_____

31. $\dfrac{1}{32.7} + \dfrac{1}{(149 - 127)}$ ----------31=_____

32. $(27.2)\left[\dfrac{0.403}{(4.75 \times 10^{-9})}\right]$ ----------32=_____

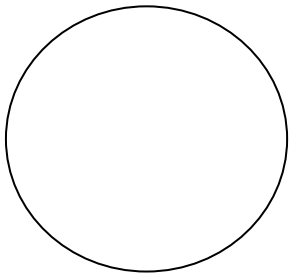
33. $\left[\dfrac{1/305}{1/234}\right] + [0.557]$ ----------33=_____

34. $\dfrac{1}{227} - \dfrac{1}{(419 + 303)}$ ----------34=_____

35. At the beginning of boot camp, Evan weighed 254 pounds. At the end of boot camp he was a lean 205 pounds. Calculate the percent change in his weight from beginning to end. ----------35=_____%

36. Two triangles are similar. The first triangle has sides of 8, 5, and 12. The second has a perimeter of 232. Calculate the length of the longest side on the second triangle. ----------36=_____

Circle

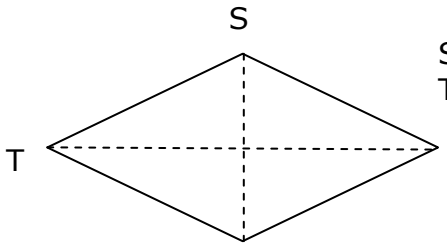


Area = 98.65

Diameter = ?

37=_____

Rhombus



SC = 2050
TM = 4100

Area = ?

38=_____

39. $\left[\frac{82.6}{127}\right](4.85 + 4.14)^3$ ----------39=_____

40. $\left[\frac{2110 + (1/(6.14x10^{-4}))}{(1980/1530) - 1.22}\right]^2$ ----------40=_____

41. $\frac{(5220 + 3560)^3}{(0.423 - 0.266)^2}$ ----------41=_____

42. $(1/(0.00684))(4390 - 1870)^2$ ----------42=_____

43. $\sqrt{5210 - 4430 + 2400} - \sqrt{1340}$ ----------43=_____

44. $(36000)\sqrt{828 + 3030 + 440}$ ----------44=_____

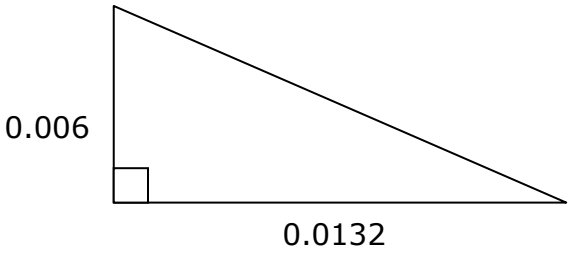
45. $(2650)\sqrt{124 + 210 - 91.5}$ ----------45=_____

46. $\left[\sqrt{(4680/7380)(25.9)}\right]^4$ ----------46=_____

47. The sum of two integers is 104. The difference of the two integers is 80. Calculate the value of the largest integer. ----------47=_____INT.

48. In a 30-60-90 triangle the hypotenuse measures two square roots of two feet. Calculate the length of the side opposite the 30^o angle. ----------48=_____ft.

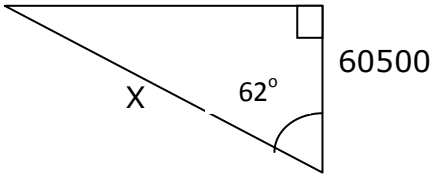
Right Triangle



Perimeter = ?

49=_____

Right Triangle



X = ?

50=_____

51. $\left[\frac{\sqrt{\sqrt{1.49x10^5 - 1.22x10^5}}}{-(130 - 143)}\right]^3 [23.3 + 6.73]$ ----------51=_____

52. $\left[\frac{1690 - 574 + \sqrt{5.09x10^7/317}}{-94.3 + 180}\right]^{-2}$ ----------52=_____

53. $\sqrt{\frac{16000}{(85600)(0.049)}} + \frac{(9.21 - 8.41)}{(0.277 + 0.0673)}$ ----------53=_____

54. $(441)^2 \sqrt{(2.79)/(283)} - (8550 + 14900)$ ----------54=_____

55. $1620 + \sqrt{(1640)(5890)} - (3230 + 2910)$ ----------55=_____

56. $\sqrt{\frac{(79800)(16200)}{(46900)(2.31x10^5)}} - 0.26 + 0.186$ ----------56=_____

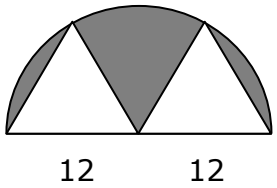
57. $\sqrt{\frac{(853)(9.4)}{(16.5) + (6.44)}} + 1/(0.0535)^1$ ----------57=_____

58. (rad) tan(99.8) + (118/144) ----------58=_____

59. Lisa took out a loan from the bank for one year at 6.99% interest. If she had to pay $125 in interest, calculate the amount of the loan? ----------59=$_____

60. Calculate the number of distinct diagonals there are in a polygon with 63 sides. ----------60=_____INT.

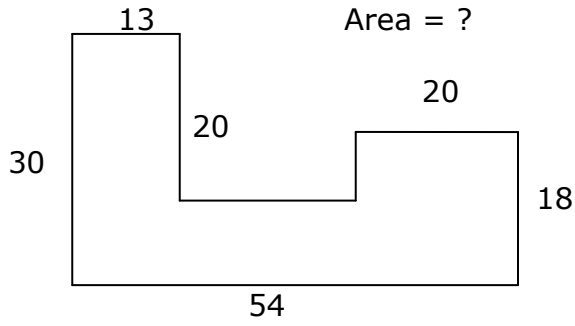
Semicircle and Equivalent Equilateral Triangles



Shaded Area = ?

61=_____

Polygon with all 90° angles



62=_____

63. $\frac{15! + 16!}{23!}$ ----------63=_____

64. (deg) (178 + 168)cos(11.4°) ----------64=_____

65. (deg) $\frac{\sin(114°)}{584}$ ----------65=_____

66. (deg) [36.1]cos(168° – 136°) ----------66=_____

67. (deg) (1860 – 3130)cos(7.47°) + 215 ----------67=_____

68. (deg) $\frac{\sin(22.8°)}{\tan(22.8°)}$[5.43] ----------68=_____

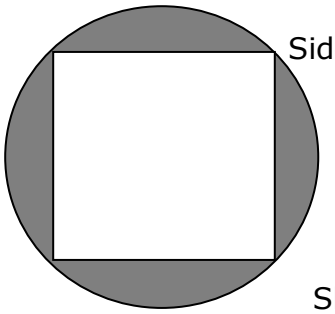
69. (deg) $\frac{\cos(33.7°)}{4.14 + 3.88}$ ----------69=_____

70. $(120 + 114 + 189)^{2/5}$ ----------70=_____

71. Mr. M gave a pop quiz with 5 true/false questions and 5 multiple choice questions with 3 choices each. Calculate the number of possible outcomes for this quiz. ----------71=_____INT.

72. Calculate the probability of drawing a red queen form a standard deck of cards. ----------72=_____

Square inscribed in a Circle

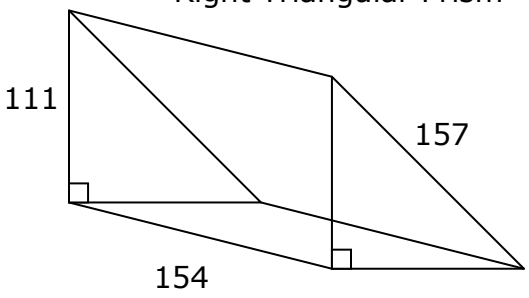


Side of Square = 12.21

Shaded Area = ?

73=_____

Right Triangular Prism



Volume = ?

74=_____

75. $\text{Ln}\left[\frac{55.5 + 169 + 51.7}{97.7 + 83.9 - 61.9}\right]$ ----------75=_____

76. $\frac{\text{Log}(7.82\text{x}10^{10} + 5.32\text{x}10^{10})}{8.81}$ ----------76=_____

77. $2\text{Log}\sqrt{\frac{(191)(12.6)}{14.2 + 11.4}}$ ----------77=_____

78. $\text{Ln}\left[\frac{6.48 + 21.2 + 35.6}{172 - 14 - \pi}\right]$ ----------78=_____

79. $2 + 4 + 6 + \ldots + 418$ ----------79=_____

80. $\frac{1}{(0.79)} + \frac{1}{3(0.79)^3} + \frac{1}{5(0.79)^5} + \frac{1}{7(0.79)^7}$ ----------80=_____

2016-2017 TMSCA Middle School Calculator Test 4 Answer Key

Page 1

1 = 4420
= 4.42×10^{3}

2 = 30.0
= 3.00×10^{1}

3 = −122
= -1.22×10^{2}

4 = −60.0
= -6.00×10^{1}

5 = −650
= -6.50×10^{2}

6 = 85.1
= 8.51×10^{1}

7 = −12.3
= -1.23×10^{1}

8 = −1.09
= -1.09×10^{0}

9 = 8.90×10^{6}

10 = 2.41×10^{11}

11 = 5.00
= 5.00×10^{0}

12 = 3.20
= 3.20×10^{0}

13 = 21700
= 2.17×10^{4}

Page 2

14 = 9.03
= 9.03×10^{0}

15 = -2.85×10^{-5}

16 = -1.15×10^{8}

17 = 0.505
= 5.05×10^{-1}

18 = 0.708
= 7.08×10^{-1}

19 = 5.47×10^{-6}

20 = −2.08
= -2.08×10^{0}

21 = 0.0267
= 2.67×10^{-2}

22 = 6.74
= 6.74×10^{0}

23 = 7.82
= 7.82×10^{0}

24 = 17.9
= 1.79×10^{1}

25 = 17.4
= 1.74×10^{1}

26 = 12.3
= 1.23×10^{1}

Page 3

27 = 29.9
= 2.99×10^{1}

28 = −6900
= -6.90×10^{3}

29 = 1.11×10^{-6}

30 = 556
= 5.56×10^{2}

31 = 0.0760
= 7.60×10^{-2}

32 = 2.31×10^{9}

33 = 1.32
= 1.32×10^{0}

34 = 0.00302
= 3.02×10^{-3}

35 = -19.3
= -1.93×10^{1}

36 = 111
= 1.11×10^{2}

37 = 11.2
= 1.12×10^{1}

38 = 4200000
= 4.20×10^{6}

Page 4

39 = 473
= 4.73×10^{2}

40 = 2.54×10^{9}

41 = 2.75×10^{13}

42 = 9.28×10^{8}

43 = 19.8
= 1.98×10^{1}

44 = 2.36×10^{6}

45 = 41300
= 4.13×10^{4}

46 = 270
= 2.70×10^{2}

47 = 92 INT.

48 = 1.41
= 1.41×10^{0}

49 = 0.0337
= 3.37×10^{-2}

50 = 129000
= 1.29×10^{5}

2016-2017 TMSCA Middle School Calculator Test 4 Answer Key

Page 5

51 = 28.8
$= 2.88 \times 10^{1}$

52 = 0.00319
$= 3.19 \times 10^{-3}$

53 = 4.28
$= 4.28 \times 10^{0}$

54 = −4140
$= -4.14 \times 10^{3}$

55 = −1410
$= -1.41 \times 10^{3}$

56 = 0.271
$= 2.71 \times 10^{-1}$

57 = 37.4
$= 3.74 \times 10^{1}$

58 = −0.0772
$= -7.72 \times 10^{-2}$

59 = $1788.27

60 = 1890 INT.

Page 6

61 = 101
$= 1.01 \times 10^{2}$

62 = 960
$= 9.60 \times 10^{2}$

63 = 8.60×10^{-10}

64 = 339
$= 3.39 \times 10^{2}$

65 = 0.00156
$= 1.56 \times 10^{-3}$

66 = 30.6
$= 3.06 \times 10^{1}$

67 = −1040
$= -1.04 \times 10^{3}$

68 = 5.01
$= 5.01 \times 10^{0}$

69 = 0.104
$= 1.04 \times 10^{-1}$

70 = 11.2
$= 1.12 \times 10^{1}$

71 = 7776 INT.

72 = 0.0385
$= 3.85 \times 10^{-2}$

Page 7

73 = 85.1
$= 8.51 \times 10^{1}$

74 = 949000
$= 9.49 \times 10^{5}$

75 = 0.836
$= 8.36 \times 10^{-1}$

76 = 1.26
$= 1.26 \times 10^{0}$

77 = 1.97
$= 1.97 \times 10^{0}$

78 = −0.895
$= -8.95 \times 10^{-1}$

79 = 43900
$= 4.39 \times 10^{4}$

80 = 3.34
$= 3.34 \times 10^{0}$

TMSCA 16-17 MS CA Test #4 Solutions to Word and Geometry Problems

11. Five appears three times as five, cube root of 125 and square root of 25. Therefore 5.00 is the mode.

12. $\frac{2(16)(5)}{50}$

13. When the circumference, radius or diameter is doubles, the area is 4 times as big. 542(4)

24. 5 shots were not made. Probability is $\frac{5}{28} = \frac{x}{100}$

$$x = \frac{100(5)}{28}$$

25. 90 – 72.6

26. Change to miles

$$\frac{29029}{5280} - \frac{-36070}{5280}$$

35. Using RPN calculator % change key:
254 enter 205 left shift ÷. The negative sign is required here because the problem doesn't indicate decrease in the wording. Without RPN calculator: $\frac{205-254}{254} = \frac{x}{100}$

36. 8x + 5x + 12x = 232
25x = 232 so x = $\frac{232}{25}$. Multiply this by 12 to get the longest side.

37. $98.65 = \pi r^2$ so radius = $\sqrt{\frac{98.65}{\pi}}$. Multiply by 2 for diameter.

38. A = $\frac{(d_1)(d_2)}{2} = \frac{(2050)(4100)}{2}$

47. x + y = 104
x – y = 80
2x = 184; x = 92, y = 12
The largest is 92

48. The side opposite the 30° angle is half the hypotenuse.

$$\frac{2\sqrt{2}}{2}$$

49. hypotenuse = $\sqrt{.006^2 + .0132^2}$. Then add all three sides for perimeter.

50. $\frac{cos62}{1} = \frac{60500}{x}$

$x = \frac{60500}{\cos 62}$

59. I = Prt
125 = P(.0699)(1)
P = $\frac{125}{.0699}$
Use SHOW key for cents.

60. $\frac{n(n-3)}{2} = \frac{63(63-3)}{2}$
Check SHOW key for large integers.

61. Area of semicircle =

$$\frac{\pi r^2}{2} = \frac{\pi(12)^2}{2}$$

Area of equilateral triangle when given the side = $\frac{s^2\sqrt{3}}{4}$ = $\frac{12^2\sqrt{3}}{4}$. Shaded area =

$$\frac{\pi(12)^2}{2} - 2\left(\frac{12^2\sqrt{3}}{4}.\right)$$

62. The segments clockwise calculate to be 13,20,21,8,20,18,54,30
Make three rectangles and combine areas.
13(30) + 21(10) + 20(18)

71. 2^5 (3^5) Use the SHOW key for high integer answers.

72. There are 2 red queens of 52 cards. $\frac{2}{52}$

73. The diameter of the circle is the diagonal of the square =

$$12.21\sqrt{2}$$

Radius is $\frac{12.21\sqrt{2}}{2}$ Area of circle = $\pi\left(\frac{12.21\sqrt{2}}{2}\right)^2$
Area of square = 12.21^2.
Subtract square from circle.

74. Base of triangle =

$$\sqrt{157^2 - 111^2}$$

Area of base triangle =

$$\frac{111\left(\sqrt{157^2 - 111^2}\right)}{2}$$

Volume = Bh.

$$154\left(\frac{111\sqrt{157^2 - 111^2}}{2}\right)$$