8

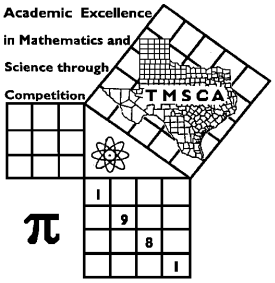
1st Score: _____	2nd Score: _____	3rd Score: _____	
S & G _____	S & G _____	S & G _____	_____. _____
Grader: _____	Grader: _____	Grader: _____	**Final Score**

PLACE LABEL BELOW

Name:_____ School:_____

SS/ID Number:_____ City:_____

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



TMSCA MIDDLE SCHOOL CALCULATOR TEST #4 ©

NOVEMBER 10, 2018

GENERAL DIRECTIONS

I. About this test:
- A. You will be given 30 minutes to take this test. There are 80 problems on this test.
- **B. ALL calculators must be cleared. TI-Nspire and HP Prime calculators are NOT permitted.**

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.

2018-2019 TMSCA Middle School Calculator Test 4

1. 2570 + 2560 ---------- 1=_____

2. −18 − 10 + 20 ---------- 2=_____

3. 2470 + 2900 − 1550 ---------- 3=_____

4. π + 2 − 2 − 3 ---------- 4=_____

5. 161 + 136 − 186 − 251 ---------- 5=_____

6. 170 − 192 − 168 − 168 + 131 ---------- 6=_____

7. (5.64 + 2.75 − 1.97) − (π + 4.94) ---------- 7=_____

8. π − 0.602 + 2.77 − 1.37 − 2.5 ---------- 8=_____

9. 222 x 89.3 x 50.7 ---------- 9=_____

10. 298 x 1760 x 68.8 x 81.7 ----------10=_____

11. Laila completed her calculator test attempting every problem. She missed half of the stated and geometry problems and only five of the "number crunchers". Calculate her score. ----------11=_____INT.

12. Old McDonald purchased twenty fifty-pound bags of cattle feed and fifty bales of alfalfa that averaged 75 pounds per bale. Calculate the weight of his purchase in kilograms. ----------12=_____kg

13. The lengths of the sides of a pentagon are in the ratio of 2:5:4:3:7. If the perimeter is 540 inches, calculate the length of the shortest side in inches. ----------13=_____in.

14. $(152/152)[99 - 159]$ ----------14=_____

15. $(57)[195 \times 37/39]$ ----------15=_____

16. $(-129 + 547)[157 - 183 - 115]$ ----------16=_____

17. $\left[\frac{128}{84}\right][(363/307) - 0.717]$ ----------17=_____

18. $\frac{[\pi/(4.77)]/474}{(0.217 \times 0.217)(0.0223)}$ ----------18=_____

19. $\frac{(189/70) + (202/178)}{(17.7 - 2.84)}$ ----------19=_____

20. $\frac{(0.00284)(6.70 \times 10^{-5})}{0.363}(0.0428 - 0.0379)$ ----------20=_____

21. $\frac{(\pi)(4/26)(14/27)}{37}$ ----------21=_____

22. $\frac{(0.519 + 0.18 - 0.454)}{\{(0.0163 - 0.0046)/(1060)\}}$ ----------22=_____

23. $\frac{(952 \times 259)/455}{(1150 \times 178) + 1.73 \times 10^{5}}$ ----------23=_____

24. Calculate the harmonic mean of 5 and 7. ----------24=_____

25. There were 218,712 in attendance of the outdoor spectacular. This was 20% more than the expected turnout. Calculate the expected turnout. ----------25=_____INT.

26. The diagonal of a square in 952.1 cm. Calculate the perimeter of the square. ----------26=_____cm

27. $\dfrac{(15.4 - 13.5)(204 + 279)}{(1.75\text{x}10^{11})}$ ----------27=_____

28. $(8.87)\left[(0.00102/7.82\text{x}10^{-4})(54.2 + 31.9)\right]$ ----------28=_____

29. $[1250 - (1370 + 709)] + [(0.21)(177 - 776)]$ ----------29=_____

30. $\dfrac{1}{-0.0879} + \dfrac{1}{(0.0299 - 0.0779)}$ ----------30=_____

31. $\dfrac{(0.258 + 0.12)}{(3.13\text{x}10^{12})}$ ----------31=_____

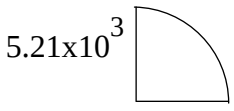
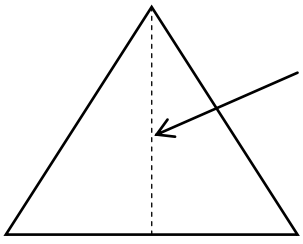
32. $(82.3)\left[(1.58\text{x}10^{8}) - (5.26\text{x}10^{7})\right]$ ----------32=_____

33. $\dfrac{1}{60.3} - \dfrac{1}{(21.8 + 108)}$ ----------33=_____

34. $\dfrac{1}{79.3} - \dfrac{1}{189} + \dfrac{1}{71.4}$ ----------34=_____

35. Calculate 521^{231}. ----------35=_____

36. A group of nickels and quarters has a value of $10.30. There are 20 more nickels than quarters. Calculate the number of nickels. --36=_____INT.

QUARTER CIRCLE	EQUILATERAL TRIANGLE
 Area = ?	 Perimeter = ?
37=_____	38=_____

39. $(2.04 + 1.79)^2(34.9 + 47.9)^2$ ----------39=_____

40. $\dfrac{(6620 + 10200)^3}{(0.0154 - 0.00678)^2}$ ----------40=_____

41. $\left[\dfrac{7540 + (1/(2.95\text{x}10^{-5}))}{(32900/34100) - 0.907}\right]^2$ ----------41=_____

42. $(1/(0.00505))(7400 - 5970)^2$ ----------42=_____

43. $(709)\sqrt{11400 + 5310 + 18600}$ ----------43=_____

44. $\sqrt{82.4} + \sqrt{76.5 + 25.5} - (\pi)\sqrt{40.3}$ ----------44=_____

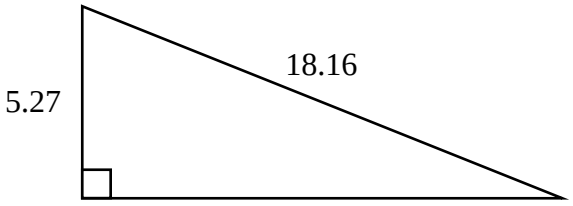
45. $\sqrt[3]{0.447 - 41.4/205} + 1/\sqrt{55.7 + 35.6}$ ----------45=_____

46. $\dfrac{1}{\sqrt{2190 + 2780 + 2150}} + \left(\dfrac{1}{\sqrt{19.8}}\right)^2$ ----------46=_____

47. A 12 foot board is cut into 2 pieces. One piece is 14 inches longer than the other. Calculate the length of the longer piece in feet. ---47=_____ft.

48. Morgan leaves her home averaging 52 mph and arrives at her destination a half hour early. If she averages 40 mph she arrives 30 minutes late. Calculate the speed she should drive to arrive right on time. ----------48=_____mph

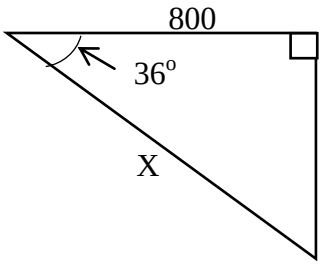
RIGHT TRIANGLE



Perimeter = ?

49=_____

RIGHT TRIANGLE



X = ?

50=_____

51. $\dfrac{\sqrt{14.9 + \pi + 18.2}}{(255 - 203 + 86.7)^2}$ ----------51=_____

52. $\left[\dfrac{19 - 15.4 + \sqrt{27400/4200}}{-8.64 + 33.7}\right]^{-3}$ ----------52=_____

53. $\sqrt{\dfrac{4.32\text{x}10^{14}}{(3000)(58.2)}} + \dfrac{(8.07\text{x}10^5 - 5.14\text{x}10^5)}{(2.65 + 1.89)}$ ----------53=_____

54. $(591)^2 \sqrt{(73.4)/(2.47)} - (4.97\text{x}10^5 + 1.37\text{x}10^6)$ ----------54=_____

55. $1.64 + \sqrt{(2030)/(34.5)} - (1.55 + 2.04)^2$ ----------55=_____

56. $\sqrt{\dfrac{1/(228 - 126)}{(259)(99.5 + 781)^3}}$ ----------56=_____

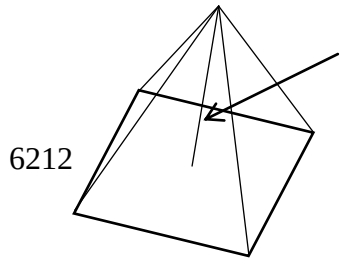
57. (deg) $\cos(1160^\circ) + (921/745)$ ----------57=_____

58. $\sqrt{\dfrac{(3.38)(561)}{(45.6) + (49.2)}} + 1/(0.779)^6$ ----------58=_____

59. The radius of a right circular cylinder is 485 cm. If the volume of the cylinder 2218 cm^3, calculate the height of the cylinder. -------59=_____cm

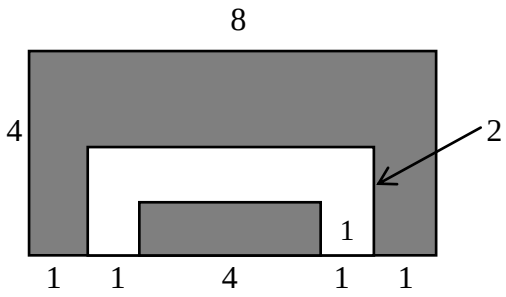
60. Calculate the probability of flipping a quarter and having it land on heads twelve times in a row. ----------60=_____

SQUARE BASED PYRAMID



61=_____

RECTANGLES



Shaded Area = ?

62=_____

63. $\frac{16! + 17!}{18!}$ ----------63=_____

64. $(180 - \pi)e^{0.941}$ ----------64=_____

65. $(2.75x10^{9} - 2.54x10^{9})^{7}(1.59x10^{8})$ ----------65=_____

66. (rad) $\frac{\sin(4.3)}{1640/60.5}$ ----------66=_____

67. (deg) $\sin(236° - 171°) + 0.84$ ----------67=_____

68. (rad) $\cos[(38.7 - 56.8)(28.4)]$ ----------68=_____

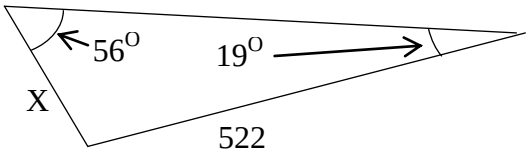
69. (deg) $\frac{\sin(968°)}{\tan(968°)}[221]$ ----------69=_____

70. $(240 + 214 + 269)^{1/5}$ ----------70=_____

71. If $7,500 is deposited at 6 ½% for 10 years, compounded annually, calculate the total amount in the account after those 10 years. ----71=$_____

72. Calculate the length of a 105^{o} 32 minute arc on a circle with a radius of 727.3 meters. ----------72=_____m

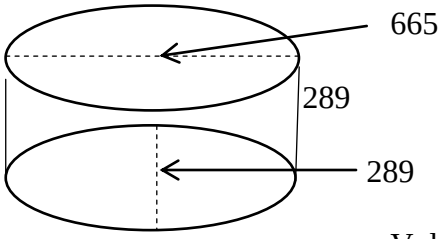
SCALENE TRIANGLE



X = ?

73=_____

RIGHT ELLIPTICAL SOLID



Volume = ?

74=_____

75. $\text{Ln}\left[\frac{377 + 472 + 436}{144 + 230 - 113}\right]$ ----------75=_____

76. $\frac{(9.66)^{0.732}(37.9)^{0.91}}{(51.1 - 20.6)^{-11}}$ ----------76=_____

77. $(54900)10^{(0.711)(1.19)}$ ----------77=_____

78. $(148)^{\pi}(155)^{2}(147 - 60.4)^{3}$ ----------78=_____

79. $2 + 4 + 6 + \ldots + 698$ ----------79=_____

80. $\frac{1}{(0.54)} + \frac{1}{3(0.54)^3} + \frac{1}{5(0.54)^5} + \frac{1}{7(0.54)^7}$ ----------80=_____

2018-2019 TMSCA Middle School Calculator Test 4 Answer Key

Page 1

1 = 5130
= 5.13×10^{3}

2 = -8.00
= -8.00×10^{0}

3 = 3820
= 3.82×10^{3}

4 = 0.142
= 1.42×10^{-1}

5 = -140
= -1.40×10^{2}

6 = -227
= -2.27×10^{2}

7 = -1.66
= -1.66×10^{0}

8 = 1.44
= 1.44×10^{0}

9 = 1.01×10^{6}

10 = 2.95×10^{9}

11 = 256 INT.

12 = 2150
= 2.15×10^{3}

13 = 51.4
= 5.14×10^{1}

Page 2

14 = -60.0
= -6.00×10^{1}

15 = 10500
= 1.05×10^{4}

16 = -58900
= -5.89×10^{4}

17 = 0.709
= 7.09×10^{-1}

18 = 1.32
= 1.32×10^{0}

19 = 0.258
= 2.58×10^{-1}

20 = 2.57×10^{-9}

21 = 0.00677
= 6.77×10^{-3}

22 = 22200
= 2.22×10^{4}

23 = 0.00143
= 1.43×10^{-3}

24 = 5.83
= 5.83×10^{0}

25 = 182,260 INT.

26 = 2690
= 2.69×10^{3}

Page 3

27 = 5.24×10^{-9}

28 = 996
= 9.96×10^{2}

29 = -955
= -9.55×10^{2}

30 = -32.2
= -3.22×10^{1}

31 = 1.21×10^{-13}

32 = 8.67×10^{9}

33 = 0.00888
= 8.88×10^{-3}

34 = 0.0213
= 2.13×10^{-2}

35 = 3.89×10^{627}

36 = 51 INT.

37 = 2.13×10^{7}

38 = 72.9
= 7.29×10^{1}

Page 4

39 = 101000
= 1.01×10^{5}

40 = 6.40×10^{16}

41 = 5.14×10^{11}

42 = 4.05×10^{8}

43 = 133000
= 1.33×10^{5}

44 = -0.767
= -7.67×10^{-1}

45 = 0.730
= 7.30×10^{-1}

46 = 0.0624
= 6.24×10^{-2}

47 = 6.58
= 6.58×10^{0}

48 = 45.2
= 4.52×10^{1}

49 = 40.8
= 4.08×10^{1}

50 = 989
= 9.89×10^{2}

2018-2019 TMSCA Middle School Calculator Test 4 Answer Key

51 = 0.000313
= 3.13×10^{-4}

52 = 67.5
= 6.75×10^{1}

53 = 114000
= 1.14×10^{5}

54 = 37000
= 3.70×10^{4}

55 = -3.58
= -3.58×10^{0}

56 = 2.35×10^{-7}

57 = 1.41
= 1.41×10^{0}

58 = 8.95
= 8.95×10^{0}

59 = 0.00300
= 3.00×10^{-3}

60 = 0.000244
= 2.44×10^{-4}

61 = 9.67×10^{10}

62 = 24.0
= 2.40×10^{1}

63 = 0.0588
= 5.88×10^{-2}

64 = 453
= 4.53×10^{2}

65 = 2.86×10^{66}

66 = -0.0338
= -3.38×10^{-2}

67 = 1.75
= 1.75×10^{0}

68 = 0.380
= 3.80×10^{-1}

69 = -82.8
= -8.28×10^{1}

70 = 3.73
= 3.73×10^{0}

71 = $14078.53

72 = 1340
= 1.34×10^{3}

73 = 205
= 2.05×10^{2}

74 = 4.36×10^{7}

75 = 1.59
= 1.59×10^{0}

76 = 3.05×10^{18}

77 = 385000
= 3.85×10^{5}

78 = 1.03×10^{17}

79 = 122000
= 1.22×10^{5}

80 = 19.0
= 1.90×10^{1}

11. There are 8 geometry and 14 word problems = 22. She missed 11 of those and 5 more. 80(5) – 16(9)

12. 20(50) + 50(75) lbs. Convert to kg on calculator. If your calculator doesn't convert, divide by 2.2. This is not as accurate but sufficient.

13.

$$2x + 5x + 4x + 3x + 7x = 540$$

$$x = \frac{540}{21}$$

Shortest side is $2x = 2\left(\frac{540}{21}\right)$

24. Harmonic mean = reciprocal of the average of the reciprocals.

$$1 \div \left(\frac{\frac{1}{5} + \frac{1}{7}}{2}\right)$$

25. $1.2x = 218712$

$$x = \frac{218712}{1.2}$$

26. Side of a square = $\frac{952.1}{\sqrt{2}}$

Perimeter = $4\left(\frac{952.1}{\sqrt{2}}\right)$

35. $(521)^{231}$:

231 [ENTER] 521 [LOG] [x] 627 [−] [10^x]

[SHOW] *(Look at the digits to the left of the decimal. This gives 627 for the exponent. Write down 627.) Punch (This gives 3.89 EO which is the first part of your answer. The answer is* $3.89\ x\ 10^{627}$

36. $n = q + 20;\ q = n - 20$

$$\left\{\begin{array}{c} 5n + 25q = 1030 \\ q = n - 20 \\ 5n + 25(n - 20) = 1030 \\ 30n = 1530 \\ n = \frac{1530}{30} \end{array}\right\}$$

37. $A = \frac{1}{4}\pi(5.21\ x\ 10^3)^2$

38. An equilateral triangle consists of two 30-60-90 triangles. The hypotenuse of the 30-60-90 triangle is $2\left(\frac{h}{\sqrt{3}}\right) = 2\left(\frac{21.05}{\sqrt{3}}\right)$

47. x = shorter piece

$x + \frac{14}{12}$ = longer piece

$$2x + \frac{14}{12} = 12$$

$x = \frac{12 - \frac{14}{12}}{2}$ = shorter piece

Longer piece = $\frac{12 - \frac{14}{12}}{2} + \frac{14}{12}$

48. x = time is should have taken. Distance = rate (time)

	Rate	Time
Fast	52	$x - \frac{1}{2}$
Slow	40	$x + \frac{1}{2}$

Distances are equal.

$$52\left(x - \frac{1}{2}\right) = 40\left(x + \frac{1}{2}\right)$$

$$52x - 26 = 40x + 20$$

$12x = 46;\ x = \frac{46}{12}$ = time

Distance = $52\left(x - \frac{1}{2}\right) =$

$52\left(\frac{46}{12} - \frac{1}{2}\right)$ $Rate = \frac{distance}{time}$

Rate = $\frac{52\left(\frac{46}{12} - \frac{1}{2}\right)}{\frac{46}{12}}$

49. Long leg = $\sqrt{18.16^2 - 5.27^2}$

Perimeter = three sides added together.

50. $\frac{\cos 36}{1} = \frac{800}{x};\ x = \frac{800}{\cos 36}$

59. $V = \pi r^2 h$

$2218 = \pi(485)^2 h$

$$h = \frac{2218}{\pi(485)^2}$$

60. $\left(\frac{1}{2}\right)^{12}$

61. $V = \frac{1}{3}Bh =$

$$\frac{1}{3}(6212)^2(7518)$$

62. 8(4) – 2(1) – 2(1) – 4(1)

71. $7500(1.065)^{10}$

72. $\left[\frac{105\frac{32}{60}}{360}\right][2\pi(727.3)]$

73. $\frac{\sin 56}{522} = \frac{\sin 19}{x}$

$$x = \frac{(522)(\sin 19)}{\sin 56}$$

74. $V = \pi r_1 r_2 h =$

$$\pi\left(\frac{665}{2}\right)\left(\frac{289}{2}\right)289$$