8

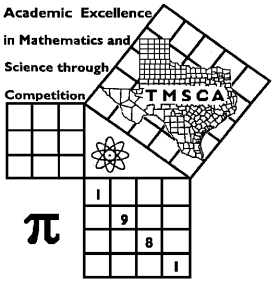
1st Score: _____	2nd Score: _____	3rd Score: _____	
S & G _____	S & G _____	S & G _____	_____. _____
Grader: _____	Grader: _____	Grader: _____	**Final Score**

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 #2 ©

OCTOBER 27, 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 2

1. 5090 + 2690 ---------- 1=_____

2. 42 + 93 + 63 ---------- 2=_____

3. 264 + 264 + 418 ---------- 3=_____

4. 33 + 35 + 71 + 46 ---------- 4=_____

5. 660 – 134 – 870 – 726 ---------- 5=_____

6. 89.5 – 154 – 158 – 170 + 62.4 ---------- 6=_____

7. 4.83 + 3.42 – 4.74 + 5.83 + 0.998 ---------- 7=_____

8. 0.243 + 0.256 + 1.4 + 0.628 + 0.891 ---------- 8=_____

9. 401 x 417 x 236 ---------- 9=_____

10. 484 x 82.7 x 119 x 1680 ----------10=_____

11. The Fibonacci sequence is given as 1,1,2,3,5,8,13… where each term is the sum of the previous two terms. Calculate the mean of the first ten terms. ----------11=_____

12. Calculate the circumference of a circle with a radius that measures 25.98 inches. ----------12=_____in.

13. One million is what percent more than one thousand, five hundred twenty-two. ----------13=_____%

14. $(163/86)[191 - 186]$ ----------14=_____

15. $228/[195 \times 232 \times 358]$ ----------15=_____

16. $\{290/252\}\left[\frac{148}{130 + 170}\right]$ ----------16=_____

17. $\left[\frac{318}{239}\right][(263/53) - 4.78]$ ----------17=_____

18. $\left[\frac{(47.2 + 48.4)}{253/130}\right]\left[\frac{1.33}{15.4}\right]$ ----------18=_____

19. $\left[\frac{(521/1770) - (646/2430)}{2.97/(1.37)}\right]$ ----------19=_____

20. $\frac{2.35 + 5.82 + \pi}{(9.30\text{x}10^{-4})(6.04\text{x}10^{-4})(0.0298)}$ ----------20=_____

21. $\frac{91}{(20 - 72)} - \frac{(40 - 20)}{86}$ ----------21=_____

22. $\frac{(0.00422 + 0.00535 - 0.00666)}{\{(0.0405 - 0.117)/(57.5)\}}$ ----------22=_____

23. $\left[\frac{1850 + 252}{288 - 1050}\right]\left[\frac{1580}{1040}\right]$ ----------23=_____

24. Calculate the number of distinct diagonals there are in a polygon with thirty-one sides. ----------24=_____INT.

25. Donna has $450 in a savings account. The interest rate is 4.75% per year simple interest. Calculate the amount of interest earned in ten years. ----------25=$_____

26. If the radius of a circle is doubled, calculate the ratio of the area of the original circle to that of the new circle. ----------26=_____

27. $(0.306)\left[[86.4/(165)][0.00211/(0.00151)]\right]$ ----------27=_____

28. $\dfrac{(0.0202 - 0.0491)(5.72 + 12)}{(1.06\text{x}10^{12})}$ ----------28=_____

29. $(0.0528)\left[(44.7/54.5)(595 + 473)\right]$ ----------29=_____

30. $(28)\left[(1.18\text{x}10^{6}) - (2.08\text{x}10^{6})\right]$ ----------30=_____

31. $[5.96]\left[\dfrac{1/0.0164}{1/(0.00566)}\right]$ ----------31=_____

32. $\dfrac{(2.15 + 2.8)}{(5.16\text{x}10^{12})}$ ----------32=_____

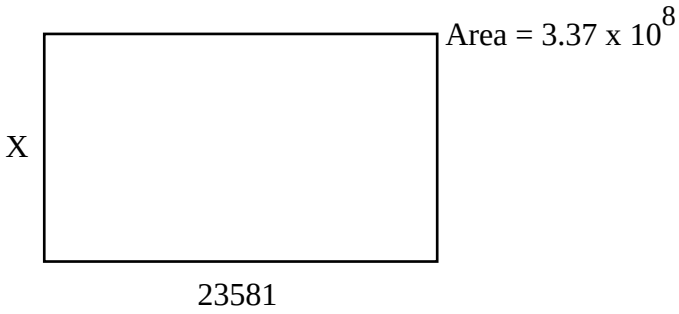
33. $\frac{1}{154} - \frac{1}{121} + \frac{1}{118}$ ----------33=_____

34. $\frac{1}{494} - \frac{1}{(731 + 399)}$ ----------34=_____

35. An automated machine can produce 217 stalmers in 18 minutes. Calculate how many minutes, at this rate, it will take to produce 1,000 stalmers. ----------35=_____min.

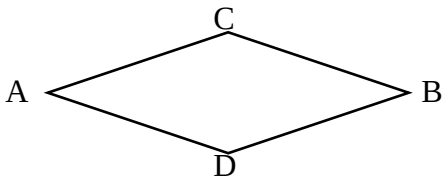
36. Calculate the value of 1001001 Base 2 in Base 10. ----------36=_____INT.

RECTANGLE



37=_____

RHOMBUS



CD = 111
AB = 353

Area = ?

38=_____

39. $\left[\frac{301}{24.4}\right](2970 + 2100)^2$ ----------39=_____

40. $(0.258 + 0.629)^2(0.218 + 0.458)^2$ ----------40=_____

41. $\left[\frac{10400 + (1/(1.45\text{x}10^{-4}))}{(23100/29600) - 0.566}\right]^2$ ----------41=_____

42. $(1/\pi)\sqrt{\frac{2.24 + 1.17}{2.86 - 1.36}}$ ----------42=_____

43. $\sqrt{1450} + \sqrt{2660 + 452} - (\pi)\sqrt{1990}$ ----------43=_____

44. $(1/(0.0236))(21800 - 16500)^2$ ----------44=_____

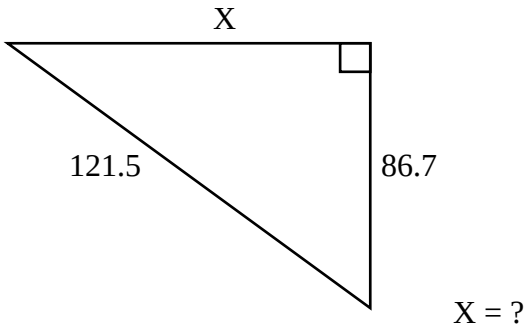
45. $(213)\sqrt{41300 + 69700 - 38000}$ ----------45=_____

46. $\sqrt[4]{2.76 - 650/354} + 1/\sqrt{0.822 + 0.286}$ ----------46=_____

47. The Central Japan Railway Company set a world speed record of 603 kilometers per hour April 20, 2015. Calculate how many miles the train travels in one minute. ----------47=_____mi.

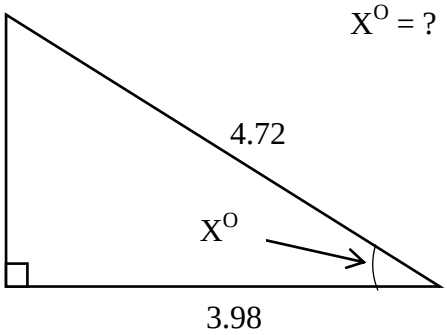
48. Tracy was working on her calculator test and managed to finish all problems through #78. When she got her corrected test back, her score was 282. Calculate how many problems she missed. --------48=_____INT.

RIGHT TRIANGLE



49=_____

RIGHT TRIANGLE



50=_____

51. $\dfrac{(18900 + 10200 - 32200)^4}{\sqrt{1.27 + 0.908 + 0.739}}$ ----------51=_____

52. $\left[\dfrac{\sqrt{\sqrt{0.124 - 0.0163}}}{-(0.484 - 0.422)}\right]^3 [7.1 + 8.02]$ ----------52=_____

53. $\dfrac{\sqrt{55.7 + \pi + 31.9}}{(753 - 784 + 193)^3}$ ----------53=_____

54. $(2.32)^2 \sqrt{(81.9)/(1.84)} - (21.9 + 27.8)$ ----------54=_____

55. $\sqrt{\dfrac{1/(358 - 254)}{(10.5)(23.3 + 20.2)^2}}$ ----------55=_____

56. $(0.196)(3.40\text{x}10^7)^{1/4} - [(6.36)(20.6)]^{1/2}$ ----------56=_____

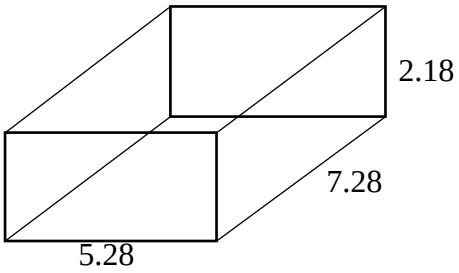
57. (deg) $\sin(124^\circ) + (75.9/68.9)$ ----------57=_____

58. $\sqrt{\dfrac{1/(78.8 - 65.2)}{(194)(450 + 283)^{-3}}}$ ----------58=_____

59. The sum of two numbers is 28.7. The difference of the two numbers is 18.1. Calculate the larger of the two numbers. --------59=_____

60. The value of x varies inversely as y. If x = 271 when y = 82, calculate the value of y when x = 21. ----------60=_____

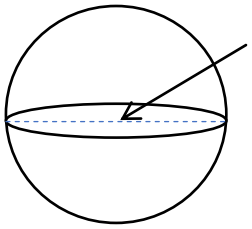
RECTANGULAR PRISM



Surface Area = ?

61=_____

SPHERE



Volume = ?

62=_____

63. $\frac{22! - 24!}{15!}$ ----------63=_____

64. (deg) $\frac{\cos(0.76°)}{317}$ ----------64=_____

65. $(1.11 \times 10^{8} - 1.57 \times 10^{8})^{4}(44100)$ ----------65=_____

66. (rad) $\frac{\cos(41.8)}{144/1020}$ ----------66=_____

67. (deg) $\cos(72.1° - 38.2°) + 0.11$ ----------67=_____

68. (rad) $(4.9)\sin(34.2)$ ----------68=_____

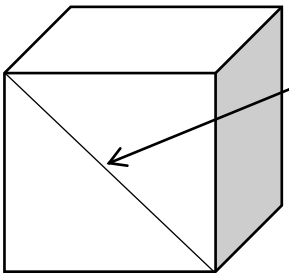
69. (deg) $\frac{\sin(94.3°) - \tan(94.3°)}{\sin(94.3°)}$ ----------69=_____

70. $(72.2 - 58.4)^{0.472 - 0.222}$ ----------70=_____

71. Calculate the probability of rolling a two on a standard six-sided die. ----------71=_____

72. Donna put $450 in a savings account. The interest rate is 4.75% compounded annually. Calculate the amount of interest earned in ten years. ----------72=$_____

CUBE

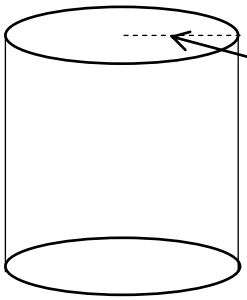


Diagonal of face = 2891

Surface Area = ?

73=_____

CYLINDER



Radius = 800

1900

Lateral Surface Area = ?

74=_____

75. $\dfrac{\text{Log}(2.75\text{x}10^{10} + 2.16\text{x}10^{10})}{\pi}$ ----------75=_____

76. $\dfrac{(1.09)^{0.452}(0.256)^{0.278}}{(30.2 - 11.2)^{-3}}$ ----------76=_____

77. $\dfrac{4.37 - 15.5}{\text{Log}(300 + 49.6)}$ ----------77=_____

78. $(38.3)^{\pi}(1.11)^{5}(78.8 - 41.8)^{5}$ ----------78=_____

79. $2 + 4 + 6 + \ldots + 466$ ----------79=_____

80. $-\dfrac{1}{(2.4)} + \dfrac{1}{3(2.4)^3} - \dfrac{1}{5(2.4)^5} + \dfrac{1}{7(2.4)^7}$ ----------80=_____

2018-2019 TMSCA Middle School Calculator Test 2 Answer Key

Page 1

1 = 7780
= 7.78×10^{3}

2 = 198
= 1.98×10^{2}

3 = 946
= 9.46×10^{2}

4 = 185
= 1.85×10^{2}

5 = -1070
= -1.07×10^{3}

6 = -330
= -3.30×10^{2}

7 = 10.3
= 1.03×10^{1}

8 = 3.42
= 3.42×10^{0}

9 = 3.95×10^{7}

10 = 8.00×10^{9}

11 = 14.3
= 1.43×10^{1}

12 = 163
= 1.63×10^{2}

13 = 65600
= 6.56×10^{4}

Page 2

14 = 9.48
= 9.48×10^{0}

15 = 1.41×10^{-5}

16 = 0.568
= 5.68×10^{-1}

17 = 0.243
= 2.43×10^{-1}

18 = 4.24
= 4.24×10^{0}

19 = 0.0131
= 1.31×10^{-2}

20 = 6.76×10^{8}

21 = -1.98
= -1.98×10^{0}

22 = -2.19
= -2.19×10^{0}

23 = -4.19
= -4.19×10^{0}

24 = 434 INT.

25 = $213.75

26 = 0.250
= 2.50×10^{-1}

Page 3

27 = 0.224
= 2.24×10^{-1}

28 = -4.83×10^{-13}

29 = 46.3
= 4.63×10^{1}

30 = -2.52×10^{7}

31 = 2.06
= 2.06×10^{0}

32 = 9.59×10^{-13}

33 = 0.00670
= 6.70×10^{-3}

34 = 0.00114
= 1.14×10^{-3}

35 = 82.9
= 8.29×10^{1}

36 = 73 INT.

37 = 14300
= 1.43×10^{4}

38 = 19600
= 1.96×10^{4}

Page 4

39 = 3.17×10^{8}

40 = 0.360
= 3.60×10^{-1}

41 = 6.51×10^{9}

42 = 0.480
= 4.80×10^{-1}

43 = -46.3
= -4.63×10^{1}

44 = 1.19×10^{9}

45 = 57500
= 5.75×10^{4}

46 = 1.93
= 1.93×10^{0}

47 = 6.24
= 6.24×10^{0}

48 = 12 INT.

49 = 85.1
= 8.51×10^{1}

50 = 32.5
= 3.25×10^{1}

2018-2019 TMSCA Middle School Calculator Test 2 Answer Key

Page 5

51 = 5.41×10^{13}

52 = -11900
= -1.19×10^{4}

53 = 2.24×10^{-6}

54 = -13.8
= -1.38×10^{1}

55 = 0.000696
= 6.96×10^{-4}

56 = 3.52
= 3.52×10^{0}

57 = 1.93
= 1.93×10^{0}

58 = 386
= 3.86×10^{2}

59 = 23.4
= 2.34×10^{1}

60 = 1060
= 1.06×10^{3}

Page 6

61 = 132
= 1.32×10^{2}

62 = 6.95×10^{-8}

63 = -4.74×10^{11}

64 = 0.00315
= 3.15×10^{-3}

65 = 1.97×10^{35}

66 = -4.07
= -4.07×10^{0}

67 = 0.940
= 9.40×10^{-1}

68 = 1.71
= 1.71×10^{0}

69 = 14.3
= 1.43×10^{1}

70 = 1.93
= 1.93×10^{0}

71 = 0.167
= 1.67×10^{-1}

72 = $265.74

Page 7

73 = 2.51×10^{7}

74 = 9550000
= 9.55×10^{6}

75 = 3.40
= 3.40×10^{0}

76 = 4880
= 4.88×10^{3}

77 = -4.38
= -4.38×10^{0}

78 = 1.10×10^{13}

79 = 54500
= 5.45×10^{4}

80 = -0.395
= -3.95×10^{-1}

11. 1,1,2,3,5,8,13,21,34,55
Find the sum of these numbers. Then divide by 10.

12. $C = 2\pi r = 2\pi(25.98)$

13. On HP RPN: 1522 enter; 1,000,000 %CHG
Without RPN:
$$\left(\frac{1{,}000{,}000 - 1522}{1522}\right)(100)$$

24. $\frac{n(n-3)}{2} = \frac{(31)(28)}{2}$

25.
$I = Prt = 450(.0475)(10)$

26. If the radius is doubled, the area is 4 times as big. So the ratio of the original to the larger is 1:4

35. $\frac{217\ st}{18\ min} = \frac{1000\ st}{x\ min}$ So

$$x = \frac{18(1000)}{217}$$

36. $1001001_2 =$
$1(2^6) + 1(2^3) + 1 =$
$64 + 8 + 1$

37. A = LW
$3.37\ x\ 10^8 = 23581\ W$
$W = \frac{3.37\ x\ 10^8}{23581}$

38. $A = \frac{(d_1)(d_2)}{2} = \frac{(111)(353)}{2}$

47. $\frac{603\ km}{1\ hr} \cdot \frac{1\ mi}{1.61\ km} \cdot \frac{1\ hr}{60\ min}$

$$= \frac{603}{1.61(60)}$$

48. $78(5) - 9x = 282$
$-9x = 282 - 78(5)$

$$x = \frac{282 - 78(5)}{-9}$$

49. $x = \sqrt{121.5^2 - 86.7^2}$

50. $\cos x = \frac{3.98}{4.72}$
$x = Acos\left(\frac{3.98}{4.72}\right)$

59. $\begin{Bmatrix} x + y = 28.7 \\ x - y = 18.1 \end{Bmatrix}$
$2x = 46.8$
$x = 23.4$
We know x is the larger since the second equation had larger minus smaller = 18.1

60. $(x_1)(y_1) = (x_2)(y_2)$

271(82) = $21y_2$; $y_2 = \frac{271(82)}{21}$

61.
$2[5.28(7.28) +$
$5.28(2.18) + 7.28(2.18)]$

62. $V = \frac{4}{3}\pi r^3 =$
$\frac{4}{3}\pi\left(\frac{.0051}{2}\right)^3$

71. $\frac{1}{6}$

72. Total in the account:
A = $\$450(1.0475)^{10}$
To get interest only, subtract $450 from this answer.

73. Area of one face of the cube is $\frac{d^2}{2}$. All six faces is
$$6\left(\frac{d^2}{2}\right) = 6\left(\frac{2891^2}{2}\right)$$

74.
$2\pi rh =$
$Lateral\ surface\ area =$
$2\pi(800)(1900)$