8

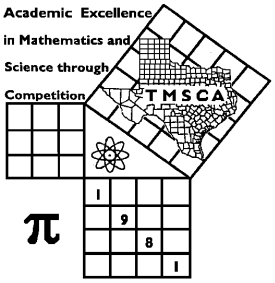
1st Score: _____	2nd Score: _____	3rd Score: _____	
S & G _____	S & G _____	S & G _____	_____. _____
Grader: _____	Grader: _____	Grader: _____	**Final Score**

PLACE LABEL BELOW

Name:_____ School:_____

SS/ID Number:_____ City:_____

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



T M S C A M I D D L E S C H O O L

C A L C U L A T O R

T E S T # 1 ©

O C T O B E R 19 , 2 0 1 9

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. HP Prime and Casio Prizm 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.

2019-2020 TMSCA Middle School Calculator Test #1

1. 8260 – 5710 ---------- 1=_____

2. –2.91 + 4.9 + 0.5 ---------- 2=_____

3. –2560 – 5380 – 7140 ---------- 3=_____

4. 49 + 68 – 68 – 34 ---------- 4=_____

5. 1820 + 2290 + 902 + 2990 ---------- 5=_____

6. 174 – 224 – 40.2 + 144 + 236 ---------- 6=_____

7. 1.46 + 1.57 + 0.692 + 0.984 + 1.31 ---------- 7=_____

8. 3.65 – 2.95 + 5.59 – 5.53 – 3.32 ---------- 8=_____

9. 93.9 x 146 x 65.1 ---------- 9=_____

10. 108 x 1910 x 366 x 444 ---------- 10=_____

11. Calculate the area of a triangle with a base of $1.03x10^4$ in. and a height of $3.79x10^4$ in. ---------- 11=_____$in.^2$

12. Calculate the mode of Ms. Moon's first period test scores. 92,88,75 91,85,75,98,80,75,85,75,89,91, and 72. ---------- 12=_____INT.

13. Calculate the number of inches in five miles. ---------- 13=_____in.

14. (286)[197 x 273 x 34] ---------- 14=_____

15. 48/[75 x 322 x 253] ---------- 15=_____

16. $\{31/32\}\left[\frac{177}{24 + 93}\right]$ ---------- 16=_____

17. $\left[\frac{-181}{266}\right]$ [(122/146) + 0.577] ---------- 17=_____

18. $\left[\frac{196/129}{174/224}\right]$ {0.00564 + 0.0202 – 0.0331} ---------- 18=_____

19. $\left[\frac{(794/1130) - (1510/1600)}{22.6/(8.82)}\right]$ ---------- 19=_____

20. $\frac{(17.7)(0.245)}{0.00212}$ (245 – 88.7) ---------- 20=_____

21. (151)[203/329 x 95/226] – 19.9 ---------- 21=_____

22. $\frac{(1730 \times 341)/1890}{(1880 \times 0.00628) + 4.37}$ ---------- 22=_____

23. $\left[\frac{3050 + 3140}{2700 - 2960}\right]\left[\frac{1320}{959}\right]$ ---------- 23=_____

24. Calculate the geometric mean of log 875 and ln 712. ---------- 24=_____

25. A T.V. is on sale for $1721.98. This price is 30% off the original price. Calculate the original price of the T.V. ---------- 25=$_____

26. The length of Dougs' truck is four and a half times the height. If the length of his truck is twenty-seven and eight tenths feet, calculate the height in feet. ---------- 26=_____ft.

27. $\dfrac{(27.2 + 14.9)(0.122 + 0.0776)}{(4.11\text{x}10^{11})}$ ---------- 27=_____

28. $[963 - (2480 + 1200)] + [(0.989)(2590 - 3220)]$ ------- 28=_____

29. $\dfrac{(35.1 - 60.9)(0.0136 + 0.0061)}{(9.40\text{x}10^{12})}$ ---------- 29=_____

30. $[0.171]\left[\dfrac{1/0.734}{1/(\pi)}\right]$ ---------- 30=_____

31. $\dfrac{1}{-2240} + \dfrac{1}{(1400 - 2310)}$ ---------- 31=_____

32. $\dfrac{1}{-993} + \dfrac{1}{(\pi)(1110 - 1470)}$ ---------- 32=_____

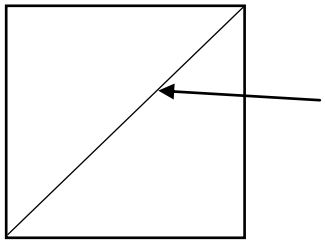
33. $\left[\dfrac{1/2630}{1/2630}\right][1.55\text{x}10^{6}]$ ---------- 33=_____

34. $\left[\dfrac{1/274}{1/167}\right] + [0.148]$ ---------- 34=_____

35. Calculate 1726^{2335}. ---------- 35=_____

36. The diameter of a circle and the diagonal of a square are equal at 5216 feet. Calculate the difference between the area of the circle and the area of the square. ---------- 36=_____

SQUARE

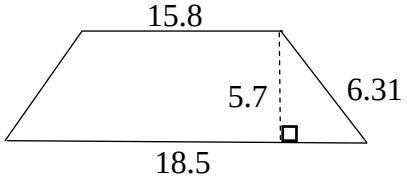


Diagonal = 52.25

Side = ?

37=_____

TRAPEZOID



Area = ?

38=_____

39. $\dfrac{(7030 + 3860)^2}{(0.319 - 0.203)^3}$ ---------- 39=_____

40. $\sqrt[3]{\dfrac{0.755 + 0.738}{1.51 - 0.563}}$ ---------- 40=_____

41. $\left[\dfrac{3.57}{10.5}\right](922 + 1250)^2$ ---------- 41=_____

42. $(1/\pi)\sqrt[3]{\dfrac{0.00649 + 0.0316}{0.168 - 0.12}}$ ---------- 42=_____

43. $\sqrt{(1460/2410) + 0.569 - 0.184}$ ---------- 43=_____

44. $(11600)\sqrt{82.7 + 166 + 38}$ ---------- 44=_____

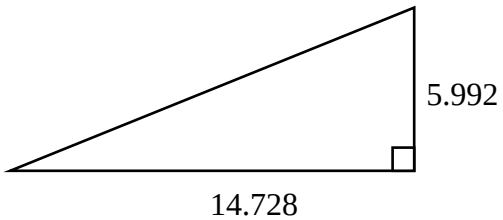
45. $\dfrac{1}{\sqrt{772 + 222 + 180}} + \left(\dfrac{1}{\sqrt{4.52}}\right)^4$ ---------- 45=_____

46. $\sqrt[3]{6.78 - 1500/1100} + 1/\sqrt{0.00206 + 0.00563}$ ---------- 46=_____

47. Kendra wanted to travel to New York. It is 1,595 miles from where she lives. She wants to drive 8 hours per day and take 3 days. Calculate her average speed to accomplish this. ---------- 47=_____mph

48. Two angles are complementary. One angle measures $(2x-5)^\circ$ and the other measures $(3x+8)^\circ$. Calculate the measure of the smaller angle. ---------- 48=_____$^\circ$

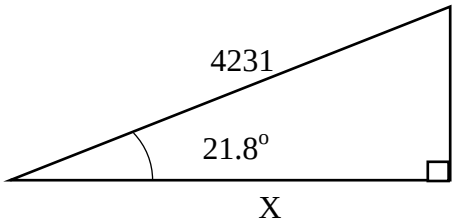
RIGHT TRIANGLE



Perimeter = ?

49=_____

RIGHT TRIANGLE



X = ?

50=_____

51. $\dfrac{(2170 + 6000 - 4330)^3}{\sqrt{0.799 + 0.197 + 0.488}}$ ---------- 51=_____

52. $\dfrac{\sqrt{2.63 + \pi + 2.07}}{(3.73\text{x}10^5 - 3.92\text{x}10^5 + 1.29\text{x}10^5)^2}$ ---------- 52=_____

53. $\sqrt{\dfrac{3.75\text{x}10^{-6}}{(7.6)(28.3)}} + \dfrac{(3880 - 3960)}{(1.52\text{x}10^5 + 2.08\text{x}10^5)}$ ---------- 53=_____

54. $(9.52)^2 \sqrt{(153)/(14.1)} - (54.5 + 193)$ ---------- 54=_____

55. $0.379 + \sqrt{(121)/(168)} - (0.463 + 0.817)^2$ ---------- 55=_____

56. $21600 + \sqrt{(13200)(26900)} - (12600 + 11000)$ ---------- 56=_____

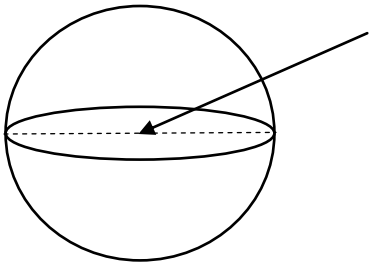
57. $\sqrt{\dfrac{1/(41.3 - 39)}{(25.1)(348 + 341)^{-6}}}$ ---------- 57=_____

58. (deg) $\tan(26.2^\circ) + (33.4/36.6)$ ---------- 58=_____

59. Calculate the distance between the origin and the point (-12,7) on a coordinate plane. ---------- 59=_____

60. The sum of three consecutive integers is 3666. Calculate the value of the smallest integer. ---------- 60=_____INT.

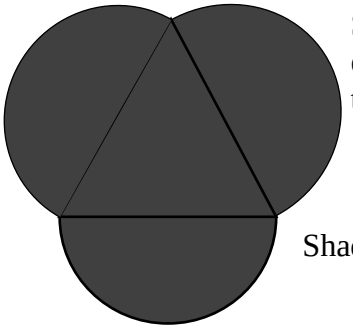
SPHERE



Volume = ?

61=_____

EQUILATERAL TRIANGLE AND SEMICIRCLES



Side of equilateral triangle = 7.77

Shaded Area = ?

62=_____

63. $\frac{18!}{13!} + 10!$ ---------- 63=_____

64. (deg) $(9590 + 28800)\sin(6.92°)$ ---------- 64=_____

65. (deg) $\frac{\sin(93.3°)}{80.4}$ ---------- 65=_____

66. (rad) $\cos\left[\frac{(115)(\pi)}{(105)(6.71)}\right]$ ---------- 66=_____

67. (deg) $[36.5]\tan(255° - 123°)$ ---------- 67=_____

68. (deg) $\frac{\tan(106°)}{2200 + 2400}$ ---------- 68=_____

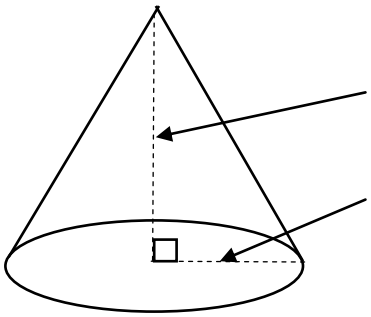
69. (rad) $\tan[(8.2 - 12.4)(0.4)]$ ---------- 69=_____

70. $(722 + 620 + 2880)^{4/5}$ ---------- 70=_____

71. Calculate the odds of drawing a numbered card, 2-10 inclusive, from a standard deck of cards. ---------- 71=_____

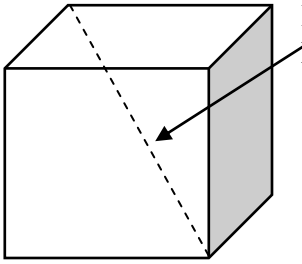
72. A regular octagon has a side length of 21.76 cm. Calculate the length of the longest diagonal. ---------- 72=_____cm

CONE



73=_____

CUBE



74=_____

75. $\dfrac{(63.7)^{0.614}(1.83)^{0.499}}{(8.2 - 3.09)^{-12}}$ ---------- 75=_____

76. $\dfrac{\text{Log}(0.283 + 0.615)}{5210 - 2930}$ ---------- 76=_____

77. $\dfrac{42100 - 9520}{\text{Log}(130 + 79.2)}$ ---------- 77=_____

78. $\dfrac{\text{Log}[10300 + (112)(163)]}{2.88 + \text{Log}[722 + 474]}$ ---------- 78=_____

79. $1 + 3 + 5 + \ldots + 521$ ---------- 79=_____

80. $-\dfrac{1}{(5.9)} + \dfrac{1}{3(5.9)^3} - \dfrac{1}{5(5.9)^5} + \dfrac{1}{7(5.9)^7}$ ---------- 80=_____

2019-2020 TMSCA Middle School Calculator Test #1 Answer Key

Page 1

1 = 2550
= 2.55×10^{3}

2 = 2.49
= 2.49×10^{0}

3 = -15100
= -1.51×10^{4}

4 = 15.0
= 1.50×10^{1}

5 = 8000
= 8.00×10^{3}

6 = 290
= 2.90×10^{2}

7 = 6.02
= 6.02×10^{0}

8 = -2.56
= -2.56×10^{0}

9 = 892000
= 8.92×10^{5}

10 = 3.35×10^{10}

11 = 1.95×10^{8}

12 = 75 INT.

13 = 317000
= 3.17×10^{5}

Page 2

14 = 5.23×10^{8}

15 = 7.86×10^{-6}

16 = 1.47
= 1.47×10^{0}

17 = -0.961
= -9.61×10^{-1}

18 = -0.0142
= -1.42×10^{-2}

19 = -0.0941
= -9.41×10^{-2}

20 = 320000
= 3.20×10^{5}

21 = 19.3
= 1.93×10^{1}

22 = 19.3
= 1.93×10^{1}

23 = -32.8
= -3.28×10^{1}

24 = 4.40
= 4.40×10^{0}

25 = $2459.97

26 = 6.18
= 6.18×10^{0}

Page 3

27 = 2.04×10^{-11}

28 = -3340
= -3.34×10^{3}

29 = -5.41×10^{-14}

30 = 0.732
= 7.32×10^{-1}

31 = -0.00155
= -1.55×10^{-3}

32 = -0.00189
= -1.89×10^{-3}

33 = 1.55×10^{6}

34 = 0.757
= 7.57×10^{-1}

35 = 3.09×10^{7558}

36 = 7.76×10^{6}

37 = 36.9
= 3.69×10^{1}

38 = 97.8
= 9.78×10^{1}

Page 4

39 = 7.60×10^{10}

40 = 1.16
= 1.16×10^{0}

41 = 1.60×10^{6}

42 = 0.295
= 2.95×10^{-1}

43 = 0.995
= 9.95×10^{-1}

44 = 196000
= 1.96×10^{5}

45 = 0.0781
= 7.81×10^{-2}

46 = 13.2
= 1.32×10^{1}

47 = 66.5
= 6.65×10^{1}

48 = 29.8
= 2.98×10^{1}

49 = 36.6
= 3.66×10^{1}

50 = 3930
= 3.93×10^{3}

2019-2020 TMSCA Middle School Calculator Test #1 Answer Key

Page 5

51 = 4.65×10^{10}

52 = 2.31×10^{-10}

53 = -9.02×10^{-5}

54 = 51.0
= 5.10×10^{1}

55 = -0.411
= -4.11×10^{-1}

56 = 16800
= 1.68×10^{4}

57 = 4.30×10^{7}

58 = 1.40
= 1.40×10^{0}

59 = 13.9
= 1.39×10^{1}

60 = 1221 INT.

Page 6

61 = 7.58×10^{7}

62 = 97.3
= 9.73×10^{1}

63 = 4.66×10^{6}

64 = 4630
= 4.63×10^{3}

65 = 0.0124
= 1.24×10^{-2}

66 = 0.871
= 8.71×10^{-1}

67 = -40.5
= -4.05×10^{1}

68 = -0.000758
= -7.58×10^{-4}

69 = 9.12
= 9.12×10^{0}

70 = 795
= 7.95×10^{2}

71 = 2.25
= 2.25×10^{0}

72 = 56.9
= 5.69×10^{1}

Page 7

73 = 9.07×10^{-9}

74 = 6.13×10^{10}

75 = 5.49×10^{9}

76 = -2.05×10^{-5}

77 = 14000
= 1.40×10^{4}

78 = 0.748
= 7.48×10^{-1}

79 = 68100
= 6.81×10^{4}

80 = -0.168
= -1.68×10^{-1}

TMSCA 19-20 MS CA Test #1 Solutions to Word and Geometry Problems

11. $\frac{(1.03\ x\ 10^4)(3.79\ x\ 10^4)}{2}$

12. 75 appears most often

13. (5280)(12)(5)

24. $\sqrt{(\log 875)(ln\ 712)}$

25. If it is 30% off, then 70% is paid. .7x = 1721.98

$$x = \frac{1721.98}{.7}$$

26. L = 4.5h; 27.8 = 4.5h

$$h = \frac{27.8}{4.5}$$

35. 1726^{2335}.

2335 [ENTER] 1726 [LOG] [x] [SHOW] *(Look at the digits to the left of the decimal. This gives 7558 for the exponent. Write down 10^{7558}.) Then punch 7558* [−] [10^x] *(This gives 3.09 E0 which is the first part of your answer. The answer is* **3.09 x10^{7558}***). This is done on the HP RPN calculator.*

36. Area of circle minus area of square:

$$\left(\frac{5216}{2}\right)^2 \pi - \frac{5216^2}{2}$$

37. $\frac{52.25}{\sqrt{2}}$

38. $\frac{(18.5+15.8)(5.7)}{2}$

47. $\frac{1595}{8(3)}$

48. $2x - 5 + 3x + 8 = 90$

$$5x - 87; x = \frac{87}{5}$$

The smaller angle is 2x – 5 so answer is $2\left(\frac{87}{5}\right) - 5$

49. Hypotenuse = $\sqrt{5.992^2 + 14.728^2}$

Perimeter = hypotenuse plus the other two sides.

50. $\frac{cos\ 21.8}{1} = \frac{x}{4231}$

$$x = 4231(\cos 21.8)$$

59. $\sqrt{12^2 + 7^2}$

60. $\frac{3666}{3}$ = the middle integer = 1222. The smallest is 1221

61. $\frac{4}{3}\pi r^3 = \frac{4}{3}\pi\left(\frac{525}{2}\right)^3$

62. Equilateral triangle Area =

$$\frac{7.77^2\sqrt{3}}{4}$$

$$1\frac{1}{2}\ circles = 1.5\left(\frac{7.77}{2}\right)^2 \pi$$

Find the sum of these shapes.

71. 36 cards in a deck are 2-10. 16 cards are not 2-10.

$$\frac{36}{16}$$

72. Longest diagonal in a polygon with an even # of sides = $\frac{side}{\sin\left(\frac{180}{n}\right)} = \frac{21.76}{\sin\left(\frac{180}{8}\right)}$

73. V = $\frac{1}{3}\pi r^2 h =$

$$\frac{1}{3}\pi(.0019)^2(.0024)$$

74. Surface area = $2d^2 =$

$$2(1.75\ x\ 10^5)^2$$