8

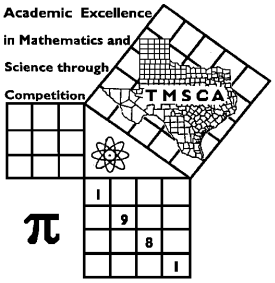
1st Score: _____	2nd Score: _____	3rd Score: _____	
S & G _____	S & G _____	S & G _____	_____. _____
Grader: _____	Grader: _____	Grader: _____	**Final Score**

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 #10 ©

FEBRUARY 2, 2019

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.

2018-2019 TMSCA Middle School Calculator Test 10

1. $-7790 - 6040$ ---------- 1=_____

2. $1.1 + 1.6 + 0.5$ ---------- 2=_____

3. $-1500 - 468 - 2160$ ---------- 3=_____

4. $38 - 32 - \pi - 8$ ---------- 4=_____

5. $4960 - 865 + 1840 - 6090$ ---------- 5=_____

6. $160 - 229 - 206 + 159 + 72.7$ ---------- 6=_____

7. $-1.85 + 0.957 - 1.74 + 1.79 + 1.76$ ---------- 7=_____

8. $3.47 + 0.787 + 1.56 + \pi + 0.732$ ---------- 8=_____

9. $32.5 \times 177 \times 247$ ---------- 9=_____

10. $52.6 \times 80.8 \times 180 \times 52.4$ ----------10=_____

11. Calculate the arithmetic mean of the boiling point of water in ^{o}C, the freezing point of water in ^{o}F, the number of cubic inches in a gallon, and the number of yards in a mile. ----------11=_____

12. There is a popular make of die cast cars that are made in 1:64 scale. A toy bus made in this scale is 5 inches long. Calculate the actual length of this bus in real life in feet. ----------12=_____ft.

13. The length of a rectangle is 1 foot more than twice its width. The perimeter of the rectangle is 428 cm. Calculate the length of the rectangle in cm. ----------13=_____cm

14. $(125)[97 \times 42 \times 31]$ ----------14=_____

15. $(332/68)[113 - 188]$ ----------15=_____

16. $\{(-168)(175 - 157)(113)\} - 1.49 \times 10^{5}$ ----------16=_____

17. $\left[\frac{196}{104}\right][(153/26) - 1.51]$ ----------17=_____

18. $\left[\frac{(1690/2710) - (3890/3490)}{586/(268)}\right]$ ----------18=_____

19. $\left[\frac{(0.00672 + 0.00197)}{96/99}\right]\left[\frac{0.0335}{3.82 \times 10^{-4}}\right]$ ----------19=_____

20. $\frac{0.00339 + 0.0116 + 0.00177}{(1.23)(0.00555)(6.17 \times 10^{-6})}$ ----------20=_____

21. $\frac{(\pi)(4/8)(6/2)}{37}$ ----------21=_____

22. $\frac{(1530 \times 1190)/307}{(338 \times 10.9) + 1970}$ ----------22=_____

23. $\frac{[-(2460 + 1780)(970 - 5600)]}{(14.6/(21900))}$ ----------23=_____

24. Calculate the area of a circle with a circumference of 5.19×10^{10} cm. 24=_____cm^2

25. Calculate the number of square inches in 5 square yards. ----------25=_____in^2

26. Maria took a TMSCA calculator test. She completed problems 1 thru 78 when time ran out. She missed 2 "number crunchers" and 2 "stated and geometry" problems. Calculate her score. ----------26=_____INT.

27. $(1.42)[(0.239/0.397)(80 + 35.9)]$ ----------27=_____

28. $\dfrac{(8.78\text{x}10^{11}) + (1.15\text{x}10^{12})}{(-0.0445)(0.009) - 3.61\text{x}10^{-4}}$ ----------28=_____

29. $[2250 - (2540 + 1600)] + [(0.561)(536 - 3400)]$ ---------29=_____

30. $(23.3)\left[(1.32\text{x}10^{8}) - (1.59\text{x}10^{8})\right]$ ----------30=_____

31. $\dfrac{1}{-4.63} + \dfrac{1}{(\pi)(19.7 - 21.4)}$ ----------31=_____

32. $(0.469)\left[\dfrac{6.62\text{x}10^{-4}}{(2.62\text{x}10^{6})}\right]$ ----------32=_____

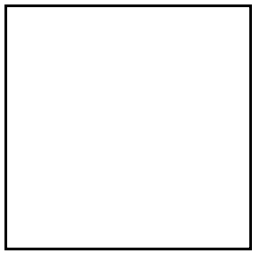
33. $\left[\dfrac{1/1080}{1/711}\right][3.10\text{x}10^{6}]$ ----------33=_____

34. $\left[\dfrac{1/283}{1/298}\right] + [0.912]$ ----------34=_____

35. If Set A has 11 elements, calculate the number of proper subsets of Set A. ----------35=_____INT.

36. If $S(x) = 4x^2 + 7x - 5$ and $M(x) = 12x^2 - 4x + 2$, calculate S(M(-4)). ----------36=_____

SQUARE

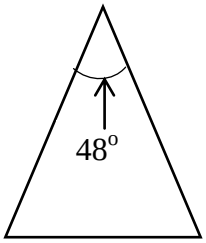


Area = $3.59\text{x}10^{5}$

Diagonal = ?

37=_____

ISOSCELES TRIANGLE



6112

Area = ?

38=_____

39. $\sqrt[3]{\frac{4670 + 2850}{41.3 - 39.1}}$ ----------39=_____

40. $\frac{(41600 + 20400)^3}{(0.4 - 0.524)^2}$ ----------40=_____

41. $\left[\frac{20600 + (1/(2.86\text{x}10^{-5}))}{(32200/36300) - 0.408}\right]^2$ ----------41=_____

42. $\sqrt{8490 - 5700 + 5970} - \sqrt{3520}$ ----------42=_____

43. $(736)\sqrt{204 + 271 + 143}$ ----------43=_____

44. $\sqrt{752} + \sqrt{336 + 1090} - (\pi)\sqrt{860}$ ----------44=_____

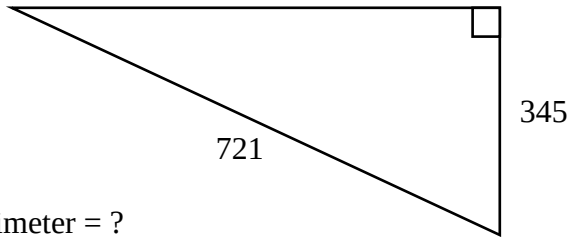
45. $(3230)\sqrt[3]{895 + 4050 - 1260}$ ----------45=_____

46. $\left[\sqrt[3]{(368/359)(60.6)}\right]^5$ ----------46=_____

47. Angle A and Angle B form a linear pair. Angle A measures 7x + 4 and Angle B measures 4x + 9. Calculate the measure of the larger angle in degree. ----------47=_____°

48. Calculate the number of cubic feet in a 5.7 liter engine. ----------48=_____ft^3

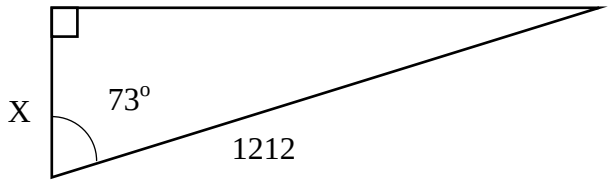
RIGHT TRIANGLE



Perimeter = ?

49=_____

RIGHT TRIAMGLE



X = ?

50=_____

51. $\sqrt{\frac{9.01\text{x}10^{-7}}{(3.88)(0.0458)}} + \frac{(0.012 - 0.0355)}{(2.25 + 4.54)}$ ----------51=_____

52. $\left[\frac{1370 - 417 + \sqrt{2.98\text{x}10^{9}/4460}}{-5.76 + 11.1}\right]^{4}$ ----------52=_____

53. $\frac{\sqrt{1.52 + \pi + 0.506}}{(0.289 - 0.282 + 0.123)^{2}}$ ----------53=_____

54. $\sqrt{\frac{(7520)(5540)}{(9580)(43500)}} - 0.0732 + 0.166$ ----------54=_____

55. $\sqrt{\frac{1/(675 - 453)}{(34.8)(57.2 + 17.1)^{2}}}$ ----------55=_____

56. $20100 + \sqrt{(38800)(9220)} - (22600 + 23300)$ ----------56=_____

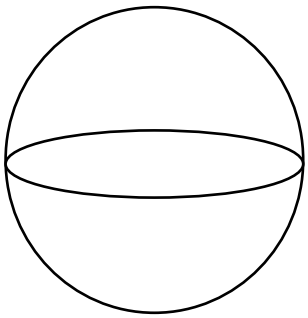
57. $\sqrt{\frac{(2650)(256)}{(19.1) + (40.3)}} + 1/(0.0967)^{2}$ ----------57=_____

58. (deg) $\sin(3500^{\circ}) + (74.6/50)$ ----------58=_____

59. 25 ml of a 32% acid solution is evaporated down to 10 ml. Assuming only water is evaporated from the original solution, calculate the acid percentage of the remaining 10 ml. ----------59=_____%

60. Calculate the fifteenth pentagonal number. ----------60=_____INT.

SPHERE

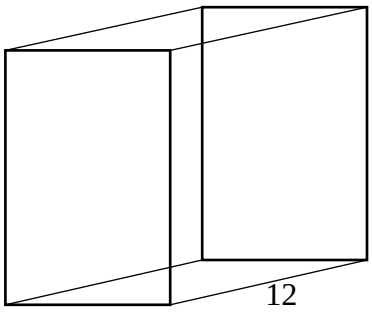


Surface Area = 5715

Area of Great Circle = ?

61=_____

RECTANGULAR PRISM



Inner Diagonal = ?

62=_____

63. $\frac{19!/9!}{20! + 18!}$ ----------63=_____

64. $(1.94 \times 10^{9} - 7.33 \times 10^{9})^{6}(3.66 \times 10^{9})$ ----------64=_____

65. (deg) $(13.2 + 7.55)\cos(113°)$ ----------65=_____

66. (rad) $\cos\left[\frac{(1.52)(\pi)}{(1.4)(1.11)}\right]$ ----------66=_____

67. (deg) $(5.95 - 2.55)\sin(3.05°) + 0.126$ ----------67=_____

68. (rad) $(0.882)\cos(57.5)$ ----------68=_____

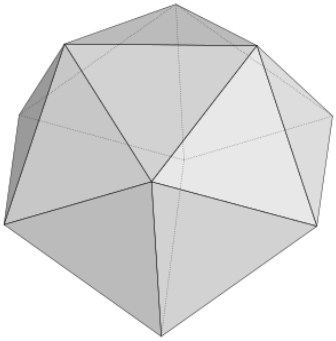
69. (deg) $\frac{\tan(22.5°)}{282 + 214}$ ----------69=_____

70. $(3310 - 2640)^{0.235 - 0.495}$ ----------70=_____

71. Tickets to the State Fair of Texas are priced at $18 for adults and $14 for a child. One weekend a total of $78,072 was brought in at the ticket booth. There were 964 more child tickets sold than adult tickets. Calculate the number of adult tickets sold. ----------71=_____INT.

72. A bag contains marbles, 6 green, 8 red, 12 blue, and 5 yellow. A marble is chosen at random and not replaced. Calculate the probability of drawing a blue marble and then a yellow. ----------72=_____

REGULAR ICOSAHEDRON

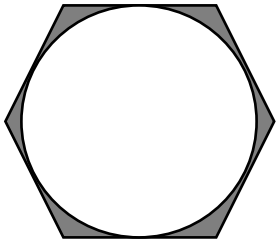


Edge = 717

Surface Area = ?

73=_____

REGULAR HEXAGON AND CIRCLE



Radius of Circle = 22.8

Shaded Area = ?

74=_____

75. $\frac{\text{Log}(47.1 + 42.1)}{10.2 - 13.5}$ ----------75=_____

76. $\frac{(5.47)^{0.941}(2.03)^{0.262}}{(14.2 - 4.91)^{-9}}$ ----------76=_____

77. $\frac{35.2 - 19.7}{\text{Log}(15.4 + 10.2)}$ ----------77=_____

78. $\text{Ln}\left[\frac{113 + 93 + 39.9}{121 - 35.1 - 46.4}\right]$ ----------78=_____

79. $1 + 2 + 3 + \ldots + 451$ ----------79=_____

80. $1 + (0.32) + \frac{(0.32)^2}{2} + \frac{(0.32)^3}{6} + \frac{(0.32)^4}{24}$ ----------80=_____

2018-2019 TMSCA Middle School Calculator Test 10 Answer Key

Page 1

1 = -13800
= -1.38×10^{4}

2 = 3.20
= 3.20×10^{0}

3 = -4130
= -4.13×10^{3}

4 = -5.14
= -5.14×10^{0}

5 = -155
= -1.55×10^{2}

6 = -43.3
= -4.33×10^{1}

7 = 0.917
= 9.17×10^{-1}

8 = 9.69
= 9.69×10^{0}

9 = 1.42×10^{6}

10 = 4.01×10^{7}

11 = 531
= 5.31×10^{2}

12 = 26.7
= 2.67×10^{1}

13 = 143
= 1.43×10^{2}

Page 2

14 = 1.58×10^{7}

15 = -366
= -3.66×10^{2}

16 = -491000
= -4.91×10^{5}

17 = 8.24
= 8.24×10^{0}

18 = -0.225
= -2.25×10^{-1}

19 = 0.786
= 7.86×10^{-1}

20 = 398000
= 3.98×10^{5}

21 = 0.127
= 1.27×10^{-1}

22 = 1.05
= 1.05×10^{0}

23 = 2.94×10^{10}

24 = 2.14×10^{20}

25 = 6480
= 6.48×10^{3}

26 = 354 INT.

Page 3

27 = 99.1
= 9.91×10^{1}

28 = -2.66×10^{15}

29 = -3500
= -3.50×10^{3}

30 = -6.29×10^{8}

31 = -0.403
= -4.03×10^{-1}

32 = 1.19×10^{-10}

33 = 2.04×10^{6}

34 = 1.97
= 1.97×10^{0}

35 = 2047 INT.

36 = 178000
= 1.78×10^{5}

37 = 847
= 8.47×10^{2}

38 = 2.10×10^{7}

Page 4

39 = 15.1
= 1.51×10^{1}

40 = 1.55×10^{16}

41 = 1.35×10^{10}

42 = 34.3
= 3.43×10^{1}

43 = 18300
= 1.83×10^{4}

44 = -26.9
= -2.69×10^{1}

45 = 49900
= 4.99×10^{4}

46 = 974
= 9.74×10^{2}

47 = 110
= 1.10×10^{2}

48 = 0.201
= 2.01×10^{-1}

49 = 1700
= 1.70×10^{3}

50 = 354
= 3.54×10^{2}

2018-2019 TMSCA Middle School Calculator Test 10 Answer Key

Page 5

51 = -0.00121
= -1.21×10^{-3}

52 = 1.21×10^{10}

53 = 135
= 1.35×10^{2}

54 = 0.409
= 4.09×10^{-1}

55 = 0.000153
= 1.53×10^{-4}

56 = -6890
= -6.89×10^{3}

57 = 214
= 2.14×10^{2}

58 = 0.507
= 5.07×10^{-1}

59 = 80.0
= 8.00×10^{1}

60 = 330 INT.

Page 6

61 = 1430
= 1.43×10^{3}

62 = 19.8
= 1.98×10^{1}

63 = 1.37×10^{-7}

64 = 8.97×10^{67}

65 = -8.11
= -8.11×10^{0}

66 = -0.998
= -9.98×10^{-1}

67 = 0.307
= 3.07×10^{-1}

68 = 0.512
= 5.12×10^{-1}

69 = 0.000835
= 8.35×10^{-4}

70 = 0.184
= 1.84×10^{-1}

71 = 2018 INT.

72 = 0.0645
= 6.45×10^{-2}

Page 7

73 = 4450000
= 4.45×10^{6}

74 = 168
= 1.68×10^{2}

75 = -0.591
= -5.91×10^{-1}

76 = 3.07×10^{9}

77 = 11.0
= 1.10×10^{1}

78 = 1.83
= 1.83×10^{0}

79 = 102000
= 1.02×10^{5}

80 = 1.38
= 1.38×10^{0}

TMSCA 18-19 MS CA Test #10 Solutions to Word and Geometry Problems

11. $\frac{100+32+231+1760}{4}$

12. $\frac{1}{64} = \frac{5}{x\ inches}$;

$$x = 64(5)$$

Divide by 12 to change to ft.

13. $w = width$

$$2w + 1 = length$$

$$2w + 2(2w + 1) = 428$$

$$w = 71$$

Length = 2(71) + 1

24. C = $2\pi r = 5.19\ x\ 10^{10}$

$$r = \frac{5.19\ x\ 10^{10}}{2\pi}$$

$$Area = \pi r^2 = \pi\left(\frac{5.19\ x\ 10^{10}}{2\pi}\right)^2$$

25. 5(36)(36)

26. 78(5) – 4(9)

35. $2^{11} - 1$

36. $m(-4) = 12(-4)^2 - 4(-4) + 2 = 210$

$S(210) = 4(210)^2 + 7(210) - 5$

37. side = $\sqrt{3.59\ x10^5}$

Diagonal = $\left(\sqrt{3.59\ x10^5}\right)\left(\sqrt{2}\right)$

38. An altitude from the vertex angle to the base, divides the 48° angle in half and the base in half. A right triangle is formed with an angle of 24° and a leg of 3056. To find the length of the altitude (h) use:

38. $\frac{\tan 24}{1} = \frac{3056}{h}$

$$h = \frac{3056}{\tan 24}$$

Area = $\left(\frac{3056}{\tan 24}\right)(3056)$

47. $7x + 4 + 4x + 9 = 180$

$$x = \frac{167}{11}$$

Angle A = $7x + 4 = 7\left(\frac{167}{11}\right) + 4$

48. 1 gal ~ $3.79\ liters$

$$231\ in^3 = 1\ gal.$$

$$1\ ft^3 = 1728\ in^3$$

$$5.7\ l \cdot \frac{1\ g}{3.79\ l} \cdot \frac{231 in^3}{1\ g} \cdot \frac{1\ ft^3}{1728\ in^3}$$

49. $long\ leg = \sqrt{721^2 - 345^2}$

Add all three sides for perimeter.

50. $\frac{\cos 73}{1} = \frac{x}{1212}$

$$x = 1212\ (\cos 73)$$

59.

	ml	%acid	acid
orig	25	.32	8
water	14	0	0
final	10	x	10x

10x = 8; x = $\frac{8}{10} = 80\%$

60. $\frac{n(3n-1)}{2} = \frac{(15)(45-1)}{2}$

61. Surface area = $4\pi r^2$

Great circle area = πr^2

$$\frac{5715}{4}$$

62. $\sqrt{9^2 + 12^2 + 13^2}$

71. A = # of adult tickets

A+964 = # of child tickets

18A + 14(A+964) = 78072

Solve for A.

72. $\frac{12}{31} \cdot \frac{5}{30}$

73. An icosahedron's surface consists of 20 equilateral triangles.

$$20\left(\frac{717^2\sqrt{3}}{4}\right)$$

74. A hexagon consists of 6 equilateral triangles.

Hexagon area = $6\left(\frac{h^2\sqrt{3}}{3}\right)$ =

$$6\left(\frac{22.8^2\sqrt{3}}{3}\right)$$

Circle = $\pi(22.8)^2$

Shaded area = hexagon minus circle

$$6\left(\frac{22.8^2\sqrt{3}}{3}\right) - \pi(22.8)^2$$