8

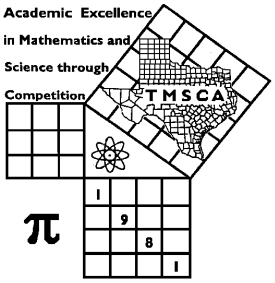
1st Score: _____	2nd Score: _____	3rd Score: _____	
S & G _____	S & G _____	S & G _____	_____. _____
Grader: _____	Grader: _____	Grader: _____	**Final Score**

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 #8 ©

JANUARY 19, 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 8

1. 1460 – 2450 ---------- 1=_____

2. 15 – 4 + 5 ---------- 2=_____

3. –128 + 350 – 91 ---------- 3=_____

4. 31 – 33 – 41 + 19 ---------- 4=_____

5. 189 + 152 – 128 – 176 ---------- 5=_____

6. 74.9 – 189 – 195 + 162 + 208 ---------- 6=_____

7. 1.59 + 1.17 – 0.941 + 1.62 + 0.503 ---------- 7=_____

8. 2.45 – 1.77 + 4.21 – 3.58 – π ---------- 8=_____

9. 41.2 x 104 x 463 ---------- 9=_____

10. 663 x 110 x 763 x 38 ----------10=_____

11. Calculate the sum of the sixth root of nine, thirteen to the twelfth power and negative fifteen squared. ----------11=_____

12. Sandra worked every problem through number 75 on her calculator test. She missed one fifth of the problems she worked. Calculate her score. ----------12=_____INT.

13. Sixteen and three-fourths is what percent of one hundred twenty. 13=_____%

14. $(127)[213 \times 109 \times 208]$ ----------14=_____

15. $(-79/156)[503 - 130]$ ----------15=_____

16. $\{(59)(78 - 93)(192)\} - 1.19 \times 10^5$ ----------16=_____

17. $\left[\frac{266}{331}\right][(54/433) + 0.0907]$ ----------17=_____

18. $\frac{(55/94) + (74/188)}{(0.509 - 0.424)}$ ----------18=_____

19. $\left[\frac{(1120/902) - (1550/482)}{17.8/(12.1)}\right]$ ----------19=_____

20. $\frac{(0.00359)(1.15)}{4.59}(19.7 - 3.3)$ ----------20=_____

21. $\frac{1500 + 824 + 2270}{(0.0387)(16.9)(36.4)}$ ----------21=_____

22. $\frac{[-(1050 + 2800)(1900 - 1550)]}{(0.0878/(124))}$ ----------22=_____

23. $\frac{(\pi)(84/90)(160/70)}{(38/36)}$ ----------23=_____

24. Abbey and her friend were given $15.00 to spend at the candy store. They purchased 2 suckers for 75¢ each, 4 licorice ropes for 35¢ each and a pound and a half of chocolate covered almonds for $6.99 per pound. Calculate how much money they have left after their purchase. ----------24=$_____

25. If Set M has 41 elements and Set T has 32 elements, calculate the number of elements in the Cartesian product set. ----------25=_____INT.

26. Three consecutive integers have a sum of 393. Calculate the square root of the largest integer. ----------26=_____

27. $[227 - (759 + 269)] + [(0.37)(536 - 1490)]$ ----------27=_____

28. $(74.4)[(0.84/2.7)(0.0012 + 0.00114)]$ ----------28=_____

29. $\dfrac{(1.25\text{x}10^{10}) + (3.03\text{x}10^{10})}{(-0.408)(0.135) - 0.0114}$ ----------29=_____

30. $\dfrac{1}{-82} + \dfrac{1}{(\pi)(13.5 - 58.1)}$ ----------30=_____

31. $\dfrac{1}{135} + \dfrac{1}{(1280 - 991)}$ ----------31=_____

32. $\dfrac{(54.6 + 298)}{(1.75\text{x}10^{12})}$ ----------32=_____

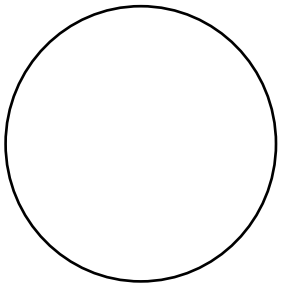
33. $\dfrac{1}{101} - \dfrac{1}{(186 + 45.5)}$ ----------33=_____

34. $\dfrac{1}{407} - \dfrac{1}{484} + \dfrac{1}{82.9}$ ----------34=_____

35. Calculate the harmonic mean of the Log 62, e^5, ln 51, and pi to the ninth power. ----------35=_____

36. A cube has a volume of 1313 cubic meters. Calculate the volume of the cube in cubic feet. ----------36=_____ $ft.^3$

CIRCLE

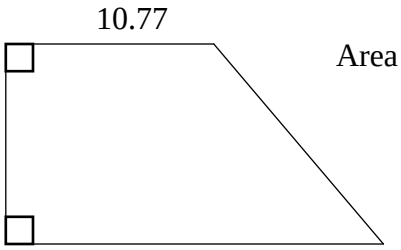


Circumference = 801.98

Area = ?

37=_____

TRAPEZOID



Area = 138.83

Height = ?

38=_____

39. $\left[\dfrac{311 + (1/(9.59\text{x}10^{-4}))}{(369/1190) - 0.0846}\right]^2$ ----------39=_____

40. $(0.702 + 1.01 + 0.388)^2(345 + 366)^2$ ----------40=_____

41. $\dfrac{(50300 + 9460)^2}{(0.00645 - 0.00712)^3}$ ----------41=_____

42. $(1/(0.0263))(38100 - 23600)^3$ ----------42=_____

43. $\sqrt{20900 - 4270 + 16200} - \sqrt{25000}$ ----------43=_____

44. $(1/\pi)\sqrt{\dfrac{0.155 + 0.04}{3.65 - 2.9}}$ ----------44=_____

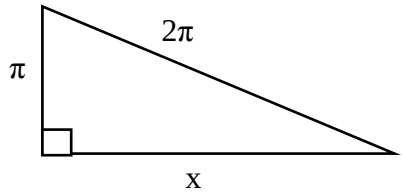
45. $\dfrac{1}{\sqrt{3690 + 1010 + 2390}} + \left(\dfrac{1}{\sqrt{6.84}}\right)^3$ ----------45=_____

46. $\sqrt[4]{3.44 - 108/141} + 1/\sqrt{0.0187 + 0.00489}$ ----------46=_____

47. Calculate the product of the roots of $7x + 3x^2 = -8$. ----------47=_____

48. Calculate the number of distinct diagonals in a polygon with 89 sides. ----------48=_____INT.

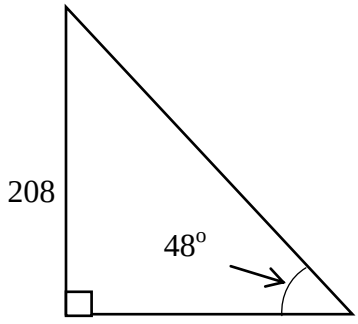
RIGHT TRIANGLE



x = ?

49=_____

RIGHT TRIANGLE



x = ?

50=_____

51. $\left[\frac{\sqrt{\sqrt{6.77 - 1.85}}}{-(28600 - 2.42\text{x}10^5)}\right]^2 [13700 + 4480]$ ----------51=_____

52. $\frac{(0.0217 + 0.0123 - 0.0287)^3}{\sqrt{0.0399 + 0.0345 + 0.103}}$ ----------52=_____

53. $\frac{\sqrt{3.18 + \pi + 2.62}}{(0.0805 - 0.12 + 0.227)^4}$ ----------53=_____

54. $\sqrt{\frac{1/(7.28 - 4.17)}{(109)(31.1 + 38.4)^4}}$ ----------54=_____

55. $0.93 + \sqrt{(38.3)/(26.6)} - (0.164 + 0.152)^2$ ----------55=_____

56. $(0.306)^2 \sqrt{(1.5)/(9.23)} - (0.0272 + 0.0334)$ ----------56=_____

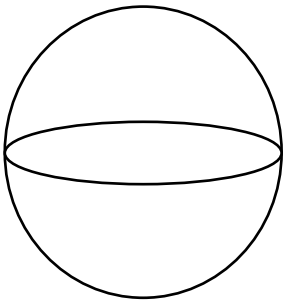
57. $\sqrt{\frac{(32.5)(3040)}{(223) + (152)}} - 28$ ----------57=_____

58. $\sqrt{\frac{1/(79.5 - 58.4)}{(1310)(3.07 + 14)^5}}$ ----------58=_____

59. If 18 people complete a project in 13 days working 8 hours a day, calculate how many days it would take 10 people working 7 hours a day to complete the project. ----------59=_____days

60. A right cylindrical water tank can hold 523,000 gallons of water. The diameter of the tank is 32 feet. Calculate the height of the tank in feet. ----------60=_____ft.

SPHERE

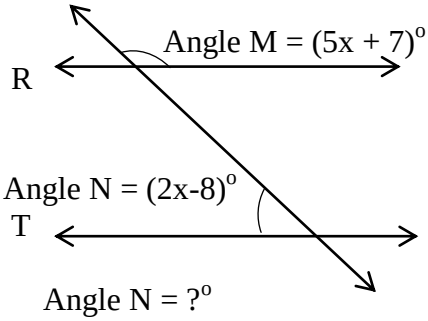


Surface Area = 12521

Diameter = ?

61=_____

PARRALLEL LINES CUT BY A TRANSVERSAL



62=_____

63. $\frac{25!}{7!} + 22!$ ----------63=_____

64. (deg) $\frac{\sin(44°)}{106}$ ----------64=_____

65. (deg) (568 – 509)sin(355°) ----------65=_____

66. (deg) cos(423° – 385°) + 0.113 ----------66=_____

67. (deg) [730]sin(57.8° – 12.7°) ----------67=_____

68. (deg) $\frac{\sin(115°)}{\tan(115°)}$[165] ----------68=_____

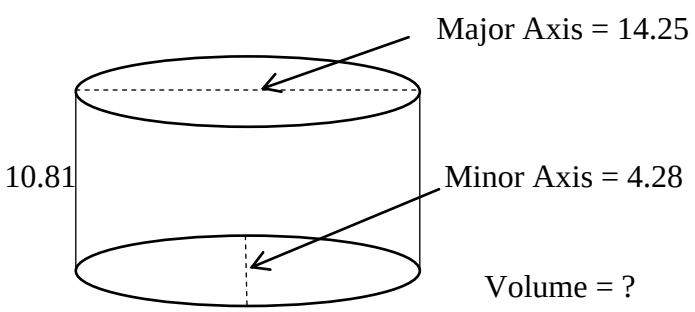
69. (deg) $\frac{\sin(17°) - \tan(17°)}{\sin(17°)}$ ----------69=_____

70. $(155 + 175 + 194)^{2/5}$ ----------70=_____

71. Calculate the odds of rolling a sum of 7 on a standard pair of dice. ----------71=_____

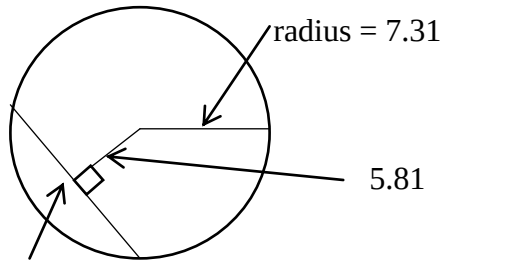
72. If an automobile tire is 32 inches in diameter and rotates at 800 revolutions per minute, calculate the speed of the car in miles per hour. ----------72=_____mph.

RIGHT ELLIPTICAL SOLID



73=_____

CHORD OF A CIRCLE



74=_____

75. $\dfrac{(4.6)^{0.523}(1.3)^{0.673}}{(0.673 - 0.337)^{-9}}$ ----------75=_____

76. $\dfrac{0.0231 + \sqrt{(0.0217)(0.029)} + (0.128)(0.258)}{\sqrt{\sqrt{9.99 + 9.22}}}$ ----------76=_____

77. $2\text{Log}\sqrt{\dfrac{(70.3)(0.384)}{78.6 + 115}}$ ----------77=_____

78. $(3.18)^{\pi}(0.125)^{4}(602 - 141)^{2}$ ----------78=_____

79. $1 + 3 + 5 + \ldots + 765$ ----------79=_____

80. $1 + \dfrac{(0.829)^{4}}{2} - \dfrac{(0.829)^{6}}{6} + \dfrac{(0.829)^{8}}{24} - \dfrac{(0.829)^{10}}{120}$ ----------80=_____

2018-2019 TMSCA Middle School Calculator Test 8 Answer Key

Page 1

1 = -990
= -9.90×10^{2}

2 = 16.0
= 1.60×10^{1}

3 = 131
= 1.31×10^{2}

4 = -24.0
= -2.40×10^{1}

5 = 37.0
= 3.70×10^{1}

6 = 60.9
= 6.09×10^{1}

7 = 3.94
= 3.94×10^{0}

8 = -1.83
= -1.83×10^{0}

9 = 1.98×10^{6}

10 = 2.11×10^{9}

11 = 2.33×10^{13}

12 = 240 INT.

13 = 14.0
= 1.40×10^{1}

Page 2

14 = 6.13×10^{8}

15 = -189
= -1.89×10^{2}

16 = -289000
= -2.89×10^{5}

17 = 0.173
= 1.73×10^{-1}

18 = 11.5
= 1.15×10^{1}

19 = -1.34
= -1.34×10^{0}

20 = 0.0148
= 1.48×10^{-2}

21 = 193
= 1.93×10^{2}

22 = -1.90×10^{9}

23 = 6.35
= 6.35×10^{0}

24 = $1.62

25 = 1312 INT.

26 = 11.5
= 1.15×10^{1}

Page 3

27 = -1150
= -1.15×10^{3}

28 = 0.0542
= 5.42×10^{-2}

29 = -6.44×10^{11}

30 = -0.0193
= -1.93×10^{-2}

31 = 0.0109
= 1.09×10^{-2}

32 = 2.01×10^{-10}

33 = 0.00558
= 5.58×10^{-3}

34 = 0.0125
= 1.25×10^{-2}

35 = 4.88
= 4.88×10^{0}

36 = 46400
= 4.64×10^{4}

37 = 51200
= 5.12×10^{4}

38 = 10.9
= 1.09×10^{1}

Page 4

39 = 3.60×10^{7}

40 = 2.23×10^{6}

41 = -1.19×10^{19}

42 = 1.16×10^{14}

43 = 23.1
= 2.31×10^{1}

44 = 0.162
= 1.62×10^{-1}

45 = 0.0678
= 6.78×10^{-2}

46 = 7.79
= 7.79×10^{0}

47 = 2.67
= 2.67×10^{0}

48 = 3827 INT.

49 = 5.44
= 5.44×10^{0}

50 = 187
= 1.87×10^{2}

2018-2019 TMSCA Middle School Calculator Test 8 Answer Key

Page 5

51 = 8.85×10^{-7}

52 = 3.53×10^{-7}

53 = 2420
= 2.42×10^{3}

54 = 1.12×10^{-5}

55 = 2.03
= 2.03×10^{0}

56 = -0.0229
= -2.29×10^{-2}

57 = -11.8
= -1.18×10^{1}

58 = 5.00×10^{-6}

59 = 26.7
= 2.67×10^{1}

60 = 86.9
= 8.69×10^{1}

Page 6

61 = 63.1
= 6.31×10^{1}

62 = 43.7
= 4.37×10^{1}

63 = 4.20×10^{21}

64 = 0.00655
= 6.55×10^{-3}

65 = -5.14
= -5.14×10^{0}

66 = 0.901
= 9.01×10^{-1}

67 = 517
= 5.17×10^{2}

68 = -69.7
= -6.97×10^{1}

69 = -0.0457
= -4.57×10^{-2}

70 = 12.2
= 1.22×10^{1}

71 = 0.200
= 2.00×10^{-1}

72 = 76.2
= 7.62×10^{1}

Page 7

73 = 518
= 5.18×10^{2}

74 = 8.87
= 8.87×10^{0}

75 = 0.000145
= 1.45×10^{-4}

76 = 0.0388
= 3.88×10^{-2}

77 = -0.856
= -8.56×10^{-1}

78 = 1970
= 1.97×10^{3}

79 = 147000
= 1.47×10^{5}

80 = 1.19
= 1.19×10^{0}

TMSCA 18-19 MS CA Test #8 Solutions to Word and Geometry Problems

11. $\sqrt[6]{9} + 13^{12} + (-15)^2$

12. 75 x 5 – 15 x 9

13. $\frac{x}{100} = \frac{16\frac{3}{4}}{120}; x = \frac{\left(16\frac{3}{4}\right)(100)}{120}$

24. 15 – 2(.75) – 4(.35) – 1.5(6.99)

25. 41(32) INTEGER

26. $\frac{393}{3}$ = middle integer so largest is 132. $\sqrt{132}$

35. Harmonic mean is the reciprocal of the average of the reciprocals.

$$1 \div \left[\left(\frac{1}{Log62} + \frac{1}{e^5} + \frac{1}{ln51} + \frac{1}{\pi^9}\right) \div 4\right]$$

36. $1\,m^3 = 100^3 cm^3$
$1in^3 = 2.54^3 cm^3$
$1\,ft^3 = 12^3\ or\ 1728\,in^3$

$$1313 \cdot \frac{100^3}{1} \cdot \frac{1}{(2.54)^3} \cdot \frac{1}{1728}$$

37. r = $\frac{801.98}{2\pi}$ A = $\pi\left(\frac{801.98}{2\pi}\right)^2$

38. $138.83 = \frac{1}{2}(14.82 + 10.77)h$ so

$$h = \frac{138.83(2)}{14.82 + 10.77}$$

47. $3x^2 + 7x + 8 = 0$ The product of the roots is c/a where c = 8 and a = 3. $\frac{8}{3}$

48. $\frac{n(n-3)}{2} = \frac{89(86)}{2}$

49. $\sqrt{(2\pi)^2 - \pi^2}$

50. $\frac{\tan 48}{1} = \frac{208}{x}$ so

$$x = \frac{208}{\tan 48}$$

59. 18(13)(8) = 10(7)(x)

$$x = \frac{18(13)(8)}{10(7)}$$

60. 231 cubic inches = 1 gal
12^3 = 1728 cu. in = 1 ft^3
Radius = 16 ft.
$\frac{523000(231)}{1728}$ = cu. ft. = V

$\pi r^2 h = V; h = \frac{V}{\pi r^2}$

$$h = \frac{\frac{523000(231)}{1728}}{\pi(16)^2}$$

61. $4\pi r^2 = 12521$

$$r = \sqrt{\frac{12521}{4\pi}}$$

$$d = 2\left[\sqrt{\frac{12521}{4\pi}}\right]$$

62. $5x + 7 + 2x - 8 = 180$

$$x = \frac{181}{7}$$

$$angle\ N = 2\left(\frac{181}{7}\right) - 8$$

71. 6 ways to roll a 7, 30 ways to not roll a 7. Odds:

$$\frac{6}{30}$$

72. C = 32π
In one minute the distance traveled is $32\pi(800)$ inches

$$\frac{32\pi(800)}{1\ min} \cdot \frac{1ft}{12\ in} \cdot \frac{1mi}{5280ft} \cdot \frac{60\ min}{1\ hr}$$

73. $V = \pi\left(\frac{14.25}{2}\right)\left(\frac{4.28}{2}\right)10.81$

74. Draw a radius from center to end of chord x. This forms a right triangle with c = 7.31, a = 5.81. Find b.

$$b = \sqrt{7.31^2 - 5.81^2}$$

Chord x =

$$2\left(\sqrt{7.31^2 - 5.81^2}\right)$$