8

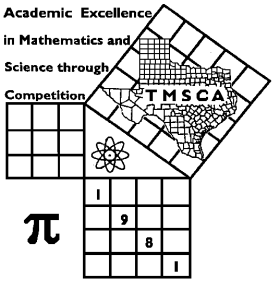
1st Score: _____	2nd Score: _____	3rd Score: _____	
S & G _____	S & G _____	S & G _____	_____. _____
Grader: _____	Grader: _____	Grader: _____	**Final Score**

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 #3 ©

NOVEMBER 3, 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 3

1. $-3650 + 900$ ---------- 1=_____

2. $26 - 5 - 5$ ---------- 2=_____

3. $8.1 + 8.9 + 8.5$ ---------- 3=_____

4. $33 + 73 + 55 + 44$ ---------- 4=_____

5. $3310 - 3930 - 4140 + 4270$ ---------- 5=_____

6. $-31.5 - 74.4 - 163 + 169 + 194$ ---------- 6=_____

7. $0.819 - 1.81 + 0.227 - \pi - 1.77$ ---------- 7=_____

8. $(1.57 - 1.89) + (2.63 - 0.442 - 2.53)$ ---------- 8=_____

9. $170 \times 96.7 \times 95.7$ ---------- 9=_____

10. $44 \times 3950 \times 475 \times 347$ ----------10=_____

11. Calculate the sum of the first 11 prime numbers. ----------11=_____INT.

12. Donald is looking to purchase new race skis for the winter. The recommendation for the length of skis he needs to buy is his height plus or minus 5 cm. If he is 6 feet 2 inches tall, calculate the longest ski he should buy according to this recommendation in cm. 12=_____cm

13. Calculate the median of the first dozen prime numbers. ----------13=_____INT.

14. $(503/124)[166 - 272]$ ----------14=_____

15. $(116)[20 \times 146 \times 114]$ ----------15=_____

16. $\{36/77\}\left[\frac{96}{209 + 156}\right]$ ----------16=_____

17. $\left[\frac{83}{87}\right][(90/42) - 0.6]$ ----------17=_____

18. $\frac{[0.00106/(0.0011)]/1.63}{(144 \times 265)(0.0791)}$ ----------18=_____

19. $\frac{(93/255) + (157/189)}{(4.54 - 0.763)}$ ----------19=_____

20. $\frac{(0.23)(0.157)}{7.81\times10^{-4}}(1.56\times10^{-4} - 7.44\times10^{-5})$ ----------20=_____

21. $\frac{190}{(112 - 102)} - \frac{(134 - 121)}{159}$ ----------21=_____

22. $\frac{(\pi)(560/390)(564/964)}{(296/807)}$ ----------22=_____

23. $\frac{[-(1540 + 2240)(3200 - 3020)]}{(32.3/(51500))}$ ----------23=_____

24. Calculate the difference of the supplement and the complement of the largest integral acute angle. ----------24=_____

25. Gal would like to purchase an item that is regularly priced at $922.78. She has a store coupon for 20% off. After purchasing the item, the manufacturer sent her a rebate check for 10% of what she paid. Calculate the total amount Gal saved on her purchase. ----------25=$_____

26. Negative eight times a number increased by five is equal to the number itself. Calculate the value of the number. ----------26=_____

27. $[2800 - (359 + 2970)] + [(-0.0686)(3410 - 429)]$ --------27=_____

28. $(3.18)[(0.137/0.332)(0.19 + 0.306)]$ ----------28=_____

29. $\dfrac{(0.0549 + 0.134)(3.49 + 4.97)}{(1.23\text{x}10^{11})}$ ----------29=_____

30. $\dfrac{1}{2.47} + \dfrac{1}{(6.3 - 4.68)}$ ----------30=_____

31. $(\pi)\left[\dfrac{0.444}{(6.26\text{x}10^{10})}\right]$ ----------31=_____

32. $\dfrac{1}{14.9} + \dfrac{1}{(\pi)(\pi - 1.07)}$ ----------32=_____

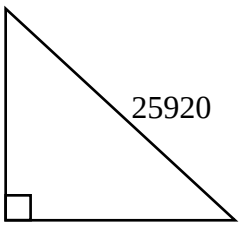
33. $\dfrac{1}{208} - \dfrac{1}{1100} + \dfrac{1}{784}$ ----------33=_____

34. $\dfrac{1}{41.1} - \dfrac{1}{(66.4 + 60.5)}$ ----------34=_____

35. Charles made the following sequence after he had finished his homework. 0, 1/3, ½, 3/5, 2/3, 5/7, ¾, … Calculate the 15th term of this sequence. ----------35=_____

36. Loki can complete Task A in 1 hour 5 minutes. Thor can complete Task A in five-sixths of an hour. Calculate how long it would take them to complete Task A if they work together. ----------36=_____min.

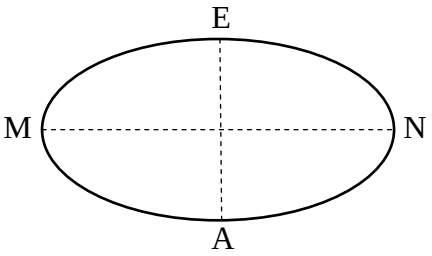
ISOSCELES RIGHT TRIANGLE



Perimeter = ?

37=_____

ELLIPSE



MN = 522
EA = 250

Area = ?

38=_____

39. $\left[\frac{79500 + (1/(9.82\times10^{-5}))}{(84200/38900) - 2.1}\right]^2$ ----------39=_____

40. $\left[\frac{47.1}{12.7}\right](200 + 486)^3$ ----------40=_____

41. $\sqrt{\frac{0.421 + 0.192}{110 - 56.6}}$ ----------41=_____

42. $\sqrt{460} + \sqrt{390 + 383} - (\pi)\sqrt{431}$ ----------42=_____

43. $(1/\pi)\sqrt[3]{\frac{0.0513 + 0.129}{1.07 - 0.916}}$ ----------43=_____

44. $(1980)\sqrt{145 + 26 + 58.4}$ ----------44=_____

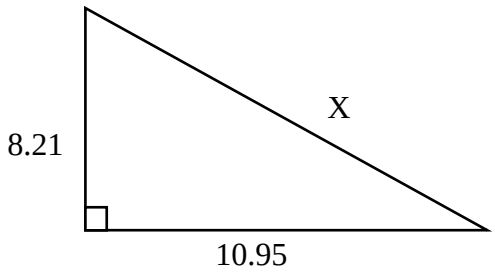
45. $(1280)\sqrt[4]{833 + 913 - 385}$ ----------45=_____

46. $\left[\sqrt[3]{(1.75/0.634)(5.08)}\right]^4$ ----------46=_____

47. Calculate the x-coordinate of the intersection of the line $y = -2/3x + 1/5$ and the x-axis. ----------47=_____

48. Calculate the sum of the roots of the following quadratic equation. $2x^2 - 5x + 8 = 0$. ----------48=_____

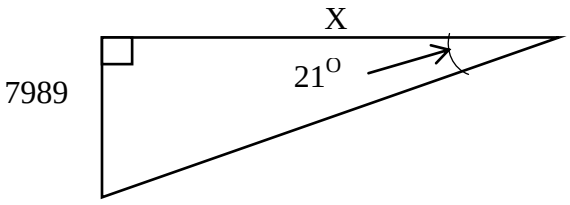
RIGHT TRIANGLE



X = ?

49=_____

RIGHT TRIANGLE



X = ?

50=_____

51. $\left[\frac{87.2 + 159 + \sqrt{49500 + 51400}}{22100/18400}\right]^{2}$ ----------51=_____

52. $\left[\frac{10.2 - 5.69 + \sqrt{13900/1720}}{-4.31 + 5.99}\right]^{-3}$ ----------52=_____

53. $\left[\frac{\sqrt{\sqrt{1230 - 919}}}{-(34.7 - 37.6)}\right]^{3}[1.24\text{x}10^{5} + 3.77\text{x}10^{5}]$ ----------53=_____

54. $\sqrt{\frac{(16200)(5950)}{(2.20\text{x}10^{5})(17300)}} - 0.0164 + 0.0538$ ----------54=_____

55. $(0.118)(2.68\text{x}10^{8})^{1/4} - [(4.4)(22.1)]^{1/2}$ ----------55=_____

56. $8450 + \sqrt{(17600)(17300)} - (25700 + 25700)$ ----------56=_____

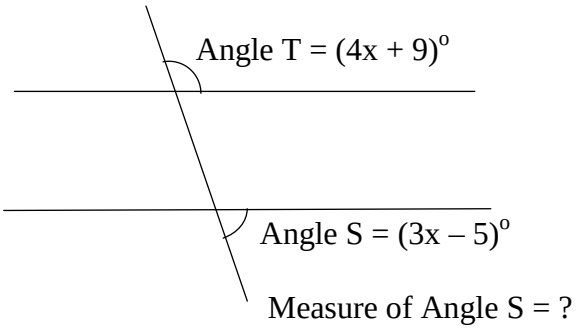
57. $\sqrt{\frac{(125)(16.8)}{(2760) + (4770)}} + 1/(0.808)^{-3}$ ----------57=_____

58. $\sqrt{\frac{1/(4750 - 4310)}{(136)(9.89 + 17.5)^{-3}}}$ ----------58=_____

59. Calculate the odds of rolling a standard fair six sided die and having it land on a prime number. ----------59=_____

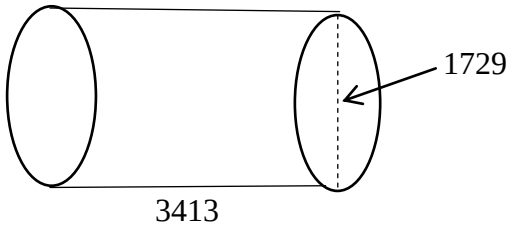
60. Calculate the value of the 23rd triangular number. ----------60=_____INT.

PARALLEL LINES CUT BY A TRANSVERSAL



61=_____

CYLINDER



Total Surface Area = ?

62=_____

63. $\frac{19!}{31!}$ ----------63=_____

64. (deg) (214 – 128)sin(87.5°) ----------64=_____

65. $(330 - \pi)e^{0.231}$ ----------65=_____

66. (deg) [26.7]tan(34.5° – 94.4°) ----------66=_____

67. (deg) (19 – 9.03)sin(182°) + 0.28 ----------67=_____

68. (deg) $\frac{\sin(31.8°)}{\tan(31.8°)}$[92.3] ----------68=_____

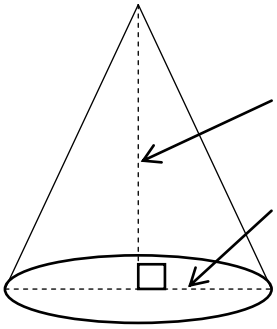
69. (rad) tan[(62.2 – 42)(0.661)] ----------69=_____

70. $(1670 - 661 + 2930)^{1/3}$ ----------70=_____

71. Scott weighs 132 pounds and sits three and a half feet from the fulcrum of a seesaw. If Sara weighs 98 pounds, calculate how far she must sit from the fulcrum to balance the seesaw. ----------71=_____ft.

72. A field in the shape of an equilateral triangle covers an area of 10 acres. Calculate the length of a side of the field in feet. ----------72=_____ft.

CONE



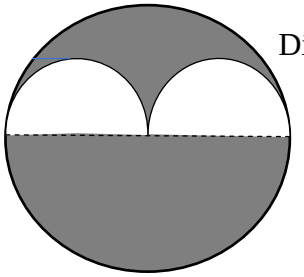
Height = 3007

Diameter = 1207

Volume = ?

73=_____

CIRCLE AND EQUAL SEMICIRCLES



Diameter of Circle = 5215

Shaded Area = ?

74=_____

75. $\dfrac{0.109 + \sqrt{(0.0373)(0.125)} + (0.206)(0.351)}{\sqrt{\sqrt{1.25 + 1.32}}}$ ----------75=_____

76. $\dfrac{\text{Log}(9.46\text{x}10^{7} + 1.28\text{x}10^{8})}{2.53}$ ----------76=_____

77. $\text{Log}(15.9 + 9.51 + 17.3)$ ----------77=_____

78. $\dfrac{(e^{0.23})(e^{0.109})(e^{0.255})}{\text{Ln}(13.4 + 62.2)}$ ----------78=_____

79. $1 + 3 + 5 + \ldots + 401$ ----------79=_____

80. $1 + (0.389) + \dfrac{(0.389)^2}{2} + \dfrac{(0.389)^3}{6} + \dfrac{(0.389)^4}{24}$ ----------80=_____

2018-2019 TMSCA Middle School Calculator Test 3 Answer Key

Page 1

1 = -2750
= -2.75×10^{3}

2 = 16.0
= 1.60×10^{1}

3 = 25.5
= 2.55×10^{1}

4 = 205
= 2.05×10^{2}

5 = -490
= -4.90×10^{2}

6 = 94.1
= 9.41×10^{1}

7 = -5.68
= -5.68×10^{0}

8 = -0.662
= -6.62×10^{-1}

9 = 1.57×10^{6}

10 = 2.86×10^{10}

11 = 160 INT.

12 = 193
= 1.93×10^{2}

13 = 15 INT.

Page 2

14 = -430
= -4.30×10^{2}

15 = 3.86×10^{7}

16 = 0.123
= 1.23×10^{-1}

17 = 1.47
= 1.47×10^{0}

18 = 0.000196
= 1.96×10^{-4}

19 = 0.316
= 3.16×10^{-1}

20 = 0.00377
= 3.77×10^{-3}

21 = 18.9
= 1.89×10^{1}

22 = 7.20
= 7.20×10^{0}

23 = -1.08×10^{9}

24 = 90.0
= 9.00×10^{1}

25 = $258.38

26 = 0.556
= 5.56×10^{-1}

Page 3

27 = -733
= -7.33×10^{2}

28 = 0.651
= 6.51×10^{-1}

29 = 1.30×10^{-11}

30 = 1.02
= 1.02×10^{0}

31 = 2.23×10^{-11}

32 = 0.221
= 2.21×10^{-1}

33 = 0.00517
= 5.17×10^{-3}

34 = 0.0165
= 1.65×10^{-2}

35 = 0.875
= 8.75×10^{-1}

36 = 28.3
= 2.83×10^{1}

37 = 62600
= 6.26×10^{4}

38 = 102000
= 1.02×10^{5}

Page 4

39 = 1.93×10^{12}

40 = 1.20×10^{9}

41 = 0.107
= 1.07×10^{-1}

42 = -16.0
= -1.60×10^{1}

43 = 0.335
= 3.35×10^{-1}

44 = 30000
= 3.00×10^{4}

45 = 7770
= 7.77×10^{3}

46 = 33.8
= 3.38×10^{1}

47 = 0.300
= 3.00×10^{-1}

48 = 2.50
= 2.50×10^{0}

49 = 13.7
= 1.37×10^{1}

50 = 20800
= 2.08×10^{4}

2018-2019 TMSCA Middle School Calculator Test 3 Answer Key

Page 5

51 = 220000
= 2.20×10^{5}

52 = 0.0119
= 1.19×10^{-2}

53 = 1.52×10^{6}

54 = 0.197
= 1.97×10^{-1}

55 = 5.24
= 5.24×10^{0}

56 = -25500
= -2.55×10^{4}

57 = 1.06
= 1.06×10^{0}

58 = 0.586
= 5.86×10^{-1}

59 = 1.00
= 1.00×10^{0}

60 = 276 INT.

Page 6

61 = 70.4
= 7.04×10^{1}

62 = 2.32×10^{7}

63 = 1.48×10^{-17}

64 = 85.9
= 8.59×10^{1}

65 = 412
= 4.12×10^{2}

66 = -46.1
= -4.61×10^{1}

67 = -0.0679
= -6.79×10^{-2}

68 = 78.4
= 7.84×10^{1}

69 = 1.00
= 1.00×10^{0}

70 = 15.8
= 1.58×10^{1}

71 = 4.71
= 4.71×10^{0}

72 = 1000
= 1.00×10^{3}

Page 7

73 = 1.15×10^{9}

74 = 1.60×10^{7}

75 = 0.197
= 1.97×10^{-1}

76 = 3.30
= 3.30×10^{0}

77 = 1.63
= 1.63×10^{0}

78 = 0.419
= 4.19×10^{-1}

79 = 40400
= 4.04×10^{4}

80 = 1.48
= 1.48×10^{0}

TMSCA 2018-2019 MS CA Test 3 Solutions to Word and Geometry Problems

11.
2+3+5+7+11+13+17+19+23 +29 + 31

12. 6(12) + 2 = 74 in. Some calculators will convert this to cm. Otherwise do 74(2.54). Then add 5.

13. The median of 12 numbers will be the average of the 6th and 7th numbers. See number 1. $\frac{13+17}{2}$

24. (180 – 89) – (90 – 89)

25. 922.78 – 922.78(.8)(.9)

26. $-8n + 5 = n$

$5 = 9n;\ \frac{5}{9} = n$

35. Pattern before simplifying: $0, \frac{1}{3}, \frac{2}{4}, \frac{3}{5}, \frac{4}{6} \ldots \frac{n-1}{n+1}$
15th term will be
$\frac{15-1}{15+1} = \frac{14}{16}$

36. 1 hour 5 min. = 65 min
$\frac{5}{6}$ hour = 50 min.
For two people working together this works: $\frac{ab}{a+b}$

$$\frac{(65)(50)}{65+50}$$

37. Each leg = $\frac{25920}{\sqrt{2}}$
Perim = $2\left(\frac{25920}{\sqrt{2}}\right) + 25920$

38. A = $\pi r_1(r_2) =$

$$\pi\left(\frac{522}{2}\right)\left(\frac{250}{2}\right)$$

47. Let y = 0. Solve for x.

$$0 = \frac{-2}{3}x + \frac{1}{5}$$

$$x = \frac{-1}{5} \div \frac{-2}{3}$$

48. Sum of the roots = $\frac{-b}{a}$
= $\frac{5}{2}$ since b = -5 and a = 2

49. $\sqrt{8.21^2 + 10.95^2}$

50. $\frac{tan\ 21}{1} = \frac{7989}{x}$

$$x = \frac{7989}{tan\ 21}$$

59. $\frac{primes}{not\ primes} = \frac{2,3,5}{1,4,6} = \frac{3}{3}$

60. $\frac{23(24)}{2}$

61.

$$4x + 9 + 3x - 5 = 180$$

$$7x + 4 = 180$$

$\frac{176}{7} = x$; Angle S = $3\left(\frac{176}{7}\right) - 5$

62. $2\pi rh + 2\pi r^2 =$

$$2\pi\left(\frac{1729}{2}\right)(3413) + 2\pi\left(\frac{1729}{2}\right)^2$$

71. Weight times distance on one side = weight times distance on other side.
3.5(132) = 98*x*

$$x = \frac{(3.5)(132)}{98}$$

72. 640 acres = 1 mi^2
10 acres = $\frac{1}{64}\ mi^2$
Area of equilateral triangle in terms of side, x:

$$\frac{x^2\sqrt{3}}{4} =$$

$$\frac{x^2\sqrt{3}}{4} = \frac{1}{64}$$

$x = \sqrt{\frac{4}{64\sqrt{3}}}$ miles
Convert to feet by multiplying by 5280.

73. $V = \frac{1}{3}\pi r^2 h$
= $\frac{1}{3}\pi\left(\frac{1207}{2}\right)^2(3007)$

74. Large circle = $\left(\frac{5215}{2}\right)^2\pi$

Small circle = $\left(\frac{5215}{4}\right)^2\pi$

Subtract smaller from larger.