8

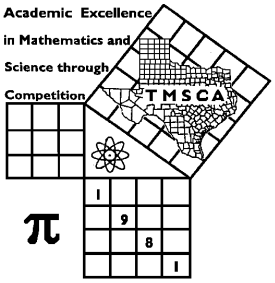
1st Score: _____	2nd Score: _____	3rd Score: _____	
S & G _____	S & G _____	S & G _____	_____. _____
Grader: _____	Grader: _____	Grader: _____	**Final Score**

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 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.

2019-2020 TMSCA Middle School Calculator Test #3

1. 955 – 1070 ---------- 1=_____

2. 22 – 16 – 57 ---------- 2=_____

3. –27.8 + 6.19 + 26.2 ---------- 3=_____

4. π – 6 – 13 + 15 ---------- 4=_____

5. –386 – 1110 – 922 – 1030 ---------- 5=_____

6. 39.9 – 39.3 – 49.7 + 141 + 88.4 ---------- 6=_____

7. 1.72 + 1.35 + 1.5 + 1.16 + 0.884 ---------- 7=_____

8. (0.941 + 3.89 – 3.68) – (1.88 + 3.65) ---------- 8=_____

9. 81.6 x 33.9 x 557 ---------- 9=_____

10. 147 x 507 x 137 x 1300 ---------- 10=_____

11. Calculate the smallest three-digit term in the Fibonacci Sequence. 11=_____INT.

12. The volume of a cube is 379 cubic centimeters. Calculate the volume in cubic inches. ---------- 12=_____$in.^3$

13. Calculate pi to the fifteenth power divided by 15 to the power of pi. ---------- 13=_____

14. (61)[68 x 147 x 59] ---------- 14=_____

15. (102/75)[78 – 58] ---------- 15=_____

16. $\left[\frac{130}{504}\right]$[(366/769) – 0.148] ---------- 16=_____

17. $\left[\frac{115}{49}\right]$[(134/56) + 2.35] ---------- 17=_____

18. $\frac{(146/135) + (39/39)}{(0.0428 - 0.121)}$ ---------- 18=_____

19. $\left[\frac{(3110/3460) - (2670/2040)}{1.87/(2.69)}\right]$ ---------- 19=_____

20. $\frac{618}{(509 - 329)} - \frac{(765 - 688)}{172}$ ---------- 20=_____

21. (0.49)[51/119 x 101/66] – 0.298 ---------- 21=_____

22. $\frac{(\pi)(418/551)(641/75)}{(669/527)}$ ---------- 22=_____

23. $\frac{(0.00312 + 0.00241 - 0.00141)}{\{(0.0127 - 0.0047)/(877)\}}$ ---------- 23=_____

24. Calculate the sum of the complement and supplement of the angle that measures the largest prime number less than 50. ---------- 24=_____

25. June counted 8 dolphins and 3 whales in the first hour of her sight seeing trip. If the trip lasts 5 hours and her observations are at the same rate, calculate the total number of dolphins and whales she will see. ---------- 25=_____INT.

26. Negative eight times a number increased by five is negative fifty-two. Calculate the number. ---------- 26=_____

27. $(2.36\text{x}10^{-4})[[0.00885/(0.0194)][2.14/(1.69)]]$ ---------- 27=_____

28. $\dfrac{(3.01\text{x}10^{12}) + (2.88\text{x}10^{12})}{(-40.5)(10.8) - 294}$ ---------- 28=_____

29. $[1170 - (1110 + 617)] + [(1.38)(233 - 485)]$ ---------- 29=_____

30. $[67.9]\left[\dfrac{1/48.8}{1/(31.8)}\right]$ ---------- 30=_____

31. $\dfrac{1}{-3.44} + \dfrac{1}{(\pi)(2.71 - \pi)}$ ---------- 31=_____

32. $(19.6)\left[(3.77\text{x}10^{-10}) - (1.30\text{x}10^{-10})\right]$ ---------- 32=_____

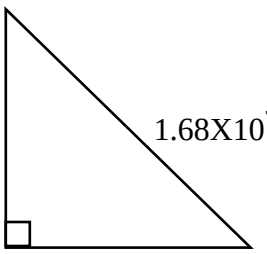
33. $\left[\dfrac{1/881}{1/827}\right][1.78\text{x}10^{6}]$ ---------- 33=_____

34. $\dfrac{1}{5740} - \dfrac{1}{6100} + \dfrac{1}{1790}$ ---------- 34=_____

35. The following sequence was put on the board in math class.
$\frac{1}{1}, \frac{2}{4}, \frac{3}{9}, \frac{4}{16}, \frac{5}{25}\ldots$, calculate the value of the 25th term. ---------- 35=_____

36. Sara works and completes a task in 1.4 hours. Paula completes the same task in 20 minutes less. If they work together, calculate the number of minutes they would take to complete the task. --- 36=_____min.

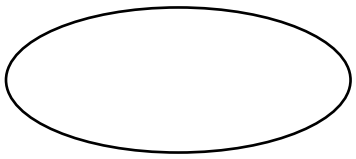
ISOSCELES RIGHT TRIANGLE



Area = ?

37=_____

ELLIPSE



Major Axis = 81.32

Minor Axis = 23.21

Area = ?

38=_____

39. $\left[\frac{1240}{0.36}\right](6.52 + 8.28)^3$ ---------- 39=_____

40. $(47.6 + 45.5 + 160)^2(610 + 1060)^2$ ---------- 40=_____

41. $\frac{(7260 + 9390)^3}{(0.0158 - 0.015)^2}$ ---------- 41=_____

42. $(1/(0.00533))(67100 - 40600)^2$ ---------- 42=_____

43. $(3290)\sqrt{44.7 + 82.4 + 150}$ ---------- 43=_____

44. $\sqrt{(4.67/10.2) + 0.455 - 0.222}$ ---------- 44=_____

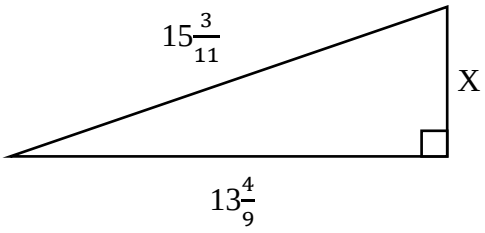
45. $(1770)\sqrt[4]{11300 + 17200 - 14800}$ ---------- 45=_____

46. $\frac{(2860 + 9090)^{1/3}}{(90 - 12)^{1/3}}$ ---------- 46=_____

47. Calculate the x-coordinate of the intersection of the line $y = (-5/7)x + 7/11$ and the x-axis. ---------- 47=_____

48. Calculate the sum of the roots of the following quadratic equation.
$8x^2 - 7x + 15 = 0$ ---------- 48=_____

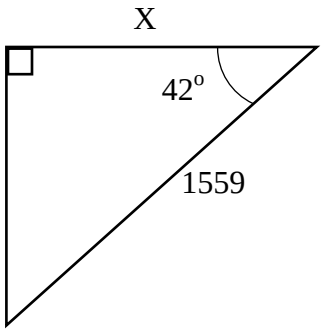
RIGHT TRIANGLE



X = ?

49=_____

RIGHT TRIANGLE



X = ?

50=_____

51. $\left[\frac{1730 - 1600 + \sqrt{2.69x10^5/45.1}}{-317 + 491}\right]^4$ ---------- 51=_____

52. $\left[\frac{5.68 + 10 + \sqrt{55.9 + 89.6}}{27/11.1}\right]^3$ ---------- 52=_____

53. $\left[\frac{\sqrt{\sqrt{1330 - 1260}}}{-(8920 - 8770)}\right]^2 [527 + 135]$ ---------- 53=_____

54. $(16.1)(8.99x10^7)^{1/4} - [(943)(1960)]^{1/2}$ ---------- 54=_____

55. $16300 + \sqrt{(20400)(6860)} - (17200 + 21700)$ ---------- 55=_____

56. $\sqrt{\frac{1/(32.3 - 30.4)}{(702)(176 + 163)^3}}$ ---------- 56=_____

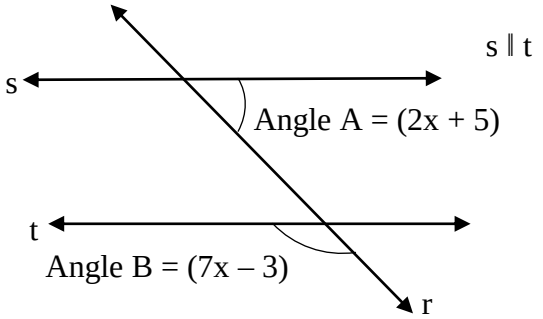
57. $\sqrt{\frac{(5.3)(237)}{(4020) + (2370)}} - 0.529$ ---------- 57=_____

58. (rad) sin(7.73) + (1.21/10.1) ---------- 58=_____

59. Calculate the odds of rolling a fair die and landing on a number less than 5. ---------- 59=_____

60. Calculate the fifty-first hexagonal number. ---------- 60=_____

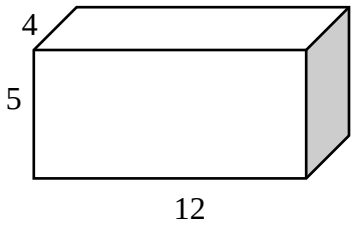
PARALLEL LINES CUT BY A TRANSVERSAL



Measure of Angle A = ?

61=_____

RECTANGULAR PRISM



Surface Area = ?

62=_____

63. $\frac{21!/15!}{32! + 30!}$ ---------- 63=_____

64. (deg) $\frac{\cos 20}{1510}$ ---------- 64=_____

65. $(324 - \pi)e^{0.914}$ ---------- 65=_____

66. (rad) $\tan\left[\frac{(312)(\pi)}{(0.841)(1.96)}\right]$ ---------- 66=_____

67. (deg) $\sin(9.99° - 6.16°) + 0.0355$ ---------- 67=_____

68. (deg) $\frac{\sin(0.701°) - \tan(0.701°)}{\sin(0.701°)}$ ---------- 68=_____

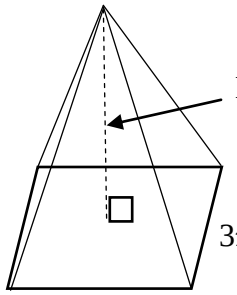
69. (deg) $\frac{\tan(4.84°)}{1.77 + 1.14}$ ---------- 69=_____

70. $\left[(884)\left(\frac{3.18}{(12.2)(\pi)}\right)\right]^{5/2}$ ---------- 70=_____

71. Bethany weighs 78 Pounds and sits 5 feet from the fulcrum of a seesaw. If Sara weighs 112 pounds, calculate how far from the fulcrum Sara must sit to balance the seesaw. ---------- 71=_____ft.

72. Carl drops a rock off a cliff. The rock falls 22 seconds before hitting the ground. The acceleration due to gravity is 9.80 meters per second squared. Calculate the speed of the rock the instance it hits the ground. ---------- 72=_____m/s

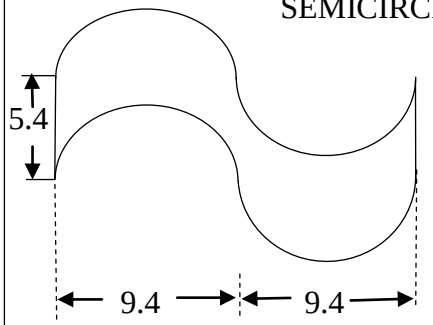
SQUARE BASED PYRAMID



Volume = ?

73=_____

PLANE FIGURE WITH CONGRUENT SEMICIRCLES



Area = ?

74=_____

75. $\frac{\text{Log}(0.483 + 0.794)}{30.2 - 42.3}$ ---------- 75=_____

76. $\frac{(16.8)^{0.88}(23.6)^{0.967}}{(11.3 - 4.67)^{-10}}$ ---------- 76=_____

77. $(9850)10^{(0.153)(6.14)}$ ---------- 77=_____

78. $\frac{(e^{0.571})(e^{0.532})(e^{0.172})}{\text{Ln}(493 + 161)}$ ---------- 78=_____

79. $4 + 6 + 8 + \ldots + 876$ ---------- 79=_____

80. $1 + \frac{(0.449)^4}{2} - \frac{(0.449)^6}{6} + \frac{(0.449)^8}{24} - \frac{(0.449)^{10}}{120}$ --------- 80=_____

2019-2020 TMSCA Middle School Calculator Test #3 Answer Key

Page 1

1 = -115
= -1.15×10^{2}

2 = -51.0
= -5.10×10^{1}

3 = 4.59
= 4.59×10^{0}

4 = -0.858
= -8.58×10^{-1}

5 = -3450
= -3.45×10^{3}

6 = 180
= 1.80×10^{2}

7 = 6.61
= 6.61×10^{0}

8 = -4.38
= -4.38×10^{0}

9 = 1.54×10^{6}

10 = 1.33×10^{10}

11 = 144 INT.

12 = 23.1
= 2.31×10^{1}

13 = 5790
= 5.79×10^{3}

Page 2

14 = 3.60×10^{7}

15 = 27.2
= 2.72×10^{1}

16 = 0.0846
= 8.46×10^{-2}

17 = 11.1
= 1.11×10^{1}

18 = -26.6
= -2.66×10^{1}

19 = -0.590
= -5.90×10^{-1}

20 = 2.99
= 2.99×10^{0}

21 = 0.0234
= 2.34×10^{-2}

22 = 16.0
= 1.60×10^{1}

23 = 452
= 4.52×10^{2}

24 = 176
= 1.76×10^{2}

25 = 55 INT.

26 = 7.13
= 7.13×10^{0}

Page 3

27 = 0.000136
= 1.36×10^{-4}

28 = -8.05×10^{9}

29 = -905
= -9.05×10^{2}

30 = 44.2
= 4.42×10^{1}

31 = -1.03
= -1.03×10^{0}

32 = 4.84×10^{-9}

33 = 1.67×10^{6}

34 = 0.000569
= 5.69×10^{-4}

35 = 0.0400
= 4.00×10^{-2}

36 = 36.3
= 3.63×10^{1}

37 = 7.06×10^{13}

38 = 1480
= 1.48×10^{3}

Page 4

39 = 1.12×10^{7}

40 = 1.79×10^{11}

41 = 7.21×10^{18}

42 = 1.32×10^{11}

43 = 54800
= 5.48×10^{4}

44 = 0.831
= 8.31×10^{-1}

45 = 19100
= 1.91×10^{4}

46 = 5.35
= 5.35×10^{0}

47 = 0.891
= 8.91×10^{-1}

48 = 0.875
= 8.75×10^{-1}

49 = 7.25
= 7.25×10^{0}

50 = 1160
= 1.16×10^{3}

2019-2020 TMSCA Middle School Calculator Test #3 Answer Key

Page 5

51 = 2.01
= 2.01×10^{0}

52 = 1480
= 1.48×10^{3}

53 = 0.246
= 2.46×10^{-1}

54 = 208
= 2.08×10^{2}

55 = -10800
= -1.08×10^{4}

56 = 4.39×10^{-6}

57 = -0.0856
= -8.56×10^{-2}

58 = 1.11
= 1.11×10^{0}

59 = 2.00
= 2.00×10^{0}

60 = 5151 INT.

Page 6

61 = 44.6
= 4.46×10^{1}

62 = 256
= 2.56×10^{2}

63 = 1.48×10^{-28}

64 = 0.000622
= 6.22×10^{-4}

65 = 800
= 8.00×10^{2}

66 = 1.20
= 1.20×10^{0}

67 = 0.102
= 1.02×10^{-1}

68 = -7.48×10^{-5}

69 = 0.0291
= 2.91×10^{-2}

70 = 46100
= 4.61×10^{4}

71 = 3.48
= 3.48×10^{0}

72 = 216
= 2.16×10^{2}

Page 7

73 = 577
= 5.77×10^{2}

74 = 102
= 1.02×10^{2}

75 = -0.00878
= -8.78×10^{-3}

76 = 4.18×10^{10}

77 = 85700
= 8.57×10^{4}

78 = 0.552
= 5.52×10^{-1}

79 = 192000
= 1.92×10^{5}

80 = 1.02
= 1.02×10^{0}

TMSCA 19-20 MS CA Test #3 Solutions to Word and Geometry Problems

11. Terms in sequence: 1,1,2,3,5,8,13,21,34,55,89,144

12. $\frac{379}{2.54^3}$ On the HP calculator there is a key that will convert inches to cm, however you must punch it three times.

13. $\frac{\pi^{15}}{15^{\pi}}$

24. Largest prime less than 50 is 47. Complement is 90-47 = 43. Supplement is 180-47 = 133. 43 + 133

25. $\frac{11}{1} = \frac{x}{5}$ $x = 11(5)$

26. $-8n + 5 = -42$

$$n = \frac{-57}{-8}$$

35. $\frac{1}{25}$

36. 1.4 hours is 84 minutes.

$$\frac{84(64)}{84+64}$$

37. A = $\frac{(1.68x\ 10^7)^2}{4}$

38. A = $\left(\frac{81.32}{2}\right)\left(\frac{23.21}{2}\right)\pi$

47. On the x-axis, y = 0.

$$0 = \frac{-5}{7}x + \frac{7}{11}$$

$$x = \frac{-7}{11} \div \frac{-5}{7}$$

48. Sum of the roots = $\frac{-b}{a} = \frac{7}{8}$

49. $\sqrt{\left(15\frac{3}{11}\right)^2 - \left(13\frac{4}{9}\right)^2}$

50. $\frac{cos\ 42}{1} = \frac{x}{1559}$;

$x = 1559 \cos(42)$

59. 4 numbers are less than 5; 2 numbers not less than 5. Odds: $\frac{4}{2}$

60. $\frac{n(4n-2)}{2}$ or n(2n-1)

51[2(51) – 1] Integer. Look at all digits.

61. Supplementary angles add to be 180 degrees.

$$2x + 5 + 7x - 3 = 180$$

$$x = \frac{178}{9}$$

Angle A = $2\left(\frac{178}{9}\right) + 5$

62. $2(5x12 + 4x5 + 4x12)$

71. Weight times distance at one end = weight times distance at the other end of see saw.

$78(5) = 112x; x = \frac{78(5)}{112}$

72. Final velocity = Initial velocity + acc(time)
9.8(22)

73. $V = \frac{1}{3}(3\pi)^2(6.2\pi)$

74. This figure is just a rectangle with semicircles cut out and pasted in new positions. $A = 9.4(2)(5.4)$