8

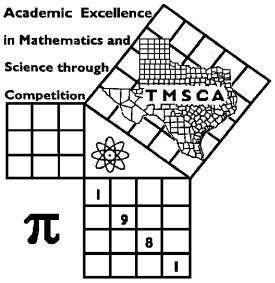
1st Score: _____	2nd Score: _____	3rd Score: _____	
S & G _____	S & G _____	S & G _____	_____. _____
Grader: _____	Grader: _____	Grader: _____	**Final Score**

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 #9 ©

JANUARY 26, 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 9

1. 1080 – 1250 ---------- 1=_____

2. –32 + 10 – 23 ---------- 2=_____

3. 44 – 113 + 110 ---------- 3=_____

4. 35 – π – 30 – 15 ---------- 4=_____

5. –977 + 519 + 533 + 1040 ---------- 5=_____

6. 221 – 105 – 200 – 161 + 141 ---------- 6=_____

7. 2.78 – 0.707 + 4.24 – 2.74 – 0.915 ---------- 7=_____

8. (7.84 + 7.72 – 7.97) – (3.96 + 8.54) ---------- 8=_____

9. 147 x 197 x 484 ---------- 9=_____

10. 75.1 x 868 x 2740 x 859 ----------10=_____

11. Amanda's phone bill was charged $83.52 for data used in a month. If she is charged $12.98 per gigabyte, calculate the number of gigabytes she used. ----------11=_____gb

12. The vertices of a right triangle have coordinates (8,5), (8,-2) and (3,-2). Calculate the area of the right triangle in square units. ----12=_____sq. units

13. Convert 11pi over 6 radians to degrees. ----------13=_____°

14. $(-405)[467 \times 492 \times 337]$ ----------14=_____

15. $(448/106)[99 - 207]$ ----------15=_____

16. $\{-109/85\}\left[\frac{23}{119 + 94}\right]$ ----------16=_____

17. $\left[\frac{397}{147}\right][(400/213) - 0.817]$ ----------17=_____

18. $\left[\frac{(0.136 + 0.259)}{93/102}\right]\left[\frac{9.42 \times 10^{-4}}{7.98}\right]$ ----------18=_____

19. $\frac{(380/243) + (739/723)}{(0.343 - 0.338)}$ ----------19=_____

20. $\frac{4.46 + 0.955 + 2.45}{(1.22)(0.0063)(3.16 \times 10^{-4})}$ ----------20=_____

21. $(0.181)[116/18 \times 86/130] - 0.419$ ----------21=_____

22. $\frac{[-(2010 + 3640)(4010 - 4190)]}{(0.052/(173))}$ ----------22=_____

23. $\frac{(1.39 + 0.677 - 1.32)}{\{(1.84 - 5.23)/(0.574)\}}$ ----------23=_____

24. The mean of four positive integers is eight. When the smallest number is removed, the mean of the remaining three integers is ten. Calculate the value of the integer that was removed. ---------24=_____INT.

25. In a 45-45-90 triangle, one of the legs is 244.7 inches. Calculate the length of the hypotenuse in inches. ----------25=_____in.

26. Twice the complement of an angle is 24 degrees less than its supplement. Calculate the measure of the angle in degrees. ------26=_____^{o}

27. $\dfrac{(1.11 - \pi)(464 + 75.6)}{(2.43\text{x}10^{12})}$ ----------27=_____

28. $(0.0285)[(1.27/0.539)(13.3 + 69.6)]$ ----------28=_____

29. $\dfrac{(111 + 192)(5.9 + 1.42)}{(1.25\text{x}10^{11})}$ ----------29=_____

30. $\dfrac{1}{-0.11} + \dfrac{1}{(0.018 - 0.0617)}$ ----------30=_____

31. $(114)\left[\dfrac{0.942}{(1.25\text{x}10^{-10})}\right]$ ----------31=_____

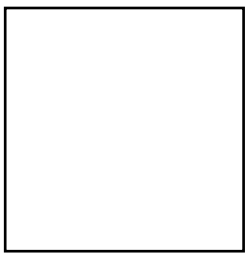
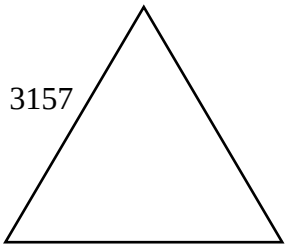
32. $\dfrac{(0.0169 + 0.0269)}{(1.06\text{x}10^{12})}$ ----------32=_____

33. $\dfrac{1}{280} - \dfrac{1}{(569 + 152)}$ ----------33=_____

34. $\left[\dfrac{1/55.4}{1/23}\right][5.57\text{x}10^{6}]$ ----------34=_____

35. Calculate the additive inverse of the multiplicative inverse of negative eight to the fifth power. ----------35=_____

36. The speed of sound at sea level at 59° F. is 1,225 kilometers per hour. Calculate this speed in feet per second. ----------36=_____fps.

SQUARE	EQUILATERAL TRIANGLE
 Perimeter = 7281 Area = ?	 3157 Height = ?
37=_____	38=_____

39. $(19.7 + 19.3)^2(4.31 + 0.702)^2$ ----------39=_____

40. $\dfrac{(31100 + 16200)^3}{(0.0302 - 0.0369)^2}$ ----------40=_____

41. $(474 + 695 + 685)^2(4.8 + 8.29)^2$ ----------41=_____

42. $(1/\pi)\sqrt{\dfrac{0.222 + 0.735}{0.174 - 0.077}}$ ----------42=_____

43. $\sqrt{(22.8/45.1) + 0.436 - 0.291}$ ----------43=_____

44. $\sqrt{11.7} + \sqrt{17.1 + 9.05} - (\pi)\sqrt{14.3}$ ----------44=_____

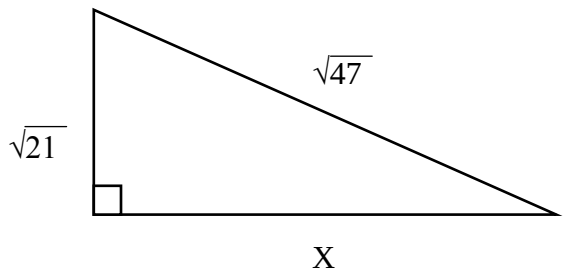
45. $\dfrac{1}{\sqrt{2690 + 1660 + 1740}} + \left(\dfrac{1}{\sqrt{8.1}}\right)^4$ ----------45=_____

46. $\dfrac{(631 + 1710)^{1/4}}{(152 - 54)^{1/5}}$ ----------46=_____

47. The minute hand of a clock is 12 inches long. Calculate how far the tip of the hand moves in 20 minutes. ----------47=_____in.

48. If a number is divided by 2, decreased by 17, multiplied by 3 and subtracted from 400, the result is 187. Calculate the number. ----48=_____INT.

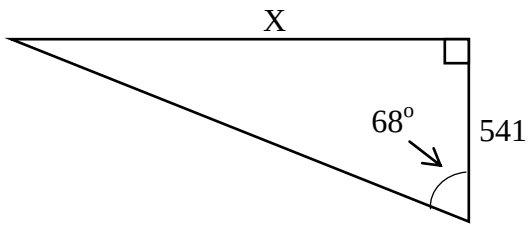
RIGHT TRIANGLE



X = ?

49=_____

RIGHT TRIANGLE



X = ?

50=_____

51. $\left[\dfrac{3060 - 2440 + \sqrt{2.30\text{x}10^{6}/6.6}}{-2600 + 4070}\right]^{4}$ ----------51=_____

52. $\sqrt{\dfrac{3.11\text{x}10^{14}}{(2.13\text{x}10^{5})(63)}} + \dfrac{(13500 - 28000)}{(1.38 + 1.35)}$ ----------52=_____

53. $\dfrac{(0.0104 + 0.0264 - 0.0195)^{2}}{\sqrt{0.00452 + 0.00968 + 0.00442}}$ ----------53=_____

54. $33800 + \sqrt{(25500)(6540)} - (26400 + 8590)$ ----------54=_____

55. $\sqrt{\dfrac{(4.77\text{x}10^{5})(12400)}{(12900)(26300)}} - 0.511 + 3.49$ ----------55=_____

56. $(15.4)^{2}\sqrt{(48.8)/(73.8)} - (117 + 130)$ ----------56=_____

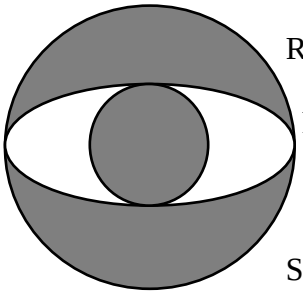
57. $\sqrt{\dfrac{1/(475 - 233)}{(235)(652 + 440)^{-6}}}$ ----------57=_____

58. (deg) $\tan(65.5^{\circ}) + (25.4/157)$ ----------58=_____

59. Calculate the area of a regular hexagon with a side length of 12.58 inches and an apothem of 10.8946 inches. ----------59=_____in^2

60. Adam drives to work at an average speed of 55 mph. and arrives 5 minutes early. If he gets held up in traffic, he only averages 45 mph and arrives 5 minutes late. Calculate the distance he drives to work. ----------60=_____mi.

CIRCLES AND ELLIPSE



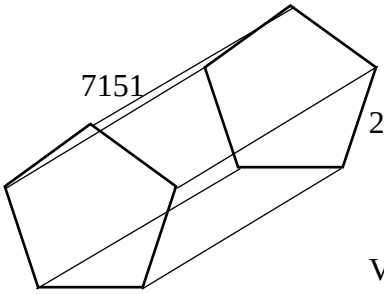
Radius of large circle = 20.2

Radius of small circle = 9.8

Shaded area = ?

61=_____

RIGHT REGULAR PENTAGONAL PRISM



Volume = ?

62=_____

63. $\frac{22! + 23!}{24!}$ ----------63=_____

64. $(43.2 - \pi)e^{0.239}$ ----------64=_____

65. (deg) (1590 + 1750)cos(2.77°) ----------65=_____

66. (rad) $\frac{\sin(12.2)}{178/3750}$ ----------66=_____

67. (deg) (97 – 78.5)cos(478°) + 1.6 ----------67=_____

68. (rad) cos[(0.626 – 1.06)(9.38)] ----------68=_____

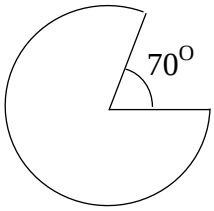
69. (rad) (2910)cos(23.2) ----------69=_____

70. $(3830 - 1260)^{0.0599 - 0.109}$ ----------70=_____

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

72. Jake deposits $1000 and earns 4¼% compounded semiannually. If he keeps the money in the account for 10 years, calculate the total balance in the account after those 10 years. ----------72=$_____

SECTOR OF A CIRCLE

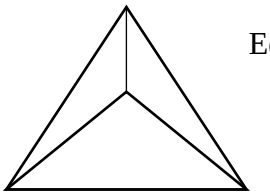


Radius = 521

Perimeter = ?

73=_____

TETRAHEDRON



Edge = 7.71

Volume = ?

74=_____

75. $\text{Ln}\left[\frac{581 + 87 + 629}{53 + 125 - 101}\right]$ ----------75=_____

76. $\frac{(0.712)^{0.269}(6.88)^{0.483}}{(44.4 - 12.6)^{-5}}$ ----------76=_____

77. $\text{Log}\sqrt{\frac{29.2 - 19.3}{(1.9)(204)}}$ ----------77=_____

78. $\frac{(e^{0.261})(e^{0.184})(e^{0.603})}{\text{Ln}(2040 + 3460)}$ ----------78=_____

79. $1 + 2 + 3 + \ldots + 252$ ----------79=_____

80. $\frac{1}{(0.409)} + \frac{1}{3(0.409)^3} + \frac{1}{5(0.409)^5} + \frac{1}{7(0.409)^7}$ --------80=_____

2018-2019 TMSCA Middle School Calculator Test 9 Answer Key

Page 1

1 = -170
= -1.70×10^{2}

2 = -45.0
= -4.50×10^{1}

3 = 41.0
= 4.10×10^{1}

4 = -13.1
= -1.31×10^{1}

5 = 1120
= 1.12×10^{3}

6 = -104
= -1.04×10^{2}

7 = 2.66
= 2.66×10^{0}

8 = -4.91
= -4.91×10^{0}

9 = 1.40×10^{7}

10 = 1.53×10^{11}

11 = 6.43
= 6.43×10^{0}

12 = 17.5
= 1.75×10^{1}

13 = 330
= 3.30×10^{2}

Page 2

14 = -3.14×10^{10}

15 = -456
= -4.56×10^{2}

16 = -0.138
= -1.38×10^{-1}

17 = 2.87
= 2.87×10^{0}

18 = 5.11×10^{-5}

19 = 517
= 5.17×10^{2}

20 = 3.24×10^{6}

21 = 0.353
= 3.53×10^{-1}

22 = 3.38×10^{9}

23 = -0.126
= -1.26×10^{-1}

24 = 2 INT.

25 = 346
= 3.46×10^{2}

26 = 24.0
= 2.40×10^{1}

Page 3

27 = -4.51×10^{-10}

28 = 5.57
= 5.57×10^{0}

29 = 1.77×10^{-8}

30 = -32.0
= -3.20×10^{1}

31 = 8.59×10^{11}

32 = 4.13×10^{-14}

33 = 0.00218
= 2.18×10^{-3}

34 = 2.31×10^{6}

35 = 0.0000305
= 3.05×10^{-5}

36 = 1120
= 1.12×10^{3}

37 = 3310000
= 3.31×10^{6}

38 = 2730
= 2.73×10^{3}

Page 4

39 = 38200
= 3.82×10^{4}

40 = 2.36×10^{18}

41 = 5.89×10^{8}

42 = 1.00
= 1.00×10^{0}

43 = 0.807
= 8.07×10^{-1}

44 = -3.35
= -3.35×10^{0}

45 = 0.0281
= 2.81×10^{-2}

46 = 2.78
= 2.78×10^{0}

47 = 25.1
= 2.51×10^{1}

48 = 176 INT.

49 = 5.10
= 5.10×10^{0}

50 = 1340
= 1.34×10^{3}

2018-2019 TMSCA Middle School Calculator Test 9 Answer Key

Page 5

51 = 0.460
$= 4.60 \times 10^{-1}$

52 = -497
$= -4.97 \times 10^{2}$

53 = 0.00219
$= 2.19 \times 10^{-3}$

54 = 11700
$= 1.17 \times 10^{4}$

55 = 7.15
$= 7.15 \times 10^{0}$

56 = -54.1
$= -5.41 \times 10^{1}$

57 = 5.46×10^{6}

58 = 2.36
$= 2.36 \times 10^{0}$

59 = 411
$= 4.11 \times 10^{2}$

60 = 41.3
$= 4.13 \times 10^{1}$

Page 6

61 = 962
$= 9.62 \times 10^{2}$

62 = 5.69×10^{10}

63 = 0.0435
$= 4.35 \times 10^{-2}$

64 = 50.9
$= 5.09 \times 10^{1}$

65 = 3340
$= 3.34 \times 10^{3}$

66 = -7.55
$= -7.55 \times 10^{0}$

67 = -7.09
$= -7.09 \times 10^{0}$

68 = -0.598
$= -5.98 \times 10^{-1}$

69 = -1030
$= -1.03 \times 10^{3}$

70 = 0.680
$= 6.80 \times 10^{-1}$

71 = 0.417
$= 4.17 \times 10^{-1}$

72 = $1522.79

Page 7

73 = 3680
$= 3.68 \times 10^{3}$

74 = 54.0
$= 5.40 \times 10^{1}$

75 = 2.82
$= 2.82 \times 10^{0}$

76 = 7.53×10^{7}

77 = -0.796
$= -7.96 \times 10^{-1}$

78 = 0.331
$= 3.31 \times 10^{-1}$

79 = 31900
$= 3.19 \times 10^{4}$

80 = 99.4
$= 9.94 \times 10^{1}$

TMSCA 18-19 MS CA Test #9 Solutions to Word and Geometry Problems

11. $\frac{83.52}{12.98}$

12. $\frac{7\,x\,5}{2}$ since the legs are 7 and 5 units

13. $\pi\ radians = 180\ degrees$

$$\frac{11(180)}{6}$$

24. 8(4) – 3(10)

25. $244.7\sqrt{2}$

26. x = angle
180-x = supplement
90-x = complement
2(90-x) = 180 – x – 24. Solve for x.

35. $-\ \frac{1}{(-8)^5}$

36.

$$\frac{1225km}{1hr}\cdot\frac{1mi}{1.61km}\cdot\frac{5280ft}{1mi}\cdot\frac{1hr}{3600sec}$$

37. $\left(\frac{7281}{4}\right)^2$

38. $\left(\frac{3157}{2}\right)\sqrt{3}$

47. $r = 12$; 20 minutes is 1/3 of the circumference

$$\frac{1}{3}(12)(2\pi)$$

48. $400 - 3\left(\frac{n}{2} - 17\right) = 187$

$$n = \left(\frac{187-400}{-3} + 17\right)(2)$$

49. $\sqrt{47-21}$

50. $\frac{\tan 68}{1} = \frac{x}{541}$;

$$x = 541(\tan 68))$$

59. A = $\frac{1}{2}aP =$

$$\frac{1}{2}(10.8946)(12.58)(6)$$

60.

	R	Time	Distance
Fast	55	$x-\frac{1}{12}$	$55\left(x-\frac{1}{12}\right)$
Slow	45	$x+\frac{1}{12}$	$45\left(x+\frac{1}{12}\right)$

x is the time it should have taken at speed to arrive on time.

$$55\left(x-\frac{1}{12}\right) = 45\left(x+\frac{1}{12}\right)$$

Solve for x. Then calculate the distance using either expression for distance.

61.
Large circle – ellipse + small circle
Ellipse: half major axis = 20.2
Half minor axis = 9.8

$$\pi(20.2)^2 - \pi(20.2)(9.8) + \pi(9.8)^2$$

62. Area of a pentagon

$$A = \frac{Perimeter^2}{\left(tan\frac{180}{5}\right)(4\cdot 5)}$$

V = Ah = $\left[\frac{(2151\ x5)^2}{\left(tan\frac{180}{5}\right)(20)}\right]7151$

71. $\frac{1+2+3+4+5}{36}$

72. $1000\left(1+\frac{.0425}{2}\right)^{(10\cdot 2)}$

73. $\mathbf{521 + 521 + \frac{290}{360}(2\pi(521))}$

74. V = $\frac{e^3}{6\sqrt{2}} = \frac{(7.71)^3}{6\sqrt{2}}$