

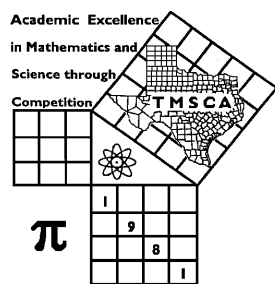
8 1st Score: _____	2nd Score: _____	3rd Score: _____	_____. ____ Final Score
S & G _____	S & G _____	S & G _____	
Grader: _____	Grader: _____	Grader: _____	

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 # 1 ©

OCTOBER 20, 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*}, 1.23x10¹, 1.23x10⁰¹, .0190, 1.90x10⁻²
 Incorrect: 12.30, 123.0, 1.23(10)², 1.23·10², 1.230x10², 1.23*10², 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 #1

1. $694 + 633$ ----- 1= _____

2. $9.1 + 7.69 + 1.79$ ----- 2= _____

3. $843 - 733 - 467$ ----- 3= _____

4. $30 + 10 + 26 + 44$ ----- 4= _____

5. $129 - 69 + 37 - 123$ ----- 5= _____

6. $147 - 38.5 - 153 + 171 + 126$ ----- 6= _____

7. $(0.565 - 0.356) + (1.1 - 0.921 - 0.527)$ ----- 7= _____

8. $0.622 + 0.518 - 0.733 + 0.6 + 0.148$ ----- 8= _____

9. $93.1 \times 178 \times 27.7$ ----- 9= _____

10. $49.3 \times 1730 \times 2820 \times 75.8$ ----- 10= _____

11. Ryan took Megan on a date. Their meals cost a total of \$38.42. Service was excellent, so Ryan left a 20% tip. Calculate the total amount Ryan paid at the restaurant. ----- 11=\$ _____

12. A NBA basketball court measures 94 feet by 50 feet. Calculate the number of square yards of carpet it would take to cover the court. 12= _____ sq. yds.

13. The average of seven numbers is 57.38. The first six numbers are 72.1, 50.8, 37.6, 84.3, 101.9, and 11.6. Calculate the value of the seventh number. ----- 13= _____

14. $(-520/473)[427 - 240]$ -----14= _____

15. $46/[173 \times 147 \times 240]$ -----15= _____

16. $\left[\frac{-182}{256}\right] [(367/228) + 0.864]$ -----16= _____

17. $\left[\frac{641}{397}\right] [(684/369) - 0.449]$ -----17= _____

18. $\frac{(294/585) + (154/610)}{(0.0185 - 0.0136)}$ -----18= _____

19. $\left[\frac{(0.00147 + 6.57 \times 10^{-4})}{176/101}\right] \left[\frac{1.87}{0.138}\right]$ -----19= _____

20. $(1.31)[137/140 \times 22/85] - 0.0487$ -----20= _____

21. $\frac{0.887 + 1.71 + 0.616}{(0.0143)(44.1)(0.144)}$ -----21= _____

22. $\left[\frac{823 + 2490}{1110 - 1010}\right] \left[\frac{343}{806}\right]$ -----22= _____

23. $\frac{(1570 \times 478)/2090}{(2650 \times 0.066) + 71.4}$ -----23= _____

24. When Phil adds 4 to his age and multiplies it by 8 he gets 208.
Calculate his age. -----24= _____ INT.

25. Calculate what percent of a leap year is 48 hours. -----25= _____ %

26. Sammy earns \$202.39 for working 15 hours and 45 minutes.
Calculate his hourly wage. -----26=\$ _____

27. $\frac{(2.97 \times 10^7) + (2.13 \times 10^8)}{(-0.012)(0.0641) - 2.02 \times 10^{-4}}$ -----27= _____

28. $\frac{(0.0166 + 0.00992)(308 + 49.3)}{(1.70 \times 10^{11})}$ -----28= _____

29. $(0.0715)[[0.00458/(0.0021)][0.00144/(0.00286)]]$ -----29= _____

30. $(22.1)[(5.11 \times 10^{11}) - (7.53 \times 10^{11})]$ -----30= _____

31. $\frac{1}{-0.104} + \frac{1}{(0.292 - 0.449)}$ -----31= _____

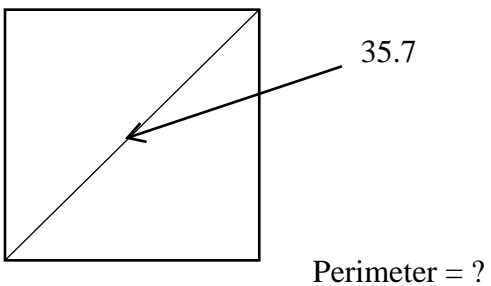
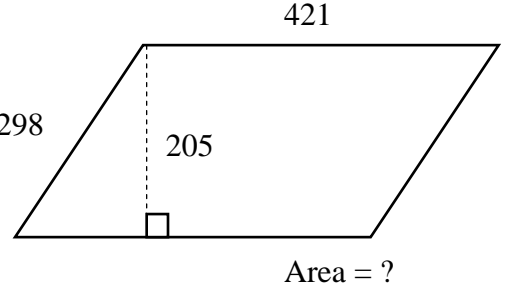
32. $[0.00663]\left[\frac{1/678}{1/(150)}\right]$ -----32= _____

33. $1/(0.00678 - 0.00442) - 1/(0.0018)$ -----33= _____

34. $\frac{1}{83.3} - \frac{1}{188} + \frac{1}{76.9}$ -----34= _____

35. Sophia is 3 feet 2 inches tall and casts a 5 foot shadow. At the same time the flag pole in the park casts a 15 foot 3 inch shadow. Calculate the height of the flagpole in feet. -----35= _____ ft.

36. A plane is launched from an aircraft carrier by the use of a catapult. The plane reaches a speed of 165 mph in 2 seconds. Calculate this speed in kilometers per hour. -----36= _____ kph

SQUARE	PARALLOGRAM
 <p style="text-align: center;">Perimeter = ?</p>	 <p style="text-align: center;">Area = ?</p>
37= _____	38= _____

39. $(0.253 + 1.82 + 0.363)^2(2.95 + 2.74)^2$ -----39= _____

40. $\sqrt{\frac{206 + 206}{138 - 87.5}}$ -----40= _____

41. $\frac{(28300 + 25400)^2}{(0.146 - 0.276)^3}$ -----41= _____

42. $(27100)\sqrt{168 + 105 + 68.2}$ -----42= _____

43. $\sqrt{2420} + \sqrt{5770 + 8550} - (\pi)\sqrt{4140}$ -----43= _____

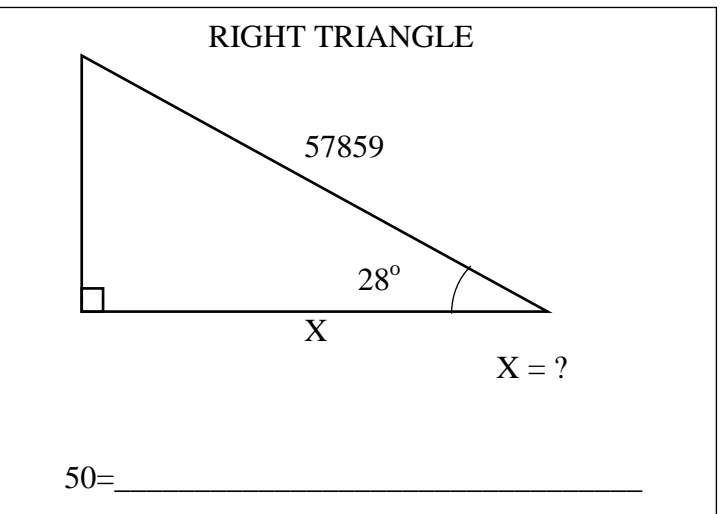
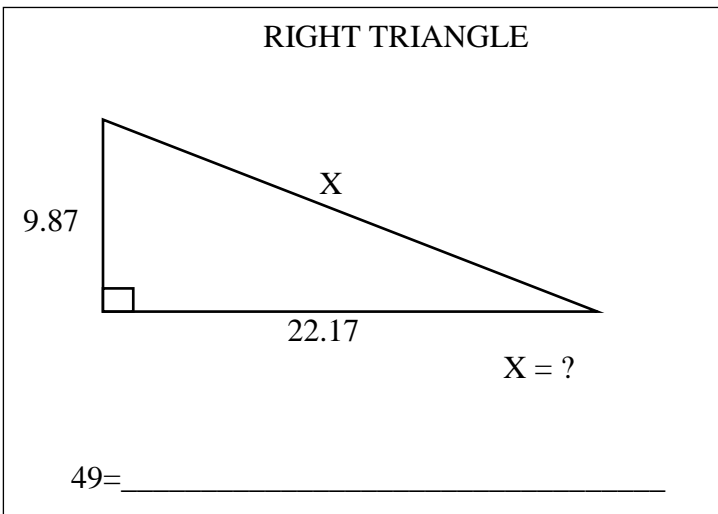
44. $(1/\pi)^3\sqrt[3]{\frac{0.699 + 0.382}{4.48 - 1.66}}$ -----44= _____

45. $\frac{1}{\sqrt{453 + 61.7 + 296}} + \left(\frac{1}{\sqrt{10.4}}\right)^2$ -----45= _____

46. $\frac{(5.57 + 12.5)^{1/5}}{(268 - 145)^{1/4}}$ -----46= _____

47. A fifty foot rope is cut into three pieces. Two of the pieces are the same length and one is 22 inches longer than the other two. Calculate the length of the longest piece in feet. -----47= _____ ft.

48. A rectangle measures 23 feet by 18 feet. Calculate the side of an equilateral triangle with the same area as the rectangle. -----48= _____ ft.



51. $\frac{\sqrt{2.74 + \pi + 2.9}}{(0.953 - 3.35 + 3.71)^3}$ -----51=_____

52. $\left[\frac{534 - 287 + \sqrt{6.51 \times 10^5 / 42.8}}{-3340 + 7830} \right]^4$ -----52=_____

53. $\left[\frac{\sqrt{\sqrt{322 - 70.4}}}{-(84 - 22.3)} \right]^3 [3.07 + 1.84]$ -----53=_____

54. $(19.8)^2 \sqrt{(8.66)/(26.2)} - (201 + 61.7)$ -----54=_____

55. $49000 + \sqrt{(52600)(15900)} - (26200 + 66500)$ -----55=_____

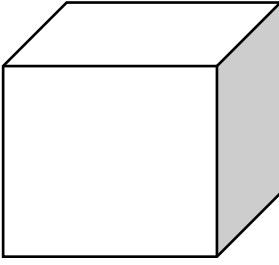
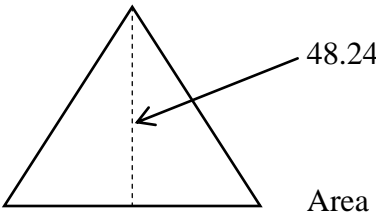
56. $0.726 + \sqrt{(393)/(409)} - (0.65 + 0.198)^2$ -----56=_____

57. $(\text{rad}) \cos(403) + (152/253)$ -----57=_____

58. $\sqrt{\frac{(33.3)(1190)}{(37.1) + (42.2)}} + 1/(0.596)^6$ -----58=_____

59. Doctor Lillian deposited \$7500 in a bank for 5 years at 4.25% simple interest. Calculate the amount in the account after those 5 years. -----59=\$_____

60. Rick picked seven numbers out of a group of ten. Calculate the number of seven digit numbers that can be formed if repetition is not allowed. -----60=_____ INT.

<p style="text-align: center;">CUBE</p> <div style="display: flex; align-items: center;">  <p>Inner Diagonal = 7777</p> </div> <p style="margin-left: 300px;">Volume = ?</p> <p>61= _____</p>	<p style="text-align: center;">EQUILATERAL TRIANGLE</p> <div style="display: flex; align-items: center;">  <p>48.24</p> </div> <p style="margin-left: 300px;">Area = ?</p> <p>62= _____</p>
---	--

63. $\frac{25!/28!}{5! + 7!}$ ----- 63= _____

64. $(24.5 - \pi)e^{0.492}$ ----- 64= _____

65. $(\text{deg}) \frac{\sin(6.28^\circ)}{5150}$ ----- 65= _____

66. $(\text{deg}) \tan(67.9^\circ - 73^\circ) + 0.0612$ ----- 66= _____

67. $(\text{deg}) [346]\sin(35.3^\circ - 34.6^\circ)$ ----- 67= _____

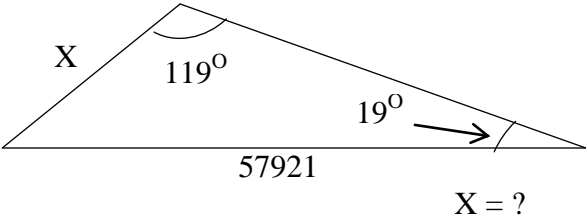
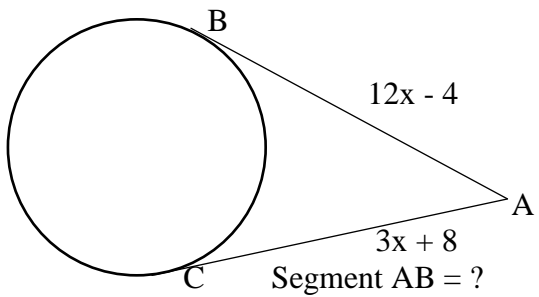
68. $(\text{deg}) \frac{\tan(166^\circ)}{1.33 + 0.943}$ ----- 68= _____

69. $(\text{deg}) \frac{\sin(111^\circ)}{\tan(111^\circ)} [21.7]$ ----- 69= _____

70. $(72 - 41.6)^{0.395} - 0.392$ ----- 70= _____

71. Calculate the slope of the line that passes through the origin and (-5, -8) on the coordinate plane. ----- 71= _____

72. Calculate the probability of drawing a prime numbered card from a standard deck of cards. ----- 72= _____

<p>SCALENE TRIANGLE</p>  <p style="text-align: right; margin-right: 50px;">$X = ?$</p> <p>73= _____</p>	<p>CIRCLE WITH TANGENT LINES</p>  <p style="text-align: right; margin-right: 50px;">Segment AB = ?</p> <p>74= _____</p>
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75. $\frac{\text{Log}(23.7 + 3.68)}{11.6 - 26.4}$ -----75= _____

76. $\frac{(1.95)^{0.919}(4.63)^{0.605}}{(20.4 - 6.7)^{-10}}$ -----76= _____

77. $2\text{Log}\sqrt{\frac{(572)(461)}{96.3 + 39.4}}$ -----77= _____

78. $\text{Ln}\left[\frac{104 + 177 + 50.5}{93.7 - 19.5 - 13.3}\right]$ -----78= _____

79. $1 + 2 + 3 + \dots + 694$ -----79= _____

80. $1 + (0.14) + \frac{(0.14)^2}{2} + \frac{(0.14)^3}{6} + \frac{(0.14)^4}{24}$ -----80= _____

2018- 2019 TMSCA Middle School Calculator Test 1 Answer Key

Page 1	Page 2	Page 3	Page 4
1 = 1330 = 1.33×10^3	14 = -206 = -2.06×10^2	27 = -2.50×10^{11}	39 = 192 = 1.92×10^2
2 = 18.6 = 1.86×10^1	15 = 7.54×10^{-6}	28 = 5.57×10^{-11}	40 = 2.86 = 2.86×10^0
3 = -357 = -3.57×10^2	16 = -1.76 = -1.76×10^0	29 = 0.0785 = 7.85×10^{-2}	41 = -1.31×10^{12}
4 = 110 = 1.10×10^2	17 = 2.27 = 2.27×10^0	30 = -5.35×10^{12}	42 = 501000 = 5.01×10^5
5 = -26.0 = -2.60×10^1	18 = 154 = 1.54×10^2	31 = -16.0 = -1.60×10^1	43 = -33.3 = -3.33×10^1
6 = 253 = 2.53×10^2	19 = 0.0165 = 1.65×10^{-2}	32 = 0.00147 = 1.47×10^{-3}	44 = 0.231 = 2.31×10^{-1}
7 = -0.139 = -1.39×10^{-1}	20 = 0.283 = 2.83×10^{-1}	33 = -132 = -1.32×10^2	45 = 0.131 = 1.31×10^{-1}
8 = 1.16 = 1.16×10^0	21 = 35.4 = 3.54×10^1	34 = 0.0197 = 1.97×10^{-2}	46 = 0.536 = 5.36×10^{-1}
9 = 459000 = 4.59×10^5	22 = 14.1 = 1.41×10^1	35 = 9.66 = 9.66×10^0	47 = 17.9 = 1.79×10^1
10 = 1.82×10^{10}	23 = 1.46 = 1.46×10^0	36 = 266 = 2.66×10^2	48 = 30.9 = 3.09×10^1
11 = \$46.10	24 = 22 INT.	37 = 101 = 1.01×10^2	49 = 24.3 = 2.43×10^1
12 = 522 = 5.22×10^2	25 = 0.546 = 5.46×10^{-1}	38 = 86300 = 8.63×10^4	50 = 51100 = 5.11×10^4
13 = 43.4 = 4.34×10^1	26 = \$12.85		

2018-2019 TMSCA Middle School Calculator Test 1 Answer Key

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$$\begin{aligned} 51 &= 1.31 \\ &= 1.31 \times 10^0 \\ 52 &= 4.63 \times 10^{-5} \\ 53 &= -0.00132 \\ &= -1.32 \times 10^{-3} \\ 54 &= -37.3 \\ &= -3.73 \times 10^1 \\ 55 &= -14800 \\ &= -1.48 \times 10^4 \\ 56 &= 0.987 \\ &= 9.87 \times 10^{-1} \\ 57 &= 1.24 \\ &= 1.24 \times 10^0 \\ 58 &= 44.7 \\ &= 4.47 \times 10^1 \\ 59 &= \$9093.75 \\ 60 &= 604800 \text{ INT.} \end{aligned}$$

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$$\begin{aligned} 61 &= 9.05 \times 10^{10} \\ 62 &= 1340 \\ &= 1.34 \times 10^3 \\ 63 &= 9.86 \times 10^{-9} \\ 64 &= 34.9 \\ &= 3.49 \times 10^1 \\ 65 &= 2.12 \times 10^{-5} \\ 66 &= -0.0280 \\ &= -2.80 \times 10^{-2} \\ 67 &= 4.23 \\ &= 4.23 \times 10^0 \\ 68 &= -0.110 \\ &= -1.10 \times 10^{-1} \\ 69 &= -7.78 \\ &= -7.78 \times 10^0 \\ 70 &= 1.01 \\ &= 1.01 \times 10^0 \\ 71 &= 1.60 \\ &= 1.60 \times 10^0 \\ 72 &= 0.308 \\ &= 3.08 \times 10^{-1} \end{aligned}$$

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$$\begin{aligned} 73 &= 21600 \\ &= 2.16 \times 10^4 \\ 74 &= 12.0 \\ &= 1.20 \times 10^1 \\ 75 &= -0.0971 \\ &= -9.71 \times 10^{-2} \\ 76 &= 1.09 \times 10^{12} \\ 77 &= 3.29 \\ &= 3.29 \times 10^0 \\ 78 &= 1.69 \\ &= 1.69 \times 10^0 \\ 79 &= 241000 \\ &= 2.41 \times 10^5 \\ 80 &= 1.15 \\ &= 1.15 \times 10^0 \end{aligned}$$

TMSCA 2018-2019 MS CA Test 1 Solutions to Word and Geometry Problems

11. 38.42(1.2)

12. $\frac{94(50)}{9}$

13. $57.38(7) - 72.1 - 50.8 - 37.6 - 84.3 - 101.9 - 11.6$

24. $8(P + 4) = 208$
 $8P + 32 = 208$
 $P = \frac{208 - 32}{8}$

25. $\frac{48}{366(24)} \times 100$

26. $\frac{202.39}{15.75}$

35. $\frac{3\frac{1}{6}}{5} = \frac{x}{15\frac{1}{4}} \quad x = \frac{(3\frac{1}{6})(15\frac{1}{4})}{5}$

36. Some calculators have a conversion key. Otherwise, know that 1.61 km \approx 1 mile. 165(1.61)

37. The side of the square is $\frac{35.7}{\sqrt{2}}$ so Perimeter = $4\left(\frac{35.7}{\sqrt{2}}\right)$

38. 421(205)

47. Pieces are x , x , and $x + \frac{22}{12}$ feet

$$3x + \frac{22}{12} = 50$$

$$x = \left(50 - \frac{22}{12}\right) \div 3$$

This is the shortest piece. Add $\frac{22}{12}$ to get the longest piece.

48. Area of rectangle = $23 \times 18 = 414$ Area of equilateral triangle = $\frac{s^2\sqrt{3}}{4} = 414$

$$side = \sqrt{\frac{414(4)}{\sqrt{3}}}$$

49. $\sqrt{9.87^2 + 22.17^2}$

50. $\cos 28 = \frac{x}{57859}$

$$x = (\cos 28)(57859)$$

59.

$Total = 7500 + Interest$

$Interest = 7500(.0425)5$

$Total = 7500(.0425)5 + 7500$

60. $\frac{10!}{(10-7)!}$ Look at all digits.

61. Edge = $\frac{7777}{\sqrt{3}}$; $V = e^3$

Volume = $\left(\frac{7777}{\sqrt{3}}\right)^3$

62. Area = $\frac{h^2\sqrt{3}}{3} = \frac{(48.24)^2\sqrt{3}}{3}$

71. $\frac{-8-0}{-5-0} = \frac{8}{5}$

72. Each suit has 2,3,5,7 as prime numbers. 4 suits so there are 16 prime numbers in a deck of cards. $\frac{16}{52}$

73. $\frac{\sin 19}{x} = \frac{\sin 119}{57921}$

$$x = \frac{(\sin 19)(57921)}{\sin 119}$$

74. $12x - 4 = 3x + 8$

$$9x = 12; \quad x = \frac{4}{3}$$

Substitute this value into $12x - 4$.

$$\overline{AB} = 12\left(\frac{4}{3}\right) - 4$$