

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 #7 ©

JANUARY 12, 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*, 1.23x10⁰*, 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 7

1. $-1910 - 961$ ----- 1=_____
2. $34 - 33 - 22$ ----- 2=_____
3. $32.7 + 103 + 75.2$ ----- 3=_____
4. $27 - 15 - 14 + 20$ ----- 4=_____
5. $378 - 467 - 2850 + 3000$ ----- 5=_____
6. $-135 - 66.8 - 189 - 163 + 69.2$ ----- 6=_____
7. $(1.97 - 1.39) + (1.71 - 2.19 - 2.26)$ ----- 7=_____
8. $\pi + 2.26 + 2.17 + 2.89 + 0.59$ ----- 8=_____
9. $144 \times 51.6 \times 128$ ----- 9=_____
10. $5810 \times 290 \times 194 \times 145$ ----- 10=_____
11. The average of five numbers is 72.71. If another number is added the average becomes 71.72. Calculate the value of the number that was added. ----- 11=_____
12. Calculate the area of a circle with a circumference of 125.521 meters. ----- 12=_____m²
13. Twenty-one percent of what number is two million. ----- 13=_____

14. $(386)[194 \times 129 \times 336]$ -----14=_____

15. $213/[163 \times 327 \times 81]$ -----15=_____

16. $\left[\frac{246}{44}\right] [(227/307) + 0.586]$ -----16=_____

17. $\{105/113\} \left[\frac{161}{20 + 25}\right]$ -----17=_____

18. $\left[\frac{(143 + 70.6)}{181/193}\right] \left[\frac{0.0304}{0.00578}\right]$ -----18=_____

19. $\frac{[57.3/(59.4)]/0.00229}{(107 \times 179)(0.704)}$ -----19=_____

20. $\frac{(\pi)(11/18)(28/41)}{203}$ -----20=_____

21. $(0.594)[162/43 \times 131/210] - 0.784$ -----21=_____

22. $\left[\frac{5430 + 3650}{3380 - 5710}\right] \left[\frac{1130}{4850}\right]$ -----22=_____

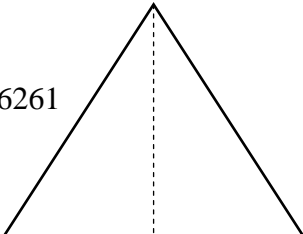
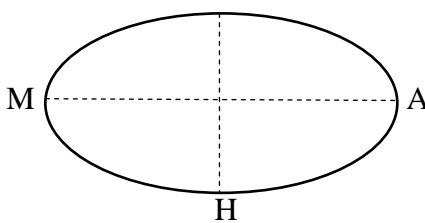
23. $\frac{(6.12 + 2.67 - 6.12)}{\{(0.0212 - 0.00605)/(449)\}}$ -----23=_____

24. Calculate the seventh root of three hundred thirty-two to the fifth power. -----24=_____

25. If Marco invested \$7,250 in a CD and earned \$923.39 in simple interest over two years, calculate the interest rate of the CD. -----25=_____%

26. Calculate how many inches there are in one thousand kilometers. -26=_____in.

27. $(0.00236)[(275/88.8)(2.38 + 2.24)]$ -----27=_____
28. $\frac{(16.2 - 14.8)(0.0115 + 0.0113)}{(2.35 \times 10^{12})}$ -----28=_____
29. $\frac{(149 + 561)(370 + 253)}{(7.56 \times 10^{10})}$ -----29=_____
30. $[1090]\left[\frac{1/0.00829}{1/(0.0112)}\right]$ -----30=_____
31. $\frac{(0.0114 + 0.0166)}{(2.06 \times 10^{12})}$ -----31=_____
32. $(11.3)[(1.06 \times 10^{11}) - (5.87 \times 10^{11})]$ -----32=_____
33. $\frac{1}{388} - \frac{1}{424} + \frac{1}{346}$ -----33=_____
34. $\left[\frac{1/4000}{1/2500}\right][6.11 \times 10^6]$ -----34=_____
35. A man has a daughter and a son. The son is three years older than the daughter. In one year, the man will be six times as old as the daughter is now. In ten years, the man will be fourteen years older than the combined ages of his children at that time. Calculate the man's present age. -----35=_____ INT.
36. Angle A and Angle B are complementary. Angle A is twelve less than two times Angle B. Calculate the measure of Angle A. -----36=_____°

EQUILATERAL TRIANGLE	ELLIPSE
 <p style="text-align: right; margin-right: 50px;">Height = ?</p>	 <p style="text-align: right; margin-right: 50px;">TH = 221</p> <p style="text-align: right; margin-right: 50px;">Area = 84009</p> <p style="text-align: right; margin-right: 50px;">MA = ?</p>
37=_____	38=_____

39. $\sqrt[4]{\frac{390 + 1340}{0.511 - 0.178}}$ -----49=_____

40. $\left[\frac{2.42}{9.91}\right](260 + 588)^2$ -----40=_____

41. $\frac{(3600 + 7130)^3}{(0.537 - 0.121)^2}$ -----41=_____

42. $\sqrt{131} + \sqrt{134 + 23.9} - (\pi)\sqrt{18.9}$ -----42=_____

43. $(86)\sqrt{349 + 98 + 294}$ -----43=_____

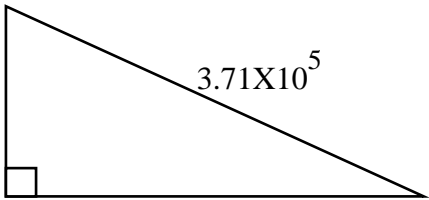
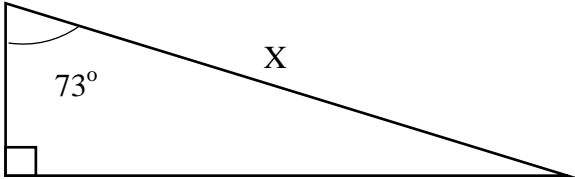
44. $(1/(0.00159))(81100 - 29200)^3$ -----44=_____

45. $\frac{(2190 + 2390)^{1/3}}{(8760 - 5630)^{1/4}}$ -----45=_____

46. $\sqrt[4]{0.22 - 57.1/378} + 1/\sqrt{39200 + 42100}$ -----46=_____

47. Calculate the sum of the exterior angles of a nonagon. -----47=_____°

48. The radius of a circle and the side of an equilateral triangle are the same length at 29.7 inches. Calculate the ratio of the area of the circle to the area of the triangle. -----48=_____

RIGHT TRIANGLE	RIGHT TRIANGLE
 <p style="text-align: center; margin-top: 10px;">Area = ?</p>	 <p style="text-align: center; margin-top: 10px;">X = ?</p>
49=_____	50=_____

$$51. \quad \sqrt{\frac{7.35 \times 10^9}{(51600)(12900)}} + \frac{(297 - 383)}{(11 + 11.7)} \text{ -----} 51 = \underline{\hspace{2cm}}$$

$$52. \quad \left[\frac{16.4 + 46.7 + \sqrt{639 + 3650}}{64.9/116} \right]^3 \text{ -----} 52 = \underline{\hspace{2cm}}$$

$$53. \quad \frac{\sqrt{81 + \pi + 37.5}}{(76800 - 55900 + 18300)^2} \text{ -----} 53 = \underline{\hspace{2cm}}$$

$$54. \quad (1.27)(2.66 \times 10^8)^{1/2} - [(5040)(43000)]^{1/2} \text{ -----} 54 = \underline{\hspace{2cm}}$$

$$55. \quad 0.476 + \sqrt{(1140)/(3150)} - (0.312 + 0.351)^2 \text{ -----} 55 = \underline{\hspace{2cm}}$$

$$56. \quad 984 + \sqrt{(1110)(255)} - (193 + 516) \text{ -----} 56 = \underline{\hspace{2cm}}$$

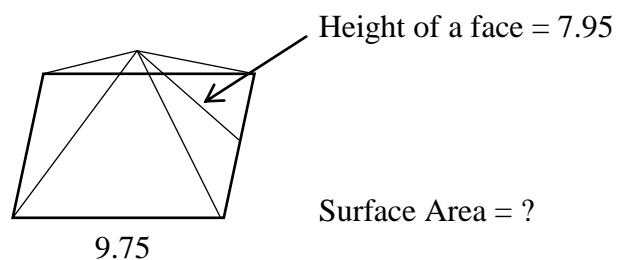
$$57. \quad (\text{rad}) \tan(318) + (102/141) \text{ -----} 57 = \underline{\hspace{2cm}}$$

$$58. \quad \sqrt{\frac{(334)(7.16)}{(1940) + (631)}} + 1/(0.988)^{-3} \text{ -----} 58 = \underline{\hspace{2cm}}$$

59. A thirty-five foot section of pipe with an inside diameter of 3 inches is completely full of water. Calculate the number of gallons there are in it. -----59=_____gal.

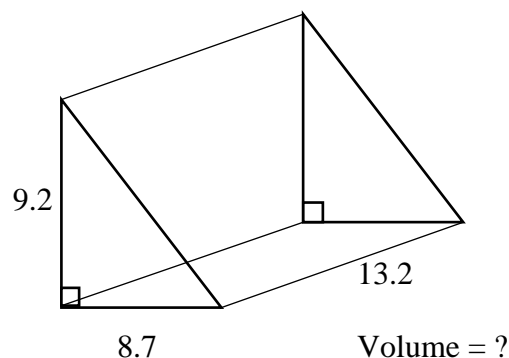
60. A 92 pound person sits 5 feet from the fulcrum of a seesaw. If another person sits 6.5 feet from the fulcrum and balances the seesaw, calculate the weight of the other person. -----60=_____lbs.

SQUARE BASE PYRAMID



61= _____

TRIANGULAR PRISM



62= _____

63. $\frac{23! - 21!}{5!}$ -----63= _____

64. $(658 - \pi)e^{0.695}$ -----64= _____

65. $(\deg) (20.7 - 10)\tan(14.1^\circ)$ -----65= _____

66. $(\text{rad}) \sin\left[\frac{(256)(\pi)}{(14.9)(0.862)}\right]$ -----66= _____

67. $(\deg) (6.3 - 25.4)\tan(16.9^\circ) + 2$ -----67= _____

68. $(\text{rad}) (45600)\sin(35.1)$ -----68= _____

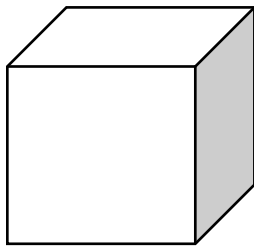
69. $(\deg) \frac{\sin(51.9^\circ)}{\tan(51.9^\circ)}[11.4]$ -----69= _____

70. $(44.5 + 27.7 + 41)^{1/5}$ -----70= _____

71. Calculate the odds of flipping a coin and having it land on heads and rolling a standard die and having it land on a one. -----71= _____

72. Brittany invests \$5,000 at 6% interest compounded quarterly for 5 years. Calculate the amount of interest earned in those 5 years. 72=\$ _____

CUBE

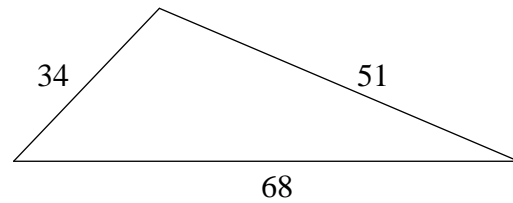


Inner Diagonal = 37.90

Side = ?

73=_____

SCALENE TRIANGLE



Area = ?

74=_____

75. $\frac{\text{Log}(1.02 \times 10^{10} + 7.15 \times 10^{10})}{18.5}$ -----75=_____

76. $\frac{\text{Log}(1770 + 1280)}{4630 - 9920}$ -----76=_____

77. $\frac{9.1 - 10.1}{\text{Log}(15.2 + 10.7)}$ -----77=_____

78. $(5.2)^\pi (1.07)^2 (15.6 - 7.63)^4$ -----78=_____

79. $4 + 6 + 8 + \dots + 534$ -----79=_____

80. $(0.991) - \frac{(0.991)^2}{2} + \frac{(0.991)^3}{3} - \frac{(0.991)^4}{4}$ -----80=_____

2018-2019 TMSCA Middle School Calculator Test 7 Answer Key

Page 1	Page 2	Page 3	Page 4
1 = -2870 = -2.87×10^3	14 = 3.25×10^9	27 = 0.0338 = 3.38×10^{-2}	39 = 8.49 = 8.49×10^0
2 = -21.0 = -2.10×10^1	15 = 4.93×10^{-5}	28 = 1.36×10^{-14}	40 = 176000 = 1.76×10^5
3 = 211 = 2.11×10^2	16 = 7.41 = 7.41×10^0	29 = 5.85×10^{-6}	41 = 7.14×10^{12}
4 = 18.0 = 1.80×10^1	17 = 3.32 = 3.32×10^0	30 = 1470 = 1.47×10^3	42 = 10.4 = 1.04×10^1
5 = 61.0 = 6.10×10^1	18 = 1200 = 1.20×10^3	31 = 1.36×10^{-14}	43 = 2340 = 2.34×10^3
6 = -485 = -4.85×10^2	19 = 0.0312 = 3.12×10^{-2}	32 = -5.44×10^{12}	44 = 8.79×10^{16}
7 = -2.16 = -2.16×10^0	20 = 0.00646 = 6.46×10^{-3}	33 = 0.00311 = 3.11×10^{-3}	45 = 2.22 = 2.22×10^0
8 = 11.1 = 1.11×10^1	21 = 0.612 = 6.12×10^{-1}	34 = 3.82×10^6	46 = 0.516 = 5.16×10^{-1}
9 = 951000 = 9.51×10^5	22 = -0.908 = -9.08×10^{-1}	35 = 41 INT.	47 = 360 = 3.60×10^2
10 = 4.74×10^{10}	23 = 79100 = 7.91×10^4	36 = 56.0 = 5.60×10^1	48 = 7.26 = 7.26×10^0
11 = 66.8 = 6.68×10^1	24 = 63.2 = 6.32×10^1	37 = 5420 = 5.42×10^3	49 = 3.04×10^{10}
12 = 1250 = 1.25×10^3	25 = 6.37 = 6.37×10^0	38 = 484 = 4.84×10^2	50 = 19600 = 1.96×10^4
13 = 9520000 = 9.52×10^6	26 = 3.94×10^7		

2018-2019 TMSCA Middle School Calculator Test 7 Answer Key

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$$51 = -0.466$$
$$= -4.66 \times 10^{-1}$$

$$52 = 1.21 \times 10^7$$

$$53 = 7.18 \times 10^{-9}$$

$$54 = 5990$$
$$= 5.99 \times 10^3$$

$$55 = 0.638$$
$$= 6.38 \times 10^{-1}$$

$$56 = 807$$
$$= 8.07 \times 10^2$$

$$57 = 1.56$$
$$= 1.56 \times 10^0$$

$$58 = 1.93$$
$$= 1.93 \times 10^0$$

$$59 = 12.9$$
$$= 1.29 \times 10^1$$

$$60 = 70.8$$
$$= 7.08 \times 10^1$$

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$$61 = 250$$
$$= 2.50 \times 10^2$$

$$62 = 528$$
$$= 5.28 \times 10^2$$

$$63 = 2.15 \times 10^{20}$$

$$64 = 1310$$
$$= 1.31 \times 10^3$$

$$65 = 2.69$$
$$= 2.69 \times 10^0$$

$$66 = -0.213$$
$$= -2.13 \times 10^{-1}$$

$$67 = -3.80$$
$$= -3.80 \times 10^0$$

$$68 = -23500$$
$$= -2.35 \times 10^4$$

$$69 = 7.03$$
$$= 7.03 \times 10^0$$

$$70 = 2.57$$
$$= 2.57 \times 10^0$$

$$71 = 0.090$$
$$= 9.09 \times 10^{-2}$$

$$72 = \$1734.28$$

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$$73 = 21.9$$
$$= 2.19 \times 10^1$$

$$74 = 839$$
$$= 8.39 \times 10^2$$

$$75 = 0.590$$
$$= 5.90 \times 10^{-1}$$

$$76 = -0.000659$$
$$= -6.59 \times 10^{-4}$$

$$77 = -0.708$$
$$= -7.08 \times 10^{-1}$$

$$78 = 820000$$
$$= 8.20 \times 10^5$$

$$79 = 71600$$
$$= 7.16 \times 10^4$$

$$80 = 0.583$$
$$= 5.83 \times 10^{-1}$$

TMSCA 18-19 MS CA Test #7 Solutions to Word and Geometry Problems

11. $\frac{5(72.71) + x}{6} = 71.72$

$$x = 71.72(6) - 72.71(5)$$

12. $C = 2\pi r$ $r = \frac{C}{2\pi}$
 $A = \pi r^2 = \pi \left(\frac{125.521}{2\pi} \right)^2$

13. $.21x = 2,000,000$
 $x = \frac{2,000,000}{.21}$

24. $\sqrt[7]{(332)^5}$

25. $I = Prt$

$$923.39 = 7250(2)r$$

$$r = \frac{923.39}{7250(2)}$$

Multiply by 100 to change to a %.

26.

$$1000km \cdot \frac{.621 mi}{1 km} \cdot \frac{5280 ft}{1 mi} \cdot \frac{12 in}{1 ft}$$

35.

	Man	Daug	Son
Now		x	x+3
In 1 yr	6x	x+1	x+4
In 10 yrs	6x+9	x+10	x+13

$$6x + 9 = (x + 10) + (x + 13) + 14$$

$$x = 7 = \text{daughter now}$$

Next year Dad would be $6x = 42$.

Now Dad is $42 - 1 = 41$.

36. Angle A = A

$$\text{Angle B} = 90 - A$$

$$A = 2(90 - A) - 12$$

$$A = 180 - 2A - 12$$

$$3A = 168; A = \frac{168}{3}$$

37. An equilateral triangle consists of two 30-60-90 triangles. The height of the equilateral triangle is the long leg of the 30-60-90 triangle.

$$\text{Height} = \frac{626}{2} \sqrt{3}$$

38. $A = \pi r_1 r_2$

$$84009 = \pi \left(\frac{221}{2} \right) \left(\frac{\overline{MA}}{2} \right)$$

$$\overline{MA} = \frac{84009(4)}{221\pi}$$

47. The exterior angles of a regular polygon always add to 360° .

48. x = radius = side of triangle

Ratio of area of circle to side of

$$\text{triangle: } \frac{\pi x^2}{\left(\frac{x^2 \sqrt{3}}{4} \right)} = \frac{\pi (29.7)^2}{\left(\frac{(29.7)^2 \sqrt{3}}{4} \right)}$$

49. Base =

$$\sqrt{(3.71 \times 10^5)^2 - (1.91 \times 10^5)^2}$$

$$\text{Area} = \frac{\text{Base}(1.91 \times 10^5)}{2}$$

50. $\cos 73 = \frac{5721}{x}; x = \frac{5721}{\cos 73}$

59. $231 \text{ in}^3 = 1 \text{ gallon}$

$$\frac{\pi r^2 h}{231} = \frac{\pi (1.5)^2 (35)(12)}{231}$$

60. $92(5) = 6.5x; x = \frac{92(5)}{6.5}$

61. $9.75^2 + \frac{4(9.75)(7.95)}{2}$

62. $\frac{9.2(8.7)}{2} (13.2)$

71. Probability of getting heads and a "1" would be $\frac{1}{2} \left(\frac{1}{6} \right) = \frac{1}{12}$ so the odds of getting both of these would be $\frac{1}{11}$

72. Interest =

$$5000 \left(1 + \frac{.06}{4} \right)^{4(5)} - 5000$$

73. $\frac{37.9}{\sqrt{3}}$

74. s = semiperimeter =

$$\frac{34+51+68}{2} = 76.5; \text{ Area} =$$

$$\sqrt{s(s-a)(s-b)(s-c)}$$

$$s - a = 76.5 - 34 = 42.5$$

$$s - b = 76.5 - 68 = 8.5$$

$$s - c = 76.5 - 51 = 25.5$$

A =

$$\sqrt{76.5(42.5)(8.5)(25.5)}$$