

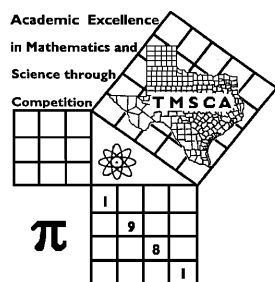
1st Score: _____	2nd Score: _____	3rd Score: _____	_____. ____ <b>Final Score</b>
S & G _____	S & G _____	S & G _____	
Grader: _____	Grader: _____	Grader: _____	

## 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 #6 ©

DECEMBER 7, 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<sup>0\*</sup>, 1.23x10<sup>1</sup>, 1.23x10<sup>01</sup>, .0190, 1.90x10<sup>-2</sup>  
 Incorrect: 12.30, 123.0, 1.23(10)<sup>2</sup>, 1.23·10<sup>2</sup>, 1.230x10<sup>2</sup>, 1.23\*10<sup>2</sup>, 0.19, 1.9x10<sup>-2</sup>, 19.0x10<sup>-3</sup>, 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 #6**

1.  $4850 - 5530$  ----- 1= \_\_\_\_\_

2.  $-4.1 + 4.4 + 3.29$  ----- 2= \_\_\_\_\_

3.  $821 - 613 - 734$  ----- 3= \_\_\_\_\_

4.  $33 - 13 - 18 - 16$  ----- 4= \_\_\_\_\_

5.  $2100 + 2200 + 631 + 2090$  ----- 5= \_\_\_\_\_

6.  $64.8 + 221 - 64.5 - 135 - 92.7$  ----- 6= \_\_\_\_\_

7.  $\pi - 5.95 + 3.21 - 1.81 - 0.745$  ----- 7= \_\_\_\_\_

8.  $(1.42 + 1.26 - 2.55) - (1.48 + 2.32)$  ----- 8= \_\_\_\_\_

9.  $57.2 \times 276 \times 195$  ----- 9= \_\_\_\_\_

10.  $2070 \times 87.5 \times 823 \times 222$  ----- 10= \_\_\_\_\_

11. An obtuse scalene triangle has two angles that measure  $24^\circ$  and  $41^\circ$ . Calculate the measure of the third angle. ----- 11= \_\_\_\_\_ $^\circ$

12. The range of a set of numbers is 1227. The smallest number in the set is 312. Calculate the largest number in the set. ----- 12= \_\_\_\_\_INT.

13. The arc of a circle is  $225^\circ$ . Convert this to radians. ----- 13= \_\_\_\_\_rad.

14.  $(246)[281 \times 325 \times 390]$  ----- 14= \_\_\_\_\_

15.  $(170)[78 \times 292/205]$  ----- 15= \_\_\_\_\_

16.  $(147 + 84)[144 - 186 - 236]$  ----- 16= \_\_\_\_\_

17.  $\{-185/152\} \left[ \frac{114}{235 + 247} \right]$  ----- 17= \_\_\_\_\_

18.  $\left[ \frac{(1850/278) - (648/2210)}{8.45 \times 10^{-4} / (0.00177)} \right]$  ----- 18= \_\_\_\_\_

19.  $\left[ \frac{270/145}{82/33} \right] \{911 + 338 - 750\}$  ----- 19= \_\_\_\_\_

20.  $\frac{(\pi)(48/33)(34/24)}{235}$  ----- 20= \_\_\_\_\_

21.  $(0.0226)[354/462 \times 324/317] - 0.00628$  ----- 21= \_\_\_\_\_

22.  $\frac{(\pi)(274/315)(520/66)}{(486/481)}$  ----- 22= \_\_\_\_\_

23.  $\frac{(946 \times 253)/1060}{(947 \times 52.8) + 35000}$  ----- 23= \_\_\_\_\_

24. Sammy purchased a car with \$2000 down and payments of \$161.37 per month for 5 years. Calculate the total amount he paid for his car. ----- 24=\$ \_\_\_\_\_

25. This past year Trina spent \$90.00 per month on gas. During the year, the average price of gas was \$2.669 per gallon. Her car gets an average of 25 miles per gallon. According to these averages, calculate the number of miles she traveled this past year. ----- 25= \_\_\_\_\_ mi.

26. Calculate the measure of an interior angle of a regular septagon. 26= \_\_\_\_\_ °

27.  $(0.149)[[34.8/(14.4)][71.1/(29.2)]]$  ----- 27= \_\_\_\_\_

28.  $\frac{(7.97 \times 10^{10}) + (1.59 \times 10^{11})}{(-0.0011)(0.00229) - 2.10 \times 10^{-6}}$  ----- 28= \_\_\_\_\_

29.  $[2640 - (2280 + 2930)] + [(-0.974)(1810 - 1230)]$  ---- 29= \_\_\_\_\_

30.  $(9.92)[(2.96 \times 10^{11}) - (7.11 \times 10^{10})]$  ----- 30= \_\_\_\_\_

31.  $\frac{1}{0.714} + \frac{1}{(56.8 - 55.9)}$  ----- 31= \_\_\_\_\_

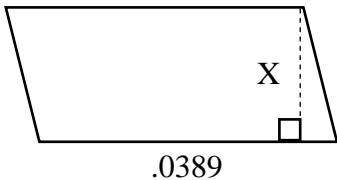
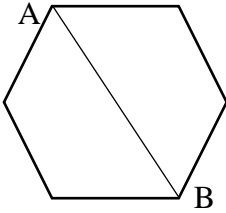
32.  $(0.434)\left[\frac{132}{(2.53 \times 10^{10})}\right]$  ----- 32= \_\_\_\_\_

33.  $\frac{1}{486} - \frac{1}{2370} + \frac{1}{2130}$  ----- 33= \_\_\_\_\_

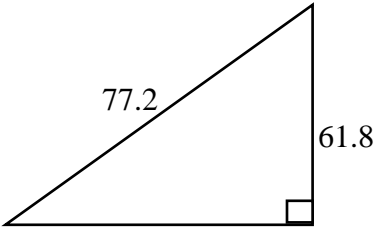
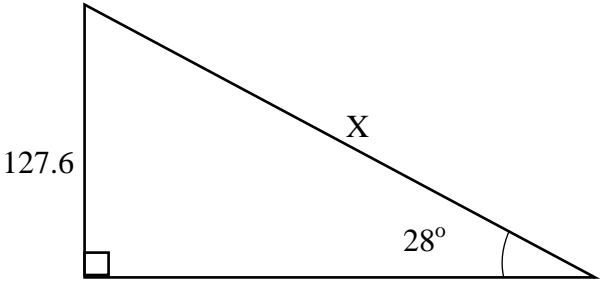
34.  $\frac{1}{195} - \frac{1}{(205 + 158)}$  ----- 34= \_\_\_\_\_

35. The volume of a cube is 387 cubic inches. Calculate the surface area of the cube. ----- 35= \_\_\_\_\_ in.<sup>2</sup>

36. A circle has a diameter of 254.3 cm. Calculate the length of a leg of an isosceles right triangle with the same area. ----- 36= \_\_\_\_\_ cm

<p style="text-align: center;"><b>PARALLELOGRAM</b></p> <div style="display: flex; justify-content: space-between; align-items: flex-start;"> <div style="text-align: center;">  </div> <div style="text-align: right;"> <p>Area = 0.000591</p> <p>X = ?</p> </div> </div> <p style="margin-top: 20px;">37= _____</p>	<p style="text-align: center;"><b>REGULAR HEXAGON</b></p> <div style="display: flex; justify-content: space-between; align-items: flex-start;"> <div style="text-align: center;">  </div> <div style="text-align: right;"> <p>AB = 32.81</p> <p>Perimeter = ?</p> </div> </div> <p style="margin-top: 20px;">38= _____</p>
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39.  $\left[\frac{1.22}{31.1}\right](429 + 1080)^4$  ----- 39= \_\_\_\_\_
40.  $(112 + 224 + 113)^2(182 + 69.7)^2$  ----- 40= \_\_\_\_\_
41.  $(0.413 + 0.306)^2(45.7 + 48.8)^2$  ----- 41= \_\_\_\_\_
42.  $(1/\pi)^3\sqrt{\frac{0.322 + 0.81}{0.988 - 0.617}}$  ----- 42= \_\_\_\_\_
43.  $\sqrt{(377/208) + 1.58 - 1.55}$  ----- 43= \_\_\_\_\_
44.  $\sqrt{3510 - 1220 + 2990} - \sqrt{768}$  ----- 44= \_\_\_\_\_
45.  $(12300)^3\sqrt{2130 + 3520 - 721}$  ----- 45= \_\_\_\_\_
46.  $\sqrt[3]{1.81 - 1730/1330} + 1/\sqrt{6.2 + 7.45}$  ----- 46= \_\_\_\_\_
47. Calculate the value of 525 Base 7 in Base 10. ----- 47= \_\_\_\_\_ INT.
48. The distance an object falls varies directly as the square of the time it falls. An object falls 13.78 feet in 3 seconds. Calculate how far the object will fall in 20 seconds. ----- 48= \_\_\_\_\_ ft.

<p style="text-align: center;"><b>RIGHT TRIANGLE</b></p>  <p style="text-align: center;">Perimeter = ?</p> <p>49= _____</p>	<p style="text-align: center;"><b>RIGHT TRIANGLE</b></p>  <p style="text-align: center;">X = ?</p> <p>50= _____</p>
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51.  $\left[ \frac{42 - 39.3 + \sqrt{1890/282}}{-18.8 + 20.9} \right]^4$  ----- 51= \_\_\_\_\_

52.  $\frac{\sqrt{8.38 + \pi + 8.99}}{(1.43 - 2.67 + 2.15)^2}$  ----- 52= \_\_\_\_\_

53.  $\left[ \frac{\sqrt{\sqrt{16200 - 6490}}}{-(1870 - 3590)} \right]^3 [1.63 \times 10^5 + 1.53 \times 10^5]$  ----- 53= \_\_\_\_\_

54.  $\sqrt{\frac{1/(326 - 142)}{(171)(114 + 25.7)^5}}$  ----- 54= \_\_\_\_\_

55.  $(6.72)(7.47 \times 10^7)^{1/3} - [(865)(6220)]^{1/2}$  ----- 55= \_\_\_\_\_

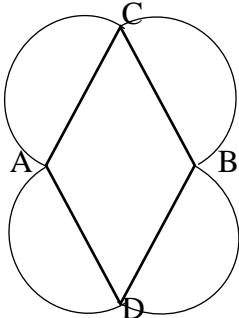
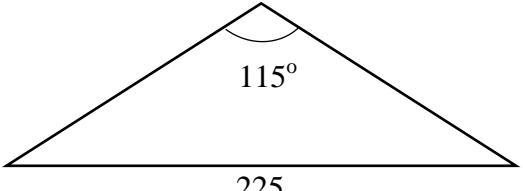
56.  $(134)^2 \sqrt{(1.08)/(199)} - (845 + 1070)$  ----- 56= \_\_\_\_\_

57.  $\sqrt{\frac{1/(11.7 - 8.25)}{(101)(5.44 + 10.3)^{-4}}}$  ----- 57= \_\_\_\_\_

58.  $\sqrt{\frac{(504)(429)}{(29.1) + (3.01)}} + 1/(3.01)^{-4}$  ----- 58= \_\_\_\_\_

59. The selling price of an automobile is \$22,391.72. The final price including sales tax is \$23,809.86. Calculate the percent sales tax. 59= \_\_\_\_\_ %

60. A plane flies 1250 miles in 3 hours with the wind. On the return flight against the same wind it took 5 hours and 15 minutes. calculate the rate of the wind in miles per hour. ----- 60= \_\_\_\_\_ mph

SEMICIRCLES AND RHOMBUS	ISOSCELES TRIANGLE
 <p style="margin-left: 20px;">AB = 5.8 CD = 9.7</p> <p style="margin-left: 20px;">Total area = ?</p> <p>61= _____</p>	 <p style="text-align: right;">Area = ?</p> <p>62= _____</p>

63.  $\frac{27!/3!}{25! + 23!}$  ----- 63= \_\_\_\_\_

64.  $(4.88 \times 10^5 - 2.69 \times 10^5)^{10} (3.58 \times 10^7)$  ----- 64= \_\_\_\_\_

65. (deg)  $(17.9 - 7.45) \tan(23.7^\circ)$  ----- 65= \_\_\_\_\_

66. (rad)  $\tan\left[\frac{(1.13)(\pi)}{(0.907)(10.5)}\right]$  ----- 66= \_\_\_\_\_

67. (deg)  $(36700 - 43000) \cos(31.1^\circ) + 615$  ----- 67= \_\_\_\_\_

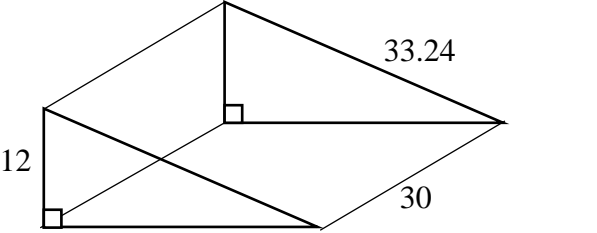
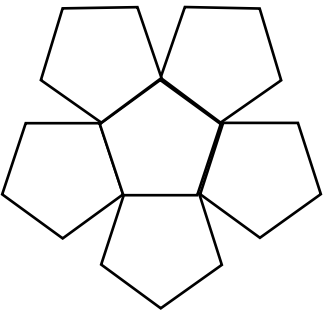
68. (rad)  $(235) \sin(835)$  ----- 68= \_\_\_\_\_

69. (deg)  $\frac{\sin(5.54^\circ)}{\tan(5.54^\circ)} [58.5]$  ----- 69= \_\_\_\_\_

70.  $(555 - 137)^{0.778} - 0.12$  ----- 70= \_\_\_\_\_

71. A cylindrical tank is 30 feet long and has a diameter of 10 feet. Calculate the number of gallons this tank will hold if filled completely. ----- 71= \_\_\_\_\_ gal.

72. Calculate the slope of the line perpendicular to the line given by  $-5y = -2x + 7$  ----- 72= \_\_\_\_\_

<p style="text-align: center;"><b>RIGHT TRIANGULAR PRISM</b></p>  <p style="text-align: right;">Volume = ?</p> <p>73= _____</p>	<p style="text-align: center;"><b>CONGRUENT REGULAR PENTAGONS</b></p>  <p style="text-align: right;">Area = 11259</p> <p style="text-align: right;">Perimeter = ?</p> <p>74= _____</p>
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75.  $\frac{\text{Log}(471 + 191)}{215 - 792}$  ----- 75= \_\_\_\_\_

76.  $\frac{(1.51)^{0.718}(3.22)^{0.331}}{(1.63 - 1.62)^{-10}}$  ----- 76= \_\_\_\_\_

77.  $(8960)10^{(0.512)(3.6)}$  ----- 77= \_\_\_\_\_

78.  $\text{Ln}\left[\frac{90.1 + 486 + 570}{66.6 - 4.48 - 20.5}\right]$  ----- 78= \_\_\_\_\_

79.  $4 + 6 + 8 + \dots + 574$  ----- 79= \_\_\_\_\_

80.  $1 + \frac{(0.89)^4}{2} - \frac{(0.89)^6}{6} + \frac{(0.89)^8}{24} - \frac{(0.89)^{10}}{120}$  ----- 80= \_\_\_\_\_



## 2019-2020 TMSCA Middle School Calculator Test #6 Answer Key

Page 1	Page 2	Page 3	Page 4
1 = -680 = $-6.80 \times 10^2$	14 = $8.76 \times 10^9$	27 = 0.877 = $8.77 \times 10^{-1}$	39 = $2.03 \times 10^{11}$
2 = 3.59 = $3.59 \times 10^0$	15 = 18900 = $1.89 \times 10^4$	28 = $-5.17 \times 10^{16}$	40 = $1.28 \times 10^{10}$
3 = -526 = $-5.26 \times 10^2$	16 = -64200 = $-6.42 \times 10^4$	29 = -3130 = $-3.13 \times 10^3$	41 = 4620 = $4.62 \times 10^3$
4 = -14.0 = $-1.40 \times 10^1$	17 = -0.288 = $-2.88 \times 10^{-1}$	30 = $2.23 \times 10^{12}$	42 = 0.462 = $4.62 \times 10^{-1}$
5 = 7020 = $7.02 \times 10^3$	18 = 13.3 = $1.33 \times 10^1$	31 = 2.51 = $2.51 \times 10^0$	43 = 1.36 = $1.36 \times 10^0$
6 = -6.40 = $-6.40 \times 10^0$	19 = 374 = $3.74 \times 10^2$	32 = $2.26 \times 10^{-9}$	44 = 45.0 = $4.50 \times 10^1$
7 = -2.15 = $-2.15 \times 10^0$	20 = 0.0275 = $2.75 \times 10^{-2}$	33 = 0.00211 = $2.11 \times 10^{-3}$	45 = 209000 = $2.09 \times 10^5$
8 = -3.67 = $-3.67 \times 10^0$	21 = 0.0114 = $1.14 \times 10^{-2}$	34 = 0.00237 = $2.37 \times 10^{-3}$	46 = 1.07 = $1.07 \times 10^0$
9 = $3.08 \times 10^6$	22 = 21.3 = $2.13 \times 10^1$	35 = 319 = $3.19 \times 10^2$	47 = 264 INT.
10 = $3.31 \times 10^{10}$	23 = 0.00266 = $2.66 \times 10^{-3}$	36 = 319 = $3.19 \times 10^2$	48 = 612 = $6.12 \times 10^2$
11 = 115 = $1.15 \times 10^2$	24 = \$11682.20	37 = 0.0152 = $1.52 \times 10^{-2}$	49 = 185 = $1.85 \times 10^2$
12 = 1539 INT.	25 = 10100 = $1.01 \times 10^4$	38 = 98.4 = $9.84 \times 10^1$	50 = 272 = $2.72 \times 10^2$
13 = 3.93 = $3.93 \times 10^0$	26 = 129 = $1.29 \times 10^2$		

2019-2020 TMSCA Middle School Calculator Test #6 Answer Key

**Page 5**

$$\begin{aligned} 51 &= 40.2 \\ &= 4.02 \times 10^1 \\ 52 &= 5.47 \\ &= 5.47 \times 10^0 \\ 53 &= 0.0607 \\ &= 6.07 \times 10^{-2} \\ 54 &= 2.44 \times 10^{-8} \\ 55 &= 511 \\ &= 5.11 \times 10^2 \\ 56 &= -592 \\ &= -5.92 \times 10^2 \\ 57 &= 13.3 \\ &= 1.33 \times 10^1 \\ 58 &= 164 \\ &= 1.64 \times 10^2 \\ 59 &= 6.33 \\ &= 6.33 \times 10^0 \\ 60 &= 89.3 \\ &= 8.93 \times 10^1 \end{aligned}$$

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$$\begin{aligned} 61 &= 78.3 \\ &= 7.83 \times 10^1 \\ 62 &= 8060 \\ &= 8.06 \times 10^3 \\ 63 &= 117 \\ &= 1.17 \times 10^2 \\ 64 &= 9.08 \times 10^{60} \\ 65 &= 4.59 \\ &= 4.59 \times 10^0 \\ 66 &= 0.391 \\ &= 3.91 \times 10^{-1} \\ 67 &= -4780 \\ &= -4.78 \times 10^3 \\ 68 &= -145 \\ &= -1.45 \times 10^2 \\ 69 &= 58.2 \\ &= 5.82 \times 10^1 \\ 70 &= 53.1 \\ &= 5.31 \times 10^1 \\ 71 &= 17600 \\ &= 1.76 \times 10^4 \\ 72 &= -2.50 \\ &= -2.50 \times 10^0 \end{aligned}$$

**Page 7**

$$\begin{aligned} 73 &= 5580 \\ &= 5.58 \times 10^3 \\ 74 &= 661 \\ &= 6.61 \times 10^2 \\ 75 &= -0.00489 \\ &= -4.89 \times 10^{-3} \\ 76 &= 1.98 \times 10^{-20} \\ 77 &= 624000 \\ &= 6.24 \times 10^5 \\ 78 &= 3.32 \\ &= 3.32 \times 10^0 \\ 79 &= 82700 \\ &= 8.27 \times 10^4 \\ 80 &= 1.24 \\ &= 1.24 \times 10^0 \end{aligned}$$