



**2016-2017 TMSCA Middle School Calculator Test 13**

1.  $1630 + 3250$  ----- 1= \_\_\_\_\_

2.  $21 - 27 + 33$  ----- 2= \_\_\_\_\_

3.  $42 + 308 - 124$  ----- 3= \_\_\_\_\_

4.  $17 + 15 - 15 - 27$  ----- 4= \_\_\_\_\_

5.  $2950 + 1660 - 1740 - 2050$  ----- 5= \_\_\_\_\_

6.  $132 + 43.9 - 42.3 - 34.5 + 88.7$  ----- 6= \_\_\_\_\_

7.  $(\pi + 2.34 - 1.31) - (3.42 + 3.85)$  ----- 7= \_\_\_\_\_

8.  $(\pi - 0.526) + (0.324 - 0.217 - 0.598)$  ----- 8= \_\_\_\_\_

9.  $205 \times 207 \times 177$  ----- 9= \_\_\_\_\_

10.  $93.7 \times 80 \times 168 \times 3200$  ----- 10= \_\_\_\_\_

11. Folders for the presentation hold 34 sheets of paper. Six reams of paper, 500 sheets each, are used to fill the folders. Calculate the number of folders that can be completely filled with the six reams of paper. ----- 11= \_\_\_\_\_ INT.

12. Tony and his three siblings purchased a gift for their mother. The gift cost \$57.98 and sales tax was 8.75%. If they split the cost equally, calculate how much each would pay after tax was added.-- 12=\$ \_\_\_\_\_

13. Cindy drove 228 miles in 3 hours and 48 minutes. Calculate her average speed for the trip. ----- 13= \_\_\_\_\_ mph

14.  $(96/193)[105 - 82]$  -----14= \_\_\_\_\_

15.  $(-672)[522 \times 168/324]$  -----15= \_\_\_\_\_

16.  $\left[\frac{-278}{41}\right] [(94/51) + 0.599]$  -----16= \_\_\_\_\_

17.  $\{135/532\} \left[\frac{114}{664 + 372}\right]$  -----17= \_\_\_\_\_

18.  $\left[\frac{(5.55 + 1.85)}{134/98}\right] \left[\frac{2.65}{0.0229}\right]$  -----18= \_\_\_\_\_

19.  $\frac{(67/76) + (81/54)}{(0.0906 - 0.112)}$  -----19= \_\_\_\_\_

20.  $\frac{(\pi)(7/5)(10/20)}{168}$  -----20= \_\_\_\_\_

21.  $\frac{35}{(24 - 105)} - \frac{(153 - 27)}{28}$  -----21= \_\_\_\_\_

22.  $\frac{(2760 \times 2980)/3390}{(3860 \times 6.66) + 20900}$  -----22= \_\_\_\_\_

23.  $\frac{[-(1250 + 1540)(460 - 1520)]}{(0.546/(259))}$  -----23= \_\_\_\_\_

24. Al completed his calculator test. He missed three-elevenths of the "stated & geometry" problems and four twenty-ninths of the "number crunchers". Calculate his score. -----24= \_\_\_\_\_ INT.

25. A truck is loaded with 12 tons of material. Calculate this weight in kilograms. -----25= \_\_\_\_\_ kg

26. Two busses leave the same stop at the same time. One travels north at 62 mph and the other east at 70 mph. Calculate how long it takes them to be 300 miles apart. -----26= \_\_\_\_\_ hrs.

27.  $[7060 - (5940 + 6530)] + [(0.994)(4380 - 7600)]$  -----27= \_\_\_\_\_

28.  $\frac{(2.87 \times 10^8) + (1.94 \times 10^8)}{(-0.0019)(7.76 \times 10^{-4}) - 7.51 \times 10^{-7}}$  -----28= \_\_\_\_\_

29.  $(0.00263)[(15.6/22)(1.47 + 1.93)]$  -----29= \_\_\_\_\_

30.  $\frac{1}{-5.15} + \frac{1}{(2.43 - 6.75)}$  -----30= \_\_\_\_\_

31.  $(282) \left[ \frac{0.0141}{(1.08 \times 10^{10})} \right]$  -----31= \_\_\_\_\_

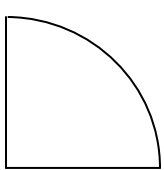
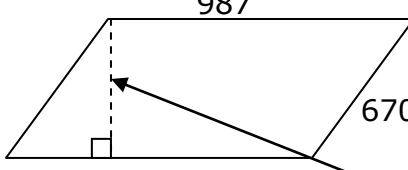
32.  $[675] \left[ \frac{1/244}{1/114} \right]$  -----32= \_\_\_\_\_

33.  $\frac{1}{316} - \frac{1}{334} + \frac{1}{150}$  -----33= \_\_\_\_\_

34.  $\left[ \frac{1/86}{1/163} \right] + [0.268]$  -----34= \_\_\_\_\_

35. Calculate the 121<sup>st</sup> pentagonal number. -----35= \_\_\_\_\_ INT.

36. A water hose delivers water at a rate of three and one-third gallons per minute. Calculate how many ounces of water flow out of this hose in four-sevenths of an hour. -----36= \_\_\_\_\_ oz.

QUARTER CIRCLE	PARALLELOGRAM
	
<p>Area = 37255</p> <p>Radius = ?</p>	<p>Area = <math>4.487 \times 10^5</math></p> <p>Height = ?</p>
<p>37= _____</p>	<p>38= _____</p>

39.  $\left[ \frac{1630 + (1/(7.28 \times 10^{-4}))}{(1510/1340) - 0.5} \right]^2$  -----39= \_\_\_\_\_

40.  $\frac{(16000 + 17600)^2}{(0.0664 - 0.159)^3}$  -----40= \_\_\_\_\_

41.  $(0.23 + 0.196)^2(39.7 + 55.9)^2$  -----41= \_\_\_\_\_

42.  $(1/(0.00155))(5.40 \times 10^5 - 3.80 \times 10^5)^3$  -----42= \_\_\_\_\_

43.  $\sqrt{59500 - 46900 + 11200} - \sqrt{46600}$  -----43= \_\_\_\_\_

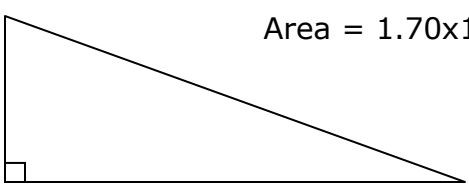
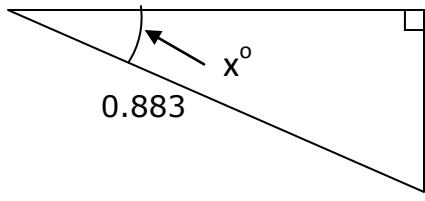
44.  $(1770)\sqrt{3300 + 22900 + 21800}$  -----44= \_\_\_\_\_

45.  $[\sqrt{(22000/26600)(5.7)}]^3$  -----45= \_\_\_\_\_

46.  $\frac{(240 + 196)^{1/2}}{(915 - 705)^{1/2}}$  -----46= \_\_\_\_\_

47. A fraction used to approximate Pi is 355 over 113. Calculate the positive percent error in this approximation? -----47= \_\_\_\_\_ %

48. Calculate the product of the roots of the following quadratic equation.  $7x + 3x^2 = -4$ . -----48= \_\_\_\_\_

<p style="text-align: center;"><b>RIGHT TRIANGLE</b></p>  <p style="text-align: right;">Area = <math>1.70 \times 10^7</math></p> <p style="text-align: left;">3519</p> <p style="text-align: right;">Hypotenuse = ?</p> <p>49= _____</p>	<p style="text-align: center;"><b>RIGHT TRIANGLE</b></p>  <p style="text-align: right;">0.356</p> <p style="text-align: left;">0.883</p> <p style="text-align: right;"><math>x^\circ = ?</math></p> <p>50= _____</p>
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51.  $\left[ \frac{15.5 + 12.7 + \sqrt{377 + 487}}{18700/32500} \right]^3$  -----51= \_\_\_\_\_

52.  $\frac{(1.43 + 1.08 - 0.989)^4}{\sqrt{818 + 437 + 912}}$  -----52= \_\_\_\_\_

53.  $\left[ \frac{\sqrt{\sqrt{0.104 - 0.0548}}}{-(508 - 766)} \right]^3 [1.07 \times 10^5 + 78900]$  -----53= \_\_\_\_\_

54.  $0.761 + \sqrt{(1800)/(960)} - (0.359 + 0.469)^2$  -----54= \_\_\_\_\_

55.  $(0.288)(1.15 \times 10^7)^{1/2} - [(518)(1880)]^{1/2}$  -----55= \_\_\_\_\_

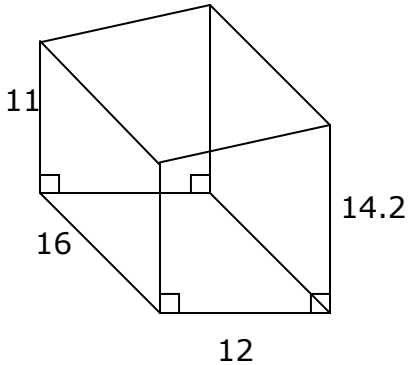
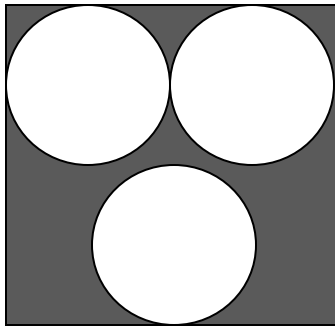
56.  $\sqrt{\frac{1/(37.5 - 29.3)}{(7.62)(32 + 57.4)^5}}$  -----56= \_\_\_\_\_

57.  $\sqrt{\frac{(1030)(10.4)}{(255) + (166)}} + 1/(5.04)^{-1}$  -----57= \_\_\_\_\_

58.  $\sqrt{\frac{1/(402 - 267)}{(646)(3850 + 3490)^3}}$  -----58= \_\_\_\_\_

59. Daisy traveled 420 miles in 6 hours and 20 minutes. She spent part of the time traveling at 65 mph and part of the time at 75 mph. Calculate how long she traveled at the faster speed. ----59= \_\_\_\_\_ hrs.

60. Three angles form a straight angle. They are given by  $(2x+5)^\circ$ ,  $(3x-8)^\circ$ , and  $(2x+8)^\circ$ . Calculate the measure of the largest angle in degrees. -----60= \_\_\_\_\_<sup>o</sup>

<p style="text-align: center;"><b>TRAPEZOIDAL PRISM</b></p>  <p style="text-align: right;">Volume = ?</p> <p>61 = _____</p>	<p style="text-align: center;"><b>SQUARE AND EQUIVALENT CIRCLES</b></p>  <p style="text-align: right;">Side of Square = 88200</p> <p style="text-align: right;">Shaded Area = ?</p> <p>62 = _____</p>
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63.  $\frac{28!/24!}{15! + 17!}$  -----63= \_\_\_\_\_

64.  $(1.23 \times 10^8 - 1.62 \times 10^8)^{-10} (61900)$  -----64= \_\_\_\_\_

65.  $(\text{deg}) (77.9 - 318) \cos(67.2^\circ)$  -----65= \_\_\_\_\_

66.  $(\text{deg}) (41700 - 15500) \tan(18.1^\circ) + 5620$  -----66= \_\_\_\_\_

67.  $(\text{rad}) \frac{\tan(44.8)}{29.1/180}$  -----67= \_\_\_\_\_

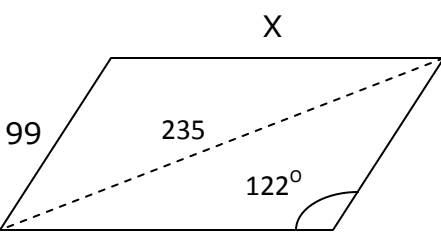
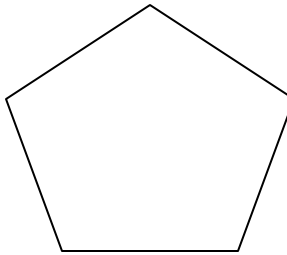
68.  $(\text{rad}) (1460) \tan(14.2)$  -----68= \_\_\_\_\_

69.  $(\text{deg}) \frac{\sin(85.3^\circ) - \tan(85.3^\circ)}{\sin(85.3^\circ)}$  -----69= \_\_\_\_\_

70.  $(5.48 + 18.1 + 12.7)^{2/5}$  -----70= \_\_\_\_\_

71. Sandy bought a new truck for \$41,728.98, which included the 8.75% sales tax. It also included a \$199 handling fee and a \$229 title fee, which are not taxed. Calculate the original price of the truck. -----71= \$ \_\_\_\_\_

72. Calculate the odds of drawing a face card from a standard deck of cards. -----72= \_\_\_\_\_

<p style="text-align: center;"><b>PARALLELOGRAM</b></p>  <p style="text-align: right; margin-right: 50px;"><math>X = ?</math></p> <p>73= _____</p>	<p style="text-align: center;"><b>REGULAR PENTAGON</b></p>  <p style="text-align: right;">Perimeter = 888</p> <p style="text-align: right;">Area = ?</p> <p>74= _____</p>
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75.  $\frac{\text{Log}(197 + 60.2)}{27200 - 20500}$  -----75= \_\_\_\_\_

76.  $\frac{(31)^{0.279}(56.8)^{0.771}}{(0.259 - 0.239)^{-9}}$  -----76= \_\_\_\_\_

77.  $\text{Log}\sqrt{\frac{347 - 182}{(24.9)(4.03)}}$  -----77= \_\_\_\_\_

78.  $\text{Ln}\left[\frac{31.7 + 21.1 + 25}{291 - 16.9 - 17.4}\right]$  -----78= \_\_\_\_\_

79.  $2 + 4 + 6 + \dots + 454$  -----79= \_\_\_\_\_

80.  $1 + \frac{(0.6)^4}{2} - \frac{(0.6)^6}{6} + \frac{(0.6)^8}{24} - \frac{(0.6)^{10}}{120}$  -----80= \_\_\_\_\_



## 2016-2017 TMSCA Middle School Calculator Test 13 Answer Key

Page 1	Page 2	Page 3	Page 4
1 = 4880 = $4.88 \times 10^3$	14 = 11.4 = $1.14 \times 10^1$	27 = -8610 = $-8.61 \times 10^3$	39 = $2.30 \times 10^7$
2 = 27.0 = $2.70 \times 10^1$	15 = -182000 = $-1.82 \times 10^5$	28 = $-2.16 \times 10^{14}$	40 = $-1.42 \times 10^{12}$
3 = 226 = $2.26 \times 10^2$	16 = -16.6 = $-1.66 \times 10^1$	29 = 0.00634 = $6.34 \times 10^{-3}$	41 = 1660 = $1.66 \times 10^3$
4 = -10.0 = $-1.00 \times 10^1$	17 = 0.0279 = $2.79 \times 10^{-2}$	30 = -0.426 = $-4.26 \times 10^{-1}$	42 = $2.64 \times 10^{18}$
5 = 820 = $8.20 \times 10^2$	18 = 626 = $6.26 \times 10^2$	31 = $3.68 \times 10^{-10}$	43 = -61.6 = $-6.16 \times 10^1$
6 = 188 = $1.88 \times 10^2$	19 = -111 = $-1.11 \times 10^2$	32 = 315 = $3.15 \times 10^2$	44 = 388000 = $3.88 \times 10^5$
7 = -3.10 = $-3.10 \times 10^0$	20 = 0.0131 = $1.31 \times 10^{-2}$	33 = 0.00684 = $6.84 \times 10^{-3}$	45 = 10.2 = $1.02 \times 10^1$
8 = 2.12 = $2.12 \times 10^0$	21 = -4.93 = $-4.93 \times 10^0$	34 = 2.16 = $2.16 \times 10^0$	46 = 1.44 = $1.44 \times 10^0$
9 = $7.51 \times 10^6$	22 = 0.0521 = $5.21 \times 10^{-2}$	35 = 21901 INT.	47 = $8.49 \times 10^{-6}$
10 = $4.03 \times 10^9$	23 = $1.40 \times 10^9$	36 = 14600 = $1.46 \times 10^4$	48 = 1.33 = $1.33 \times 10^0$
11 = 88 INT.	24 = 274 INT.	37 = 218 = $2.18 \times 10^2$	49 = 10300 = $1.03 \times 10^4$
12 = \$15.76	25 = 10900 = $1.09 \times 10^4$	38 = 455 = $4.55 \times 10^2$	50 = 23.8 = $2.38 \times 10^1$
13 = 60.0 = $6.00 \times 10^1$	26 = 3.21 = $3.21 \times 10^0$		

## 2016-2017 TMSCA Middle School Calculator Test 13 Answer Key

### Page 5

$$\begin{aligned} 51 &= 1.00 \times 10^6 \\ 52 &= 0.115 \\ &= 1.15 \times 10^{-1} \\ 53 &= 0.00113 \\ &= 1.13 \times 10^{-3} \\ 54 &= 1.44 \\ &= 1.44 \times 10^0 \\ 55 &= -10.2 \\ &= -1.02 \times 10^1 \\ 56 &= 1.67 \times 10^{-6} \\ 57 &= 10.1 \\ &= 1.01 \times 10^1 \\ 58 &= 5.38 \times 10^{-9} \\ 59 &= 0.833 \\ &= 8.33 \times 10^{-1} \\ 60 &= 67.0 \\ &= 6.70 \times 10^1 \end{aligned}$$

### Page 6

$$\begin{aligned} 61 &= 2420 \\ &= 2.42 \times 10^3 \\ 62 &= 3.20 \times 10^9 \\ 63 &= 1.38 \times 10^{-9} \\ 64 &= 7.60 \times 10^{-72} \\ 65 &= -93.0 \\ &= -9.30 \times 10^1 \\ 66 &= 14200 \\ &= 1.42 \times 10^4 \\ 67 &= 6.60 \\ &= 6.60 \times 10^0 \\ 68 &= -23200 \\ &= -2.32 \times 10^4 \\ 69 &= -11.2 \\ &= -1.12 \times 10^1 \\ 70 &= 4.21 \\ &= 4.21 \times 10^0 \\ 71 &= \$37977.91 \\ 72 &= 0.300 \\ &= 3.00 \times 10^{-1} \end{aligned}$$

### Page 7

$$\begin{aligned} 73 &= 167 \\ &= 1.67 \times 10^2 \\ 74 &= 54300 \\ &= 5.43 \times 10^4 \\ 75 &= 0.000360 \\ &= 3.60 \times 10^{-4} \\ 76 &= 3.01 \times 10^{-14} \\ 77 &= 0.108 \\ &= 1.08 \times 10^{-1} \\ 78 &= -1.19 \\ &= -1.19 \times 10^0 \\ 79 &= 51800 \\ &= 5.18 \times 10^4 \\ 80 &= 1.06 \\ &= 1.06 \times 10^0 \end{aligned}$$

TMSCA 16-17 MS CA Test #13 Solutions to Word and Geometry Problems

11.  $\frac{500(6)}{34}$

12.  $\frac{57.98(1.0875)}{4}$

13.  $\frac{228}{3\frac{48}{60}}$

24. A calculator test has 22 stated and geometry problems and 58 number crunches.  $\frac{3}{11}(22) = 6$   
 $\frac{4}{29}(58) = 8$   
 $80(5) - 14(9) = 274$

25. 12 tons is 24000 lbs. On RPN calculator there is a key to convert this to kg. There are about 2.2 lbs in a kg, so you could divide 24000 by 2.2.

26. In x hours, the two vehicles travel 62x and 70x miles. Use Pythagorean Theorem  
 $(62x)^2 + (70x)^2 = 300^2$   
 $3844x^2 + 4900x^2 = 90000$   
 $x = \sqrt{\frac{90000}{3844 + 4900}}$

35.  $\frac{n(3n-1)}{2} = \frac{121[3(121)-1]}{2}$

36.  $\left(\frac{3\frac{1}{3} \text{ gal}}{1 \text{ min}}\right) \left(\frac{128 \text{ oz}}{1 \text{ gal}}\right) \left(\frac{60 \text{ min}}{1 \text{ hr}}\right) \left(\frac{4}{7} \text{ hr}\right)$

37.  $\frac{\pi r^2}{4} = 37255$

$$r = \sqrt{\frac{37255(4)}{\pi}}$$

38.  $h = \frac{4.487 \times 10^5}{987}$

47. On RPN calculator,  $\pi$  enter, 355/113, %change key.  
 Without RPN  $\frac{\frac{355}{113} - \pi}{\frac{355}{113}} (100)$

48. In standard form the equation is  
 $3x^2 + 7x + 4 = 0$   
 The product of the roots is  $\frac{4}{3}$

49.  $\frac{1}{2}b(3519) = 1.7 \times 10^7$   
 $b = \frac{(1.7 \times 10^7)(2)}{3519}$   
 Hyp =  $\sqrt{3519^2 + \left(\frac{(1.7 \times 10^7)(2)}{3519}\right)^2}$

50.  $\text{Asin}\left(\frac{.356}{.883}\right)$

59. x = time at 75 mph  
 $6\frac{1}{3} - x$  = time at 65 mph  
 Rate x time = distance  
 $75x + 65\left(6\frac{1}{3} - x\right) = 420$   
 Solve for x.

60.  $2x + 5 + 3x - 8 + 2x + 8 = 180$   
 $7x + 5 = 180; x = 25$   
 The largest angle is  
 $3x - 8; 3(25) - 8$

61.  $V = \frac{(14.2+11)(12)}{2} \times 16$

62. radius is side of square divided by 4.

$$88200^2 - 3\pi \left(\frac{88200}{4}\right)^2$$

71.  $1.0875x = 41728.98 - 199 - 229$   
 $x = \frac{41728.98 - 199 - 229}{1.0875}$   
 Look at SHOW key for \$ and cents.

72. There are 12 face cards and 40 that are not face cards.  $\frac{12}{40}$

73. Write 122 degrees on the opposite angle (upper left angle) and concentrate on the triangle formed. The angle opposite the  $99^\circ$  can be found by  $\frac{235}{\sin 122} = \frac{99}{\sin a}$

$a = \text{ASIN}\left(\frac{99(\sin 122)}{235}\right) \approx 20.932$   
 Angle opposite side x =  $180 - 122 - 20.932 \approx 37.067$

$$\frac{235}{\sin 122} = \frac{x}{\sin 37.067}$$

$$x = \frac{(235) \sin 37.067}{\sin 122}$$

74.  $A = \frac{\text{perimeter}^2}{\tan \frac{180}{n}(4n)}; n = 5$

$$\frac{888^2}{\tan \frac{180}{5}(20)}$$