

2016-2017 TMSCA Middle School Calculator Test 7

1. $-4710 + 6720$ ----- 1=_____

2. $32 - 25 - 29$ ----- 2=_____

3. $-445 + 785 + 739$ ----- 3=_____

4. $10 - \pi + 9 - 6$ ----- 4=_____

5. $528 - 431 - 570 + 492$ ----- 5=_____

6. $95.1 - 111 - 23 + 44 + 81.9$ ----- 6=_____

7. $1.67 + 4.3 + 4.25 + 1.83 + 2.61$ ----- 7=_____

8. $(6.24 - 5.35) + (\pi - 4.04 - 5.66)$ ----- 8=_____

9. $36.4 \times 380 \times 317$ ----- 9=_____

10. $68.2 \times 202 \times 103 \times 51.2$ -----10=_____

11. The perimeter of a rectangle is 4892 inches. The length of the rectangle is 1294 inches. Calculate the area of the rectangle. ----- 11=_____sq. in.

12. Calculate what percent 235 kilograms is of a ton. -----12=_____%

13. Mitch purchased an item for \$1234.99. If the sales tax is $8\frac{1}{4}\%$, calculate the amount he will pay in sales tax. -----13=\$_____

14. $(444/634)[132 - 519]$ -----14= _____

15. $(714)[605 \times 726/210]$ -----15= _____

16. $\{36/214\} \left[\frac{305}{169 + 278} \right]$ -----16= _____

17. $\{(77)(435 - 330)(269)\} - 1.59 \times 10^6$ -----17= _____

18. $\left[\frac{(0.0133 + 0.00275)}{90/101} \right] \left[\frac{6.43}{10.3} \right]$ -----18= _____

19. $\frac{[13.1/(17.5)]/0.0302}{(2.65 \times 2.87)(135)}$ -----19= _____

20. $(15.3)[461/781 \times 655/810] - 6.58$ -----20= _____

21. $\frac{112}{(87 - 29)} - \frac{(57 - 40)}{47}$ -----21= _____

22. $\frac{[-(3090 + 3440)(2760 - 2000)]}{(1120/(2.03 \times 10^6))}$ -----22= _____

23. $\frac{(4750 + 3610 - 3150)}{\{(457 - 3250)/(2870)\}}$ -----23= _____

24. Calculate the Root Mean Square of the two digit prime numbers less than 20. -----24= _____

25. Bob sells cars for a living. He makes a weekly salary of \$350 and 2% commission on his sales. If he sold 6 cars this month for a total sales of \$113730.00, calculate his pay for the month. -----25=\$ _____

26. The sum of 3 consecutive odd integers is 369. Calculate the product of these integers. -----26= _____

27. $\frac{(0.0843 + 0.0539)(0.0541 + 0.0619)}{(9.55 \times 10^{11})}$ -----27= _____

28. $\frac{(4.33 \times 10^{12}) + (4.97 \times 10^{12})}{(-12.9)(26.4) - 162}$ -----28= _____

29. $(1.88) [(1.65/\pi)(0.00507 + 0.0081)]$ -----29= _____

30. $\frac{1}{302} + \frac{1}{(1340 - 925)}$ -----30= _____

31. $[288] \left[\frac{1/0.379}{1/0.216} \right]$ -----31= _____


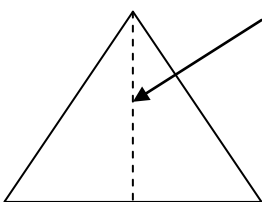
32. $(0.0511) \left[\frac{0.0239}{(1.56 \times 10^{11})} \right]$ -----32= _____

33. $\frac{1}{316} - \frac{1}{281} + \frac{1}{104}$ -----33= _____

34. $\frac{1}{631} - \frac{1}{(242 + 217)}$ -----34= _____

35. Calculate the percent increase from one-tenth to one million. -----35= _____%

36. Calculate $(-2609)^{9684}$. -----36= _____

<p style="text-align: center;">Semi-Circle</p> <div style="display: flex; justify-content: space-around; align-items: center;">  <div style="text-align: right;"> <p>Area = 38210</p> <p>Perimeter = ?</p> </div> </div> <p style="margin-top: 20px;">37= _____</p>	<p style="text-align: center;">Equilateral Triangle</p> <div style="display: flex; justify-content: space-around; align-items: center;">  <div style="text-align: right;"> <p>0.020304</p> <p>Side = ?</p> </div> </div> <p style="margin-top: 20px;">38= _____</p>
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39. $\frac{(45800 + 29300)^2}{(0.0146 - 0.0167)^3}$ ----- 39= _____

40. $\left[\frac{903 + (1/(6.21 \times 10^{-4}))}{(1840/873) - 1.45} \right]^2$ ----- 40= _____

41. $\sqrt[3]{\frac{8.05 + 5.24}{40 - 22}}$ ----- 41= _____

42. $(28000)\sqrt{51 + 80.7 + 55.8}$ ----- 42= _____

43. $(1/\pi)\sqrt[3]{\frac{6.34 + 3.62}{0.00429 - 0.0042}}$ ----- 43= _____

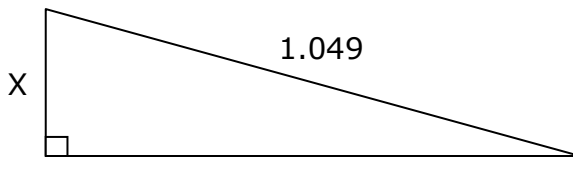
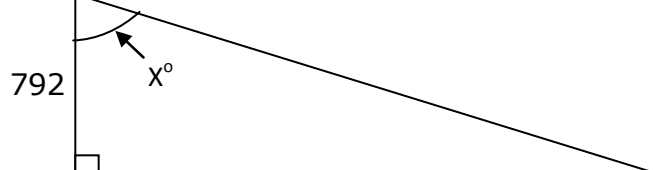
44. $\sqrt{(955/326) + 2.31 - 1.49}$ ----- 44= _____

45. $[\sqrt{(15400/58200)(30.9)}]^4$ ----- 45= _____

46. $(753)\sqrt[3]{283 + 255 - 149}$ ----- 46= _____

47. The sides of a certain triangle are in the ratio of 6:8:21. If the perimeter of the triangle is 1000 cm, calculate the length of the shortest side. ----- 47= _____ cm

48. In the same triangle in problem 47, calculate the measure of the largest angle in degrees. ----- 48= _____ °

Right Triangle	Right Triangle
 <p style="text-align: center; margin-top: 10px;">X = ?</p>	 <p style="text-align: center; margin-top: 10px;">X° = ?</p>
49= _____	50= _____

51. $\left[\frac{7.12 + 4.61 + \sqrt{39.2 + 77.8}}{2.65/1.3} \right]^3$ -----51= _____

52. $\left[\frac{40.3 - 7.41 + \sqrt{4320/13.4}}{-88.5 + 134} \right]^5$ -----52= _____

53. $\frac{\sqrt{2.44 + \pi + 0.282}}{(117 - 48.1 + 33.2)^3}$ -----53= _____

54. $0.276 + \sqrt{(124)/(546)} - (0.0796 + 0.293)^2$ -----54= _____

55. $(0.24)(2.02 \times 10^7)^{1/3} - [(58.7)(214)]^{1/2}$ -----55= _____

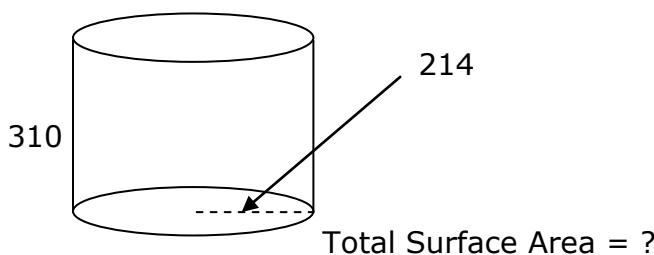
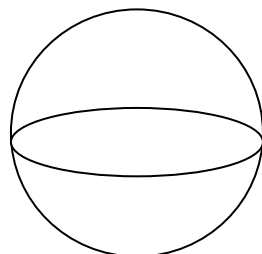
56. $\sqrt{\frac{1/(34.6 - 32.4)}{(89.9)(29 + 22.8)^3}}$ -----56= _____

57. $\sqrt{\frac{1/(751 - 170)}{(1210)(40.7 + 35.2)^3}}$ -----57= _____

58. $\sqrt{\frac{(150)(53.9)}{(7.31) + (18.3)}} + 1/(2.05)^{-4}$ -----58= _____

59. A certain projectile reaches a speed of 1,900 miles per hour.
 Calculate this speed in meters per second. -----59= _____ m/sec

60. Calculate the 100th pentagonal number. -----60= _____ INT.

<p style="text-align: center;">Cylinder</p>  <p style="text-align: right;">Total Surface Area = ?</p> <p>61= _____</p>	<p style="text-align: center;">Sphere</p>  <p style="text-align: right;">Radius = 37590</p> <p style="text-align: right;">Ratio of Volume to Surface Area = ?</p> <p>62= _____</p>
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63. $\frac{18! - 21!}{17!}$ -----63= _____

64. (deg) $\frac{\tan(30.8^\circ)}{2190}$ -----64= _____

65. $(15.6 - \pi)e^{0.793}$ -----65= _____

66. (rad) $\frac{\cos(59.8)}{463/1150}$ -----66= _____

67. (deg) $\tan(1.02^\circ - 0.696^\circ) + 0.00366$ -----67= _____

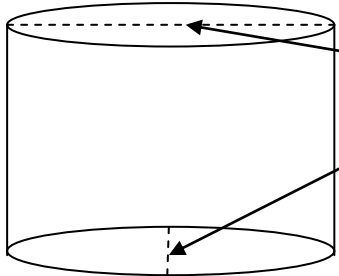
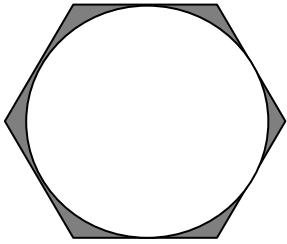
68. (deg) $\frac{\sin(106^\circ)}{\tan(106^\circ)} [14.7]$ -----68= _____

69. (rad) $(13700)\sin(46.9)$ -----69= _____

70. $(455 - 229 + 326)^{5/3}$ -----70= _____

71. Calculate the length of a $28^\circ 14$ minute arc on a circle with a radius of 113.9 cm. -----71= _____ cm

72. Twenty-five dots are randomly marked on different degrees on a circle. A spinner is made and capable at stopping at all degrees. If the spinner is spun, calculate the odds it will stop on one of the 25 dots. -----72= _____

<p style="text-align: center;">Right Elliptical Solid</p>  <p style="text-align: right;">Volume = ?</p> <p>73= _____</p>	<p style="text-align: center;">Circle, Regular Hexagon</p>  <p style="text-align: right;">Edge of Hexagon = 89</p> <p style="text-align: right;">Shaded Area = ?</p> <p>74= _____</p>
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75. $\frac{\text{Log}(5.66 \times 10^7 + 7.46 \times 10^7)}{\pi}$ ----- 75= _____

76. $\frac{(4.11)^{0.742}(47.9)^{0.298}}{(1.25 - 1.07)^{-5}}$ ----- 76= _____

77. $(10900)10^{(0.62)(4.3)}$ ----- 77= _____

78. $\frac{\text{Log}[1.55 + (1.15)(1.52)]}{1.42 + \text{Log}[3170 + 2150]}$ ----- 78= _____

79. $1 + 2 + 3 + \dots + 292$ ----- 79= _____

80. $\frac{1}{(0.8)} + \frac{1}{3(0.8)^3} + \frac{1}{5(0.8)^5} + \frac{1}{7(0.8)^7}$ ----- 80= _____

2016-2017 TMSCA Middle School Calculator Test 7 Answer Key

Page 1	Page 2	Page 3	Page 4
1 = 2010 = 2.01×10^3	14 = -271 = -2.71×10^2	27 = 1.68×10^{-14}	39 = -6.09×10^{17}
2 = -22.0 = -2.20×10^1	15 = 1.49×10^6	28 = -1.85×10^{10}	40 = 1.46×10^7
3 = 1080 = 1.08×10^3	16 = 0.115 = 1.15×10^{-1}	29 = 0.0130 = 1.30×10^{-2}	41 = 0.904 = 9.04×10^{-1}
4 = 9.86 = 9.86×10^0	17 = 585000 = 5.85×10^5	30 = 0.00572 = 5.72×10^{-3}	42 = 383000 = 3.83×10^5
5 = 19.0 = 1.90×10^1	18 = 0.0112 = 1.12×10^{-2}	31 = 164 = 1.64×10^2	43 = 15.3 = 1.53×10^1
6 = 87.0 = 8.70×10^1	19 = 0.0241 = 2.41×10^{-2}	32 = 7.83×10^{-15}	44 = 1.94 = 1.94×10^0
7 = 14.7 = 1.47×10^1	20 = 0.723 = 7.23×10^{-1}	33 = 0.00922 = 9.22×10^{-3}	45 = 66.9 = 6.69×10^1
8 = -5.67 = -5.67×10^0	21 = 1.57 = 1.57×10^0	34 = -0.000594 = -5.94×10^{-4}	46 = 5500 = 5.50×10^3
9 = 4.38×10^6	22 = -9.00×10^9	35 = 1.00×10^9	47 = 171 = 1.71×10^2
10 = 7.27×10^7	23 = -5350 = -5.35×10^3	36 = 1.36×10^{33085}	48 = 108 = 1.08×10^2
11 = 1.49×10^6	24 = 15.3 = 1.53×10^1	37 = 802 = 8.02×10^2	49 = 0.218 = 2.18×10^{-1}
12 = 25.9 = 2.59×10^1	25 = \$3674.60	38 = 0.0234 = 2.34×10^{-2}	50 = 70.2 = 7.02×10^1
13 = \$101.89	26 = 1.86×10^6		

2016-2017 TMSCA Middle School Calculator Test 7 Answer Key

Page 5

$$\begin{aligned} 51 &= 1350 \\ &= 1.35 \times 10^3 \\ 52 &= 1.74 \\ &= 1.74 \times 10^0 \\ 53 &= 2.28 \times 10^{-6} \\ 54 &= 0.614 \\ &= 6.14 \times 10^{-1} \\ 55 &= -46.7 \\ &= -4.67 \times 10^1 \\ 56 &= 0.000191 \\ &= 1.91 \times 10^{-4} \\ 57 &= 1.80 \times 10^{-6} \\ 58 &= 35.4 \\ &= 3.54 \times 10^1 \\ 59 &= 849 \\ &= 8.49 \times 10^2 \\ 60 &= 14950 \text{ INT.} \end{aligned}$$

Page 6

$$\begin{aligned} 61 &= 705000 \\ &= 7.05 \times 10^5 \\ 62 &= 12500 \\ &= 1.25 \times 10^4 \\ 63 &= -144000 \\ &= -1.44 \times 10^5 \\ 64 &= 0.000272 \\ &= 2.72 \times 10^{-4} \\ 65 &= 27.5 \\ &= 2.75 \times 10^1 \\ 66 &= -2.47 \\ &= -2.47 \times 10^0 \\ 67 &= 0.00931 \\ &= 9.31 \times 10^{-3} \\ 68 &= -4.05 \\ &= -4.05 \times 10^0 \\ 69 &= 3040 \\ &= 3.04 \times 10^3 \\ 70 &= 37100 \\ &= 3.71 \times 10^4 \\ 71 &= 56.1 \\ &= 5.61 \times 10^1 \\ 72 &= 0.0746 \\ &= 7.46 \times 10^{-2} \end{aligned}$$

Page 7

$$\begin{aligned} 73 &= 2.10 \times 10^6 \\ 74 &= 1920 \\ &= 1.92 \times 10^3 \\ 75 &= 2.58 \\ &= 2.58 \times 10^0 \\ 76 &= 0.00171 \\ &= 1.71 \times 10^{-3} \\ 77 &= 5.05 \times 10^6 \\ 78 &= 0.101 \\ &= 1.01 \times 10^{-1} \\ 79 &= 42800 \\ &= 4.28 \times 10^4 \\ 80 &= 3.19 \\ &= 3.19 \times 10^0 \end{aligned}$$

TMSCA 16-17 MS CA Test #7 Solutions to Word and Geometry Problems

11. Width = $\frac{4892 - 2(1294)}{2}$
 $A = 1294$ times width.

12. On RPN calculator convert 235 kg to lbs by punching 235, left shift, 4.

$$\frac{x}{100} = \frac{\text{lbs}}{2000}$$

13. 1234.99(.0825) SHOW key to see exact amount

24. Root mean square is the square root of the average of the squares of 11, 13, 17, 19

$$\sqrt{\frac{11^2 + 13^2 + 17^2 + 19^2}{4}}$$

25. $350(4) + .02(113730)$
See SHOW key for exact amount.

26. Shortcut: The middle integer is $\frac{369}{3} = 123$. The three numbers are 121, 123, 125. Multiply these.

35. On RPN calculator: .1 enter 1000000, left shift, ÷ key. On other calculators:

$$\frac{x}{100} = \frac{1000000 \cdot .1}{.1}$$

36. Using RPN calculator

9684 [ENTER] 2609 [LOG] [x]
 [SHOW]

(Digits to the left of the decimal are 33085. Write

down 33085)
 33085 [−] [10^x] (This gives 1.36 E 0. The answer should be 1.36 x 10³³⁰⁸⁵) Note: a negative number raised to an even power will be positive.

37. $38210 = \frac{1}{2}\pi r^2$ so

$$r = \sqrt{\frac{38210(2)}{\pi}}$$

Use this radius in $2r + \pi r$

38. Memorize the relationship of sides on 30-60-90 triangle. Half of the side is $\frac{.020304}{\sqrt{3}}$. Double this for the side.

47. $6x + 8x + 21x = 1000$
 $35x = 1000; x = \frac{1000}{35}$

The shortest side is six times this amount.

48. The angles are in the same ratio as #47. $35x = 180$;
 $x = \frac{180}{35}$ Multiply this by 21.

49. $\sqrt{1.049^2 - 1.026^2}$

50. $\frac{\tan x}{1} = \frac{2203}{792}$
 $x = \text{atan}\left(\frac{2203}{792}\right)$

59. On RPN calculator convert 1900 miles to km. Then multiply by 1000 and divide by 3600 (Since there are 1000 meters in a km and 3600 seconds in an hour.)

60. $\frac{n(3n-1)}{2} = \frac{100(300-1)}{2}$
Use SHOW key for all digits.

61. $SA = 2\pi r^2 + 2\pi rh$
 $2\pi(214)^2 + 2\pi(214)(310)$

62. Using formulas the ratio of V to SA = $\frac{\frac{4}{3}\pi r^3}{4\pi r^2}$ This simplifies to $\frac{4}{3}r$. Substitute 37590 for r.

71. $\frac{28 \frac{14}{60}}{360} (2\pi [113.9])$

72. 25 dots, 360-25 degrees don't have dots. Odds:
 $\frac{25}{360 - 25}$

73. $\pi \left(\frac{251}{2}\right) \left(\frac{61}{2}\right) (175)$

74. The hexagon may be divided into 6 equilateral triangles. The radius of the circle is the height of an equilateral triangle:

$r = \frac{89\sqrt{3}}{2}$
 Area of hexagon = $6 \left(\frac{89^2\sqrt{3}}{4}\right)$

Area of circle = $\pi \left(\frac{89\sqrt{3}}{2}\right)^2$
 Subtract these values for shaded area.