

2015-2016 TMSCA Middle School Calculator Test 8

1. $2290 + 3770$ ----- 1= _____

2. $-53 - 48 + 28$ ----- 2= _____

3. $385 + 404 - 433$ ----- 3= _____

4. $71 - 86 - 19 - 72$ ----- 4= _____

5. $182 + 193 - 111 - 113$ ----- 5= _____

6. $41.6 - 69.7 - 102 - 68.3 + 106$ ----- 6= _____

7. $0.605 + 0.9 - 0.512 + 1.4 + 1.47$ ----- 7= _____

8. $(4.53 + 2.2 - 4.9) - (0.962 + 3.17)$ ----- 8= _____

9. $322 \times 134 \times 495$ ----- 9= _____

10. $1560 \times 15.2 \times 62.8 \times 1170$ ----- 10= _____

11. Sherry worked all of the problems on her calculator test. She missed half of the "stated and geometry" problems and five "number crunchers". Calculate her final score. ----- 11= _____ INT.

12. Calculate the Greatest Common Factor of 357 and 561. ----- 12= _____ INT.

13. Calculate the number that is 0.85% larger than 23.8? ----- 13= _____

14. $(200/329)[552 - 290]$ -----14= _____

15. $-285/[104 \times 527 \times 475]$ -----15= _____

16. $\{455/169\} \left[\frac{261}{480 + 534} \right]$ -----16= _____

17. $\left[\frac{761}{860} \right] [(180/781) + 0.21]$ -----17= _____

18. $\left[\frac{(0.247 + 0.412)}{35/114} \right] \left[\frac{0.0297}{0.261} \right]$ -----18= _____

19. $\frac{[0.00225/(0.00236)]/0.472}{(2.5 \times 1.82)(0.00186)}$ -----19= _____

20. $\frac{(1480)(2.24 \times 10^{-4})}{7.71 \times 10^{-5}} (1190 - 1350)$ -----20= _____

21. $(0.222)[224/151 \times 25/98] - 0.027$ -----21= _____

22. $\frac{[-(2440 + 1700)(1480 - 702)]}{(10.1/(6500))}$ -----22= _____

23. $\frac{(0.143 + 0.429 - 0.183)}{\{(3330 - 1290)/(0.00151)\}}$ -----23= _____

24. Calculate the overall average of seven numbers if the average of the first two numbers is nine and the last five numbers is sixteen. -----24= _____ INT.

25. The sum of four consecutive integers is 330. Calculate the product of the four integers. -----25= _____

26. A small appliance lists for \$112.99. If small appliances are discounted 20% and there is a 6.25% sales tax, calculate the final price of the small appliance including tax. -----26=\$ _____

27. $(274)[(89.8/71.2)(0.506 + 0.802)]$ -----27= _____

28. $(9.92)[(0.0023/0.00174)(7.11/0.785)]$ -----28= _____

29. $\frac{(1.89 \times 10^{10}) + (8.89 \times 10^9)}{(-3.93)(4.24) - 15.8}$ -----29= _____

30. $(0.608)\left[\frac{61.5}{(1.43 \times 10^7)}\right]$ -----30= _____

31. $\frac{(14.9 + 18.1)}{(1.67 \times 10^{11})}$ -----31= _____

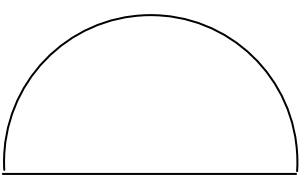
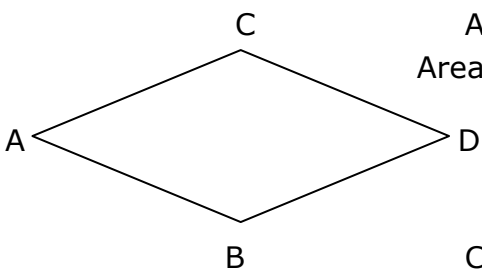
32. $[166]\left[\frac{1/70.7}{1/149}\right]$ -----32= _____

33. $\left[\frac{1/180}{1/240}\right] + [0.579]$ -----33= _____

34. $\frac{1}{260} - \frac{1}{266} + \frac{1}{29.8}$ -----34= _____

35. A cube holds 72.8 gallons of fluid. Calculate the length of each side in feet. -----35= _____ ft.

36. Calculate the percent decrease from one billion to one million. -----36= _____ %

<p>SEMICIRCLE</p>  <p style="text-align: center;">1.87×10^8</p> <p style="text-align: right;">Area = ?</p> <p>37= _____</p>	<p>RHOMBUS</p>  <p style="text-align: right;">AD = 2118 Area = 1.30×10^6</p> <p style="text-align: right;">CB = ?</p> <p>38= _____</p>
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39. $\sqrt[4]{\frac{8.56 + 5.13}{2090 - 1610}}$ -----39= _____

40. $\left[\frac{4400}{343}\right](1.18 + 2.15)^3$ -----40= _____

41. $(151 + 71 + 263)^2(67.9 + 55.4)^2$ -----41= _____

42. $\sqrt{(260/217) + 0.449 - 0.387}$ -----42= _____

43. $(1/\pi)\sqrt{\frac{0.0116 + 0.0271}{0.856 - 0.704}}$ -----43= _____

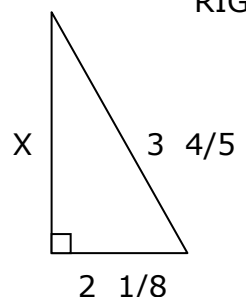
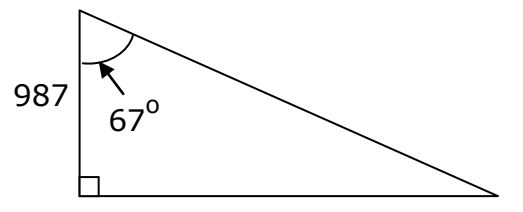
44. $(1/(0.0131))(2.42 \times 10^5 - 1.15 \times 10^5)^3$ -----44= _____

45. $\sqrt{19.6 - 5760/731} + 1/\sqrt{0.0013 + 0.00498}$ -----45= _____

46. $[\sqrt{(16/3.82)(53700)}]^3$ -----46= _____

47. Two UTV's drive towards each other on a straight line from 18 miles apart. One UTV is traveling twice the speed as the other. If they met after 15 minutes, calculate the speed of the slower UTV. -----47= _____ mph.

48. Calculate the slope of the line that is perpendicular to the line $8y + 7 = 3x$. -----48= _____

<p style="text-align: center;">RIGHT TRIANGLE</p>  <p style="text-align: right; margin-right: 100px;">$X = ?$</p> <p>49= _____</p>	<p style="text-align: center;">RIGHT TRIANGLE</p>  <p style="text-align: right; margin-right: 100px;">Perimeter = ?</p> <p>50= _____</p>
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51. $\left[\frac{17.3 - 15.8 + \sqrt{8620/6510}}{-22.8 + 76.7} \right]^4$ -----51=_____

52. $\left[\frac{20.3 + 4.21 + \sqrt{244 + 573}}{65.6/81.4} \right]^3$ -----52=_____

53. $\sqrt{\frac{88200}{(2.21)(4450)}} + \frac{(0.424 - 1.91)}{(0.154 + 0.142)}$ -----53=_____

54. $17300 + \sqrt{(22900)(24700)} - (13300 + 24700)$ -----54=_____

55. $0.368 + \sqrt{(176)/(1250)} - (0.309 + 0.547)^2$ -----55=_____

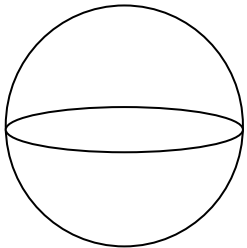
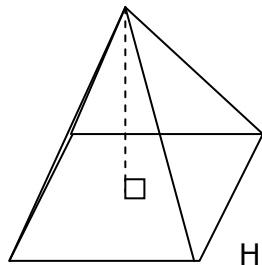
56. $(4.13)^2 \sqrt{(65)/(3.03)} - (77.3 + 74.2)$ -----56=_____

57. $\sqrt{\frac{(332)(15.5)}{(1.72) + (13.3)}} + 1/(2.07)^{-4}$ -----57=_____

58. $\sqrt{\frac{(306)(5.78)}{(767) + (890)}} - 9.59$ -----58=_____

59. The diameter of a solid hemisphere is 0.88 feet. Calculate the total surface area of the hemisphere in square feet. -----59=_____ft.²

60. In a certain bag of candies, Joan knows the probability of getting a mint is 5/64, the probability of getting a chocolate is 10/32, and the probability of getting a sour is 1/8. Calculate the probability she will not get any of these three. -----60=_____

<p style="text-align: center;">SPHERE</p> <div style="display: flex; justify-content: space-around; align-items: center;">  <div style="text-align: left;"> <p>Volume = 0.0592</p> <p>Radius = ?</p> </div> </div> <p>61= _____</p>	<p style="text-align: center;">SQUARE BASED PYRAMID</p> <div style="display: flex; justify-content: space-around; align-items: center;">  <div style="text-align: left;"> <p>Volume = 72127</p> <p>Height = Base Edge = ?</p> </div> </div> <p>62= _____</p>
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63. $\frac{43!/22!}{20! + 22!}$ -----63= _____

64. (deg) $(233 - 342)\sin(366^\circ)$ -----64= _____

65. $(294 - \pi)e^{0.214}$ -----65= _____

66. (deg) $[5]\sin(44.7^\circ - 64.8^\circ)$ -----66= _____

67. (deg) $\sin(1.61^\circ - 0.565^\circ) + 0.00396$ -----67= _____

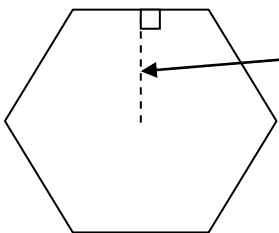
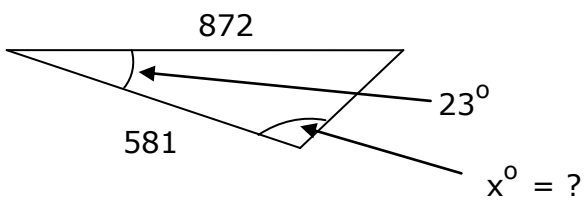
68. (deg) $\frac{\sin(19.5^\circ)}{\tan(19.5^\circ)}[362]$ -----68= _____

69. (deg) $\frac{\tan(607^\circ)}{18.8 + 73.5}$ -----69= _____

70. $(47.5 - 16.2 + 26.7)^{4/3}$ -----70= _____

71. There are fifteen teams at a Math/Science meet. Calculate how many different ways the teams could place 1 - 15 at the meet. Assume there are no ties. -----71= _____

72. A 150 foot tower, perpendicular to the ground, casts a shadow that is 22 feet 7 inches long. Calculate the angle made, in degrees, from the top of the tower to the tip of the shadow. -----72= _____^o

REGULAR HEXAGON	SCALENE TRIANGLE
 <p style="margin-left: 100px;">Apothem 72.61</p> <p style="margin-left: 100px;">Area = ?</p>	 <p style="margin-left: 100px;">872</p> <p style="margin-left: 100px;">581</p> <p style="margin-left: 100px;">23°</p> <p style="margin-left: 100px;">x° = ?</p>
73= _____	74= _____

75. $\frac{\text{Log}(9.83 + 10.8)}{2210 - 2970}$ ----- 75= _____

76. $\text{Ln}\left[\frac{236 + 278 + 275}{171 + 368 - 85.9}\right]$ ----- 76= _____

77. $\frac{42.9 - 21.8}{\text{Log}(9360 + 25600)}$ ----- 77= _____

78. $\frac{\text{Log}[0.456 + (1.24)(1.42)]}{1.94 + \text{Log}[2800 + 2440]}$ ----- 78= _____

79. $1 + 3 + 5 + \dots + 887$ ----- 79= _____

80. $(0.1) - \frac{(0.1)^2}{2} + \frac{(0.1)^3}{3} - \frac{(0.1)^4}{4}$ ----- 80= _____

2015-2016 TMSCA Middle School Calculator Test #8 Answer Key

Page 1	Page 2	Page 3	Page 4
1 = 6060 = 6.06×10^3	14 = 159 = 1.59×10^2	27 = 452 = 4.52×10^2	39 = 0.411 = 4.11×10^{-1}
2 = -73.0 = -7.30×10^1	15 = -1.09×10^{-5}	28 = 119 = 1.19×10^2	40 = 474 = 4.74×10^2
3 = 356 = 3.56×10^2	16 = 0.693 = 6.93×10^{-1}	29 = -8.56×10^8	41 = 3.58×10^9
4 = -106 = -1.06×10^2	17 = 0.390 = 3.90×10^{-1}	30 = 2.61×10^{-6}	42 = 1.12 = 1.12×10^0
5 = 151 = 1.51×10^2	18 = 0.244 = 2.44×10^{-1}	31 = 1.98×10^{-10}	43 = 0.161 = 1.61×10^{-1}
6 = -92.4 = -9.24×10^1	19 = 239 = 2.39×10^2	32 = 350 = 3.50×10^2	44 = 1.56×10^{17}
7 = 3.86 = 3.86×10^0	20 = -688000 = -6.88×10^5	33 = 1.91 = 1.91×10^0	45 = 16.0 = 1.60×10^1
8 = -2.30 = -2.30×10^0	21 = 0.0570 = 5.70×10^{-2}	34 = 0.0336 = 3.36×10^{-2}	46 = 1.07×10^8
9 = 2.14×10^7	22 = -2.07×10^9		
10 = 1.74×10^9	23 = 2.88×10^{-7}		
		35 = 2.14 = 2.14×10^0	47 = 24.0 = 2.40×10^1
11 = 256 INT.	24 = 14 INT.	36 = 99.9 = 9.99×10^1	48 = -2.67 = -2.67×10^0
12 = 51 INT.	25 = 4.63×10^7	37 = 1.37×10^{16}	49 = 3.15 = 3.15×10^0
13 = 24.0 = 2.40×10^1	26 = \$96.04	38 = 1230 = 1.23×10^3	50 = 5840 = 5.84×10^3

2015-2016 TMSCA Middle School Calculator Test #8 Answer Key

Page 5

$$51 = 5.85 \times 10^{-6}$$

$$52 = 286000 \\ = 2.86 \times 10^5$$

$$53 = -2.03 \\ = -2.03 \times 10^0$$

$$54 = 3080 \\ = 3.08 \times 10^3$$

$$55 = 0.0105 \\ = 1.05 \times 10^{-2}$$

$$56 = -72.5 \\ = -7.25 \times 10^1$$

$$57 = 36.9 \\ = 3.69 \times 10^1$$

$$58 = -8.56 \\ = -8.56 \times 10^0$$

$$59 = 1.82 \\ = 1.82 \times 10^0$$

$$60 = 0.484 \\ = 4.84 \times 10^{-1}$$

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$$61 = 0.242 \\ = 2.42 \times 10^{-1}$$

$$62 = 60.0 \\ = 6.00 \times 10^1$$

$$63 = 4.77 \times 10^{10}$$

$$64 = -11.4 \\ = -1.14 \times 10^1$$

$$65 = 360 \\ = 3.60 \times 10^2$$

$$66 = -1.72 \\ = -1.72 \times 10^0$$

$$67 = 0.0222 \\ = 2.22 \times 10^{-2}$$

$$68 = 341 \\ = 3.41 \times 10^2$$

$$69 = 0.0255 \\ = 2.55 \times 10^{-2}$$

$$70 = 225 \\ = 2.25 \times 10^2$$

$$71 = 1.31 \times 10^{12}$$

$$72 = 8.56 \\ = 8.56 \times 10^0$$

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$$73 = 1830 \\ = 1.83 \times 10^4$$

$$74 = 123 \\ = 1.23 \times 10^2$$

$$75 = -0.00173 \\ = -1.73 \times 10^{-3}$$

$$76 = 0.555 \\ = 5.55 \times 10^{-1}$$

$$77 = 4.64 \\ = 4.64 \times 10^0$$

$$78 = 0.0611 \\ = 6.11 \times 10^{-2}$$

$$79 = 197000 \\ = 1.97 \times 10^5$$

$$80 = 0.0953 \\ = 9.53 \times 10^{-2}$$

TMSCA 15-16 MS CA Test #8 Solutions to Word and Geometry Problems

11. There are 22 stated and geometry problems. Sherry missed 11 + 5 problems.

$$400 - 16(9)$$

12. $357 = 3 \cdot 119 = 3 \cdot 17 \cdot 7$

$$561 = 3 \cdot 187 = 3 \cdot 11 \cdot 17$$

$$\text{GCF} = 3 \cdot 17 = 51$$

13. 23.8 (1.0085) OR

$$23.8 (.0085) + 23.8$$

24. $\frac{9x^2 + 16x + 5}{7}$

25. $x + (x + 1) + (x + 2) + (x + 3) = 330$

$$4x = 324, x = 81. \text{ The four numbers are } 81, 82, 83, 84.$$

Multiply these together.

26. A 20% discount means it is sold for 80% of the original price. Final price with tax = $112.99(.8)(1.0625)$. Inserting the 1 before .0625 calculates the final price of item plus tax.

35. $231 \text{ in}^3 = 1 \text{ gallon}$. The cube holds $72.8(231) \text{ in}^3$. Side = $\sqrt[3]{72.8(231)} \text{ in}^3$. Convert to feet by dividing by 12.

36. On HP RPN

calculator:

$$1\text{E}9 \quad \boxed{\text{ENTER}} \quad 1\text{E}6 \quad \boxed{\% \text{ CHG}}$$

OR

$$\frac{1,000,000,000 - 1,000,000}{1,000,000,000}$$

Since the problem uses the word "decrease" don't put the negative sign in the answer.

37. $\frac{\left(\frac{1.87 \text{E}8}{2}\right)^2 \pi}{2}$

38. $A = \frac{(d_1)(d_2)}{2}$
 $1.3 \times 10^6 = \frac{2118x}{2}$
 $x = \frac{(1.3 \times 10^6)(2)}{2118}$

47.

	Rate	Time	Dist
#1	x	¼	¼ x
#2	2x	¼	½ x

$$\frac{1}{4}x + \frac{1}{2}x = 18. \quad \frac{3}{4}x =$$

$$18.$$

$$X = 18 \div \frac{3}{4}$$

48. $8y = 3x - 7$. Slope = $\frac{3}{8}$
 Perpendicular slope = $-\frac{8}{3}$

49. $\sqrt{\left(3\frac{4}{5}\right)^2 - \left(2\frac{1}{8}\right)^2}$

50. $\frac{\tan 67}{1} = \frac{\text{leg}}{\cos 67} = \frac{987}{1}$
 $\frac{987}{\cos 67} = \frac{\text{hyp}}{1}$

$$\text{Leg} = 987(\cos 67). \quad \text{Hyp} = \frac{987}{\cos 67}$$

$$\text{Perim} = 987(\cos 67) + \frac{987}{\cos 67} + 987$$

59. SA of hemisphere = $3\pi r^2$
 $= 3\pi(.44)^2$

60. $1 - \frac{5}{64} - \frac{1}{8} - \frac{10}{32}$

61. $V = \frac{4}{3}\pi r^3$

$$.0592 = \frac{4}{3}\pi r^3 \quad \text{so } r = \sqrt[3]{\frac{.0592(3)}{4\pi}}$$

62. $V = \frac{1}{3}Bh$ so $V = \frac{1}{3}x^2x$

$$72127 = \frac{1}{3}x^3$$

$$x = \sqrt[3]{72127(3)}$$

71. 15!

72. Sketch a right triangle. We are looking for the angle opposite the shadow.

Adjacent side is 150. Opposite side is 22 feet 7 in.

$$\frac{\tan x}{1} = \frac{22\frac{7}{12}}{150}$$

$$x = \text{ATAN} \left(\frac{22\frac{7}{12}}{150} \right)$$

73. A hexagon consists of 6 equilateral triangles. The Apothem is the height of one of the triangles. Use $A = \frac{h^2\sqrt{3}}{3}$ for area of one triangle. Then multiply by 6.

$$6 \left(\frac{72.61^2\sqrt{3}}{3} \right)$$

74. short side: Use law of cosines

$$\sqrt{581^2 + 872^2 - 2(581)(872)\cos 23}$$

To find angle, use law of Sines

$$\frac{\sin 23}{\text{short side}} = \frac{\sin x}{872}$$

$$x = \text{ASIN} \left(\frac{872[\sin 23]}{\text{short side}} \right)$$

This will seem to produce an angle of 57.0 degrees, but since it is the largest angle, across from the longest side, the angle is $180 - 57 = 123$ degrees.