

2015-2016 TMSCA Middle School Calculator Test #3

1. $45.8 + \pi - 23.5$ ----- 1= _____

2. $-16 - 44 - 25$ ----- 2= _____

3. $3.8 + 10.2 + 6.3$ ----- 3= _____

4. $\pi + 2 - 14 - 16$ ----- 4= _____

5. $3130 - 4970 - 3710 + 2690$ ----- 5= _____

6. $-14.7 + 124 - 82.6 - 74.3 + 98.9$ ----- 6= _____

7. $1.46 - 1.51 + 1.42 - 0.908 - \pi$ ----- 7= _____

8. $(2.64 + 2.17 - 0.409) - (1.64 + 2.63)$ ----- 8= _____

9. $146 \times 241 \times 91.3$ ----- 9= _____

10. $180 \times 4040 \times 50.5 \times 1720$ ----- 10= _____

11. The speed of sound through air is measured at 3.4×10^2 meters per second and the speed of sound through salt water is measured at 1.5×10^3 meters per second. Calculate the positive difference in these two speeds. ----- 11= _____ m/s

12. The average of a northern town in February was -9.87°F . The average temperature of this town in July was 97.24°F more than February. Calculate the average temperature in July in $^\circ\text{F}$. ----- 12= _____ $^\circ\text{F}$

13. What percent of one thousand is one-eighth? ----- 13= _____ %

14. $(485/261)[360 - 584]$ -----14= _____

15. $311/[159 \times 340 \times 395]$ -----15= _____

16. $\left[\frac{-537}{568}\right] [(97/140) - 0.333]$ -----16= _____

17. $\left[\frac{299}{131}\right] [(357/225) + 1.47]$ -----17= _____

18. $\left[\frac{120/102}{14/123}\right] \{0.00211 + 0.0019 - 0.00253\}$ -----18= _____

19. $\left[\frac{(4520/4260) - (2720/3270)}{6.71 \times 10^{-4} / 3.38 \times 10^{-4}}\right]$ -----19= _____

20. $\frac{(\pi)(10/5)(4/5)}{54}$ -----20= _____

21. $\frac{(87.6)(0.00324)}{1500} (174 - 283)$ -----21= _____

22. $\left[\frac{7040 + 7250}{3070 - 9090}\right] \left[\frac{6950}{6300}\right]$ -----22= _____

23. $\frac{[-(372 + 1050)(1210 - 286)]}{(4700/(4.20 \times 10^5))}$ -----23= _____

24. Calculate the median of the set that contains the first ten prime numbers. -----24= _____ INT.

25. One of the angles in an isosceles triangle measures 31.7° . Calculate the largest possible measure of an angle in this triangle. -----25= _____^o

26. Angle A and Angle B are complementary angles. If Angle A measures 22.4° , calculate the measure of Angle B in degrees. -----26= _____^o

27. $(0.00695)[(22.6/20.5)(440/601)]$ -----27= _____

28. $\frac{(4.39 + \pi)(7.15 + 10.6)}{(1.00 \times 10^{12})}$ -----28= _____

29. $[2770 - (1900 + 2310)] + [(-3.79)(730 - 534)]$ -----29= _____

30. $[589] \left[\frac{1/508}{1/659} \right]$ -----30= _____

31. $(5.52)[(6.37 \times 10^6) - (6.59 \times 10^6)]$ -----31= _____

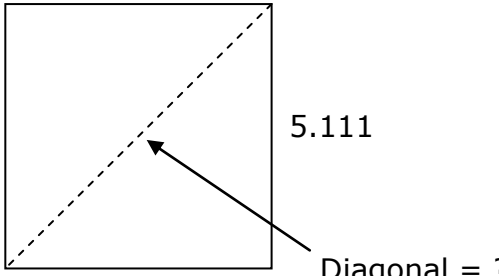
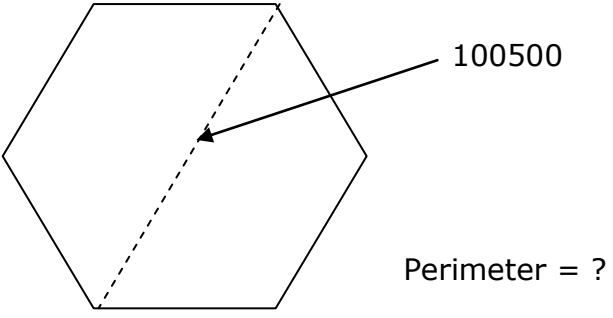
32. $(2.75) \left[\frac{28.8}{(1.04 \times 10^{11})} \right]$ -----32= _____

33. $\left[\frac{1/598}{1/489} \right] + [0.326]$ -----33= _____

34. $1/(0.739 - 0.857) - 1/(-0.0519)$ -----34= _____

35. Calculate the multiplicative inverse of the square root of e cubed. 35= _____

36. The size of the floopa increased from 600,600 to one million.
Calculate the percent increase in the size of the floopa. -----36= _____ %

<p style="text-align: center;">SQUARE</p>  <p style="text-align: right;">5.111</p> <p style="text-align: right;">Diagonal = ?</p> <p>37= _____</p>	<p style="text-align: center;">REGULAR HEXAGON</p>  <p style="text-align: right;">100500</p> <p style="text-align: right;">Perimeter = ?</p> <p>38= _____</p>
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39. $\left[\frac{3.7}{1.31}\right](485 + 986)^4$ -----39= _____

40. $\frac{(3330 + 5340)^3}{(0.0978 - 0.145)^2}$ -----40= _____

41. $\left[\frac{72200 + (1/(2.01 \times 10^{-5}))}{(60400/39900) - 0.371}\right]^2$ -----41= _____

42. $\sqrt{21100 - 4930 + 19400} - \sqrt{25100}$ -----42= _____

43. $(1/\pi)^4 \sqrt[4]{\frac{0.0305 + 0.0149}{0.0177 - 0.0171}}$ -----43= _____

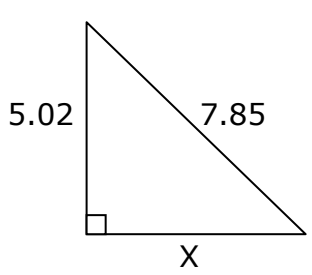
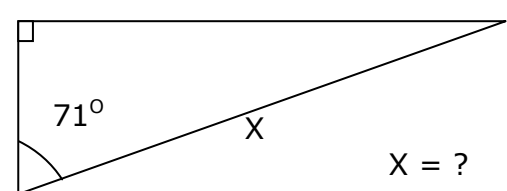
44. $\sqrt{3890} + \sqrt{3150 + 2610} - (\pi)\sqrt{4050}$ -----44= _____

45. $\sqrt[3]{5.53 - 4250/1180} + 1/\sqrt{0.0369 + 0.108}$ -----45= _____

46. $\frac{(1900 + 750)^{1/4}}{(40400 - 33800)^{1/4}}$ -----46= _____

47. The sum of two positive integers is 1026. Their difference is 490.
Calculate the value of the larger integer. -----47= _____ INT.

48. Calculate the slope of the line of the equation $3x + 2y = 6$. -----48= _____

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

51. $\left[\frac{9.12 - 7.19 + \sqrt{321/189}}{-224 + 227} \right]^{-4}$ -----51= _____

52. $\sqrt{\frac{1.01 \times 10^{-10}}{(0.0218)(0.00406)}} + \frac{(10400 - 11700)}{(2.45 \times 10^5 + 8.59 \times 10^5)}$ -----52= _____

53. $\left[\frac{\sqrt{\sqrt{3.39 \times 10^5 - 3.17 \times 10^5}}}{-(55400 - 20200)} \right]^2 [227 + 273]$ -----53= _____

54. $\sqrt{\frac{(3.56 \times 10^5)(2.64 \times 10^5)}{(99100)(1.01 \times 10^5)}} - 0.561 + 1.37$ -----54= _____

55. $0.46 + \sqrt{(1420)/(5110)} - (0.546 + 0.621)^2$ -----55= _____

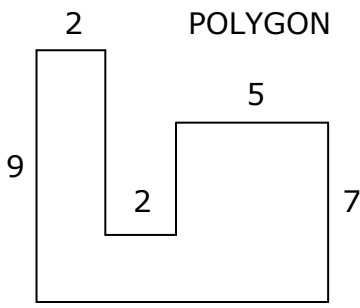
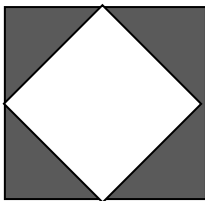
56. $(15.2)(1.18 \times 10^{10})^{1/2} - [(8.91 \times 10^{11})(2.96 \times 10^{12})]^{1/4}$ -----56= _____

57. $(\text{deg}) \sin(274^\circ) + (9.6/6.9)$ -----57= _____

58. $\sqrt{\frac{(788)(625)}{(1210) + (2230)}} - 29.5$ -----58= _____

59. The radius of a sphere is 23.8 feet. Calculate the surface area of the sphere in square feet. -----59= _____ ft.²

60. Calculate the probability of rolling a sum of eight on a standard pair of dice. -----60= _____

<p style="text-align: center;">POLYGON</p>  <p style="text-align: right;">Given all angles are right angles</p> <p style="text-align: right;">Area = ?</p> <p>61 = _____</p>	<p style="text-align: center;">SQUARES</p>  <p style="text-align: right;">Edge of large square = 1111</p> <p style="text-align: right;">Shaded Area = ?</p> <p>62 = _____</p>
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63. $\frac{18!/15!}{5! + 6!}$ -----63= _____

64. (deg) $(1870 + 4890)\sin(65.5^\circ)$ -----64= _____

65. $(6.73 - \pi)e^{0.756}$ -----65= _____

66. (rad) $\frac{\tan(59.5)}{105/668}$ -----66= _____

67. (deg) $[14.7]\tan(889^\circ - 807^\circ)$ -----67= _____

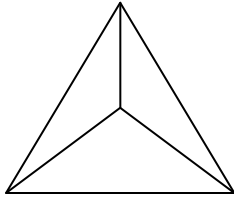
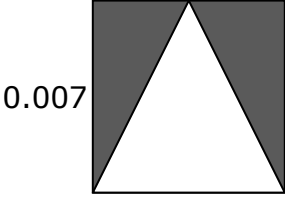
68. (rad) $\tan[(1.48 - 2.27)(4.33)]$ -----68= _____

69. (deg) $\frac{\sin(3.79^\circ)}{1220 + 926}$ -----69= _____

70. $(1420 + 2780 + 8150)^{4/5}$ -----70= _____

71. Calculate the fifty-second triangular number. -----71= _____ INT.

72. A plane can travel 2460 miles in 6 hours with the wind. Flying against the same wind, the same trip takes 6.85 hours. Calculate the rate of the wind in miles per hour. -----72= _____ mph.

<p style="text-align: center;">TETRAHEDRON</p> <div style="display: flex; justify-content: space-around; align-items: center;">  <div style="text-align: left;"> <p>Edge = 72</p> <p>Surface Area = ?</p> </div> </div> <p style="margin-top: 20px;">73= _____</p>	<p style="text-align: center;">ISOSCELES TRIANGLE AND SQUARE</p> <div style="display: flex; justify-content: space-around; align-items: center;">  <div style="text-align: left;"> <p>Ratio of shaded to unshaded = ?</p> </div> </div> <p style="margin-top: 20px;">74= _____</p>
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75. $\frac{\text{Log}(\pi + 4.14)}{4.97 - 8.53}$ -----75= _____

76. $\frac{0.159 + \sqrt{(0.117)(0.138) + (0.0422)(0.985)}}{\sqrt{\sqrt{0.0452 + 0.047}}}$ -----76= _____

77. $2\text{Log}\sqrt{\frac{(536)(1.32)}{22.1 + 27.9}}$ -----77= _____

78. $\frac{\text{Log}[695 + (12)(133)]}{3.38 + \text{Log}[556 + 3150]}$ -----78= _____

79. $1 + 3 + 5 + \dots + 991$ -----79= _____

80. $1 + \frac{(0.78)^4}{2} - \frac{(0.78)^6}{6} + \frac{(0.78)^8}{24} - \frac{(0.78)^{10}}{120}$ -----80= _____

2015-2016 TMSCA Middle School Calculator Test #3 Answer Key

Page 1	Page 2	Page 3	Page 4
1 = 25.4 = 2.54×10^1	14 = -416 = -4.16×10^2	27 = 0.00561 = 5.61×10^{-3}	39 = 1.32×10^{13}
2 = -85.0 = -8.50×10^1	15 = 1.46×10^{-5}	28 = 1.34×10^{-10}	40 = 2.93×10^{14}
3 = 20.3 = 2.03×10^1	16 = -0.340 = -3.40×10^{-1}	29 = -2180 = -2.18×10^3	41 = 1.14×10^{10}
4 = -24.9 = -2.49×10^1	17 = 6.98 = 6.98×10^0	30 = 764 = 7.64×10^2	42 = 30.2 = 3.02×10^1
5 = -2860 = -2.86×10^3	18 = 0.0153 = 1.53×10^{-2}	31 = -1.21×10^6	43 = 0.939 = 9.39×10^{-1}
6 = 51.3 = 5.13×10^1	19 = 0.115 = 1.15×10^{-1}	32 = 7.62×10^{-10}	44 = -61.7 = -6.17×10^1
7 = -2.68 = -2.68×10^0	20 = 0.0931 = 9.31×10^{-2}	33 = 1.14 = 1.14×10^0	45 = 3.87 = 3.87×10^0
8 = 0.131 = 1.31×10^{-1}	21 = -0.0206 = -2.06×10^{-2}	34 = 10.8 = 1.08×10^1	46 = 0.796 = 7.96×10^{-1}
9 = 3.21×10^6	22 = -2.62 = -2.62×10^0	35 = 0.223 = 2.23×10^{-1}	47 = 758 INT.
10 = 6.32×10^{10}	23 = -1.17×10^8	36 = 66.5 = 6.65×10^1	48 = -1.50 = -1.50×10^0
11 = 1160 = 1.16×10^3	24 = 12 INT.	37 = 7.23 = 7.23×10^0	49 = 6.04 = 6.04×10^0
12 = 87.4 = 8.74×10^1	25 = 117 = 1.17×10^2	38 = 302000 = 3.02×10^5	50 = 587 = 5.87×10^2
13 = 0.0125 = 1.25×10^{-2}	26 = 67.6 = 6.76×10^1		

2015-2016 TMSCA Middle School Calculator Test #3 Answer Key

Page 5

$$\begin{aligned} 51 &= 0.741 \\ &= 7.41 \times 10^{-1} \\ 52 &= -0.000109 \\ &= -1.09 \times 10^{-4} \\ 53 &= 5.99 \times 10^{-5} \\ 54 &= 3.87 \\ &= 3.87 \times 10^0 \\ 55 &= -0.375 \\ &= -3.75 \times 10^{-1} \\ 56 &= 377000 \\ &= 3.77 \times 10^5 \\ 57 &= 0.394 \\ &= 3.94 \times 10^{-1} \\ 58 &= -17.5 \\ &= -1.75 \times 10^1 \\ 59 &= 7120 \\ &= 7.12 \times 10^3 \\ 60 &= 0.139 \\ &= 1.39 \times 10^{-1} \end{aligned}$$

Page 6

$$\begin{aligned} 61 &= 57.0 \\ &= 5.70 \times 10^1 \\ 62 &= 617000 \\ &= 6.17 \times 10^5 \\ 63 &= 5.83 \\ &= 5.83 \times 10^0 \\ 64 &= 6150 \\ &= 6.15 \times 10^3 \\ 65 &= 7.64 \\ &= 7.64 \times 10^0 \\ 66 &= -1.23 \\ &= -1.23 \times 10^0 \\ 67 &= 105 \\ &= 1.05 \times 10^2 \\ 68 &= -0.287 \\ &= -2.87 \times 10^{-1} \\ 69 &= 3.08 \times 10^{-5} \\ 70 &= 1880 \\ &= 1.88 \times 10^3 \\ 71 &= 1378 \text{ INT.} \\ 72 &= 25.4 \\ &= 2.54 \times 10^1 \end{aligned}$$

Page 7

$$\begin{aligned} 73 &= 8980 \\ &= 8.98 \times 10^3 \\ 74 &= 1.00 \\ &= 1.00 \times 10^0 \\ 75 &= -0.242 \\ &= -2.42 \times 10^{-1} \\ 76 &= 0.595 \\ &= 5.95 \times 10^{-1} \\ 77 &= 1.15 \\ &= 1.15 \times 10^0 \\ 78 &= 0.484 \\ &= 4.84 \times 10^{-1} \\ 79 &= 246000 \\ &= 2.46 \times 10^5 \\ 80 &= 1.15 \\ &= 1.15 \times 10^0 \end{aligned}$$

TMSCA 15-16 MS CA Test #3 Solutions to Word and Geometry Problems

11. $1.5 \times 10^3 - 3.4 \times 10^2$

12. $-9.87 + 97.24$

13. $x(1000) = \frac{1}{8}$

$x = \frac{1}{8} \div 1000$

Move decimal two places right to make a percent.

24. 2,3,5,7,11,13,15,17,19,23 are the first 10 prime numbers. The median will be the average of the two middle numbers: 11 and 13.

25. If the two small angles are both 31.7° , the largest angle is $180 - 2(31.7)$

26. The sum of complementary angles is 90° .
 $90 - 22.4$

35. $\frac{1}{\sqrt{e^3}}$

36. On RPN calculator

600,600 1 6
%CHG

OR $\frac{1,000,000 - 600,600}{600,600} \times 100$

37. Diagonal = $s\sqrt{2}$
 $5.111\sqrt{2}$

38. On a hexagon the diagonal is equal to two sides. Perimeter = 3 diagonals.
 $3(100500)$

47. $x + y = 1026$

$x - y = 490$

$2x = 1516$

$x = \frac{1516}{2}$

48. For $ax + by = c$ the slope is $-\frac{a}{b} = -\frac{3}{2}$

49. $x = \sqrt{7.85^2 - 5.02^2}$

50. $\frac{\sin 71}{1} = \frac{555}{x}$ so $x = \frac{555}{\sin 71}$

59. $SA = 4\pi r^2 = 4\pi(23.8)^2$

60. There are 6×6 or 36 possible rolls on a pair of dice. There are 5 ways to roll an 8. [(2,6),(3,5),(4,4),(5,3),(6,2)]. The probability is $\frac{5}{36}$

61. 3 rectangles of 9×2 , 2×2 , and 5×7
 $9(2) + 2(2) + 5(7)$

62. Area of large square = 1111^2 . Side of smaller square = $\frac{1111}{2}\sqrt{2}$ so area of smaller square = $\left(\frac{1111}{2}\sqrt{2}\right)^2$
 $1111^2 - \left(\frac{1111}{2}\sqrt{2}\right)^2$

71. nth triangular number = $\frac{n(n+1)}{2}$

52^{nd} triangular number = $\frac{52(53)}{2}$ Use the SHOW key.

72. $p = \text{speed of plane}$

$w = \text{speed of wind}$

	Rate	Time	dist
With wind	$p+w$	6	2460
Against wind	$p-w$	6.85	2460

System: $6(p + w) = 2460$
 $6.85(p - w) = 2460$
 $p + w = \frac{2460}{6}$
 $p - w = \frac{2460}{6.85}$
 $p + w = 410$

Subtract the last two equations

$-2w = \frac{2460}{6.85} - 410$
 $w = \frac{\frac{2460}{6.85} - 410}{-2}$

73. Tetrahedron = 4 equilateral triangles.

$SA = 4 \frac{s^2\sqrt{3}}{4}$
 $SA = 4 \frac{(72)^2\sqrt{3}}{4}$

74. The shaded area = the unshaded area so the ratio is 1:1 or $\frac{1}{1}$