

2015-2016 TMSCA Middle School Calculator Test #5

1. $3530 + 1650$ ----- 1= _____

2. $8 + 9 - 26$ ----- 2= _____

3. $425 - 224 + 842$ ----- 3= _____

4. $\pi - 22 - 27 + 17$ ----- 4= _____

5. $686 + 589 + 613 + 937$ ----- 5= _____

6. $65 + 22.7 - 88.7 - 72.4 + 17.8$ ----- 6= _____

7. $1.7 + 1.3 + 0.59 + \pi + 0.689$ ----- 7= _____

8. $(6.82 - 7.26) + (2.97 - \pi - 6.19)$ ----- 8= _____

9. $218 \times 109 \times 346$ ----- 9= _____

10. $190 \times 2240 \times 5870 \times 83.9$ ----- 10= _____

11. How many five-eighth liter containers can be filled with the contents of a half filled twelve and a half liter container? ----- 11= _____ INT.

12. The area of a triangle is 242.78 inches squared. The height of the triangle 25.6 inches. Calculate the length of the base in inches. ----- 12= _____ in.

13. The temperature of the solid was negative twenty-eight degrees Celsius. Convert this temperature to degrees Fahrenheit. ----- 13= _____ °F

14. $(90/42)[59 - 21]$ -----14= _____

15. $(714)[522 \times 546 \times 380]$ -----15= _____

16. $(75 + 125)[233 - 70 - 169]$ -----16= _____

17. $\left[\frac{164}{160}\right] [(137/143) - 0.492]$ -----17= _____

18. $\left[\frac{432/151}{590/481}\right] \{2.48 + 14.7 - 5.78\}$ -----18= _____

19. $\frac{[0.00104/(6.69 \times 10^{-4})]/40.2}{(0.586 \times 0.217)(0.0409)}$ -----19= _____

20. $\frac{9.93 \times 10^{-4} + 0.00103 + 0.00173}{(0.00888)(55)(16.9)}$ -----20= _____

21. $(102)[178/431 \times 796/851] - 39.3$ -----21= _____

22. $\frac{(0.364 + 0.743 - 1.11)}{\{(4820 - 6430)/(22.2)\}}$ -----22= _____

23. $\frac{[-(2650 + 2390)(806 - 319)]}{(0.00262/(0.118))}$ -----23= _____

24. Calculate the range of the set of prime numbers less than 100. ----24= _____ INT

25. Sam purchased a large TV for \$1127.99 without tax. If the tax on this item was \$98.70, calculate the sales tax rate. -----25= _____ %

26. Angle A and Angle B are vertical angles. If Angle A is 32.7° , calculate the measure of Angle B in radians. -----26= _____ rad.

27. $\frac{(1.00 \times 10^9) + (7.48 \times 10^8)}{(-13.3)(12.3) - 49.1}$ -----27= _____

28. $\frac{(0.0528 - 0.0195)(8.34 + \pi)}{(1.70 \times 10^{11})}$ -----28= _____

29. $(0.165)[(0.00953/0.00725)(0.552/0.225)]$ -----29= _____

30. $\frac{1}{0.0209} + \frac{1}{(\pi)(0.0441 - 0.0131)}$ -----30= _____

31. $\frac{(225 + 162)}{(7.74 \times 10^{12})}$ -----31= _____

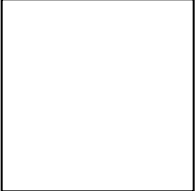
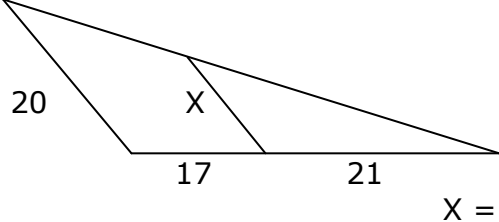
32. $\frac{1}{79.1} + \frac{1}{(86.4 - 39.1)}$ -----32= _____

33. $\left[\frac{1/88}{1/82.8}\right][2.10 \times 10^6]$ -----33= _____

34. $1/(2.79 \times 10^{-4} - 9.14 \times 10^{-4}) - 1/(-5.67 \times 10^{-4})$ -----34= _____

35. Calculate the number of distinct diagonals that can be drawn in a polygon with sixteen sides. -----35= _____ INT.

36. Train A is traveling South at a rate of 47 miles per hour. Train B is traveling North at a rate of 35 miles per hour. After passing each other on a spur track, calculate how far they will be apart in six hours. -----36= _____ mi.

SQUARE	SIMILAR TRIANGLES
 <p style="margin-left: 20px;">Area = 125.879</p> <p style="margin-left: 20px;">Perimeter = ?</p>	
37= _____	38= _____

39. $(1900 + 1420 + 3370)^2(9.72 + 9.18)^2$ -----39= _____

40. $\left[\frac{3160 + (1/(7.86 \times 10^{-5}))}{(4680/9630) - 0.084} \right]^2$ -----40= _____

41. $(6.65 + 18.5)^2(0.0247 + 0.0788)^2$ -----41= _____

42. $\sqrt{54.2 - 14.9 + 61.4} - \sqrt{33.6}$ -----42= _____

43. $(1/\pi) \sqrt[3]{\frac{0.735 + 0.362}{0.221 - 0.213}}$ -----43= _____

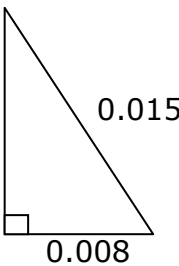
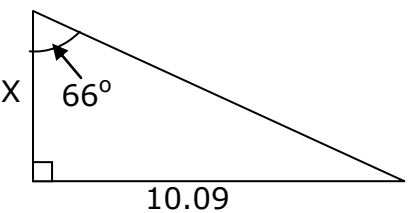
44. $\sqrt{(14.7/7.09) + 1.61 - 1.1}$ -----44= _____

45. $[\sqrt{(318/353)(1.1)}]^5$ -----45= _____

46. $(21300) \sqrt[3]{79200 + 59900 - 16600}$ -----46= _____

47. It takes 8.75 hours for a car traveling at 57 miles per hour to travel from one point to another. Calculate the speed the car must go to make the trip in six hours. -----47= _____ mph

48. Given $f(x) = 2x + 3$, calculate $f^{-1}(7)$. -----48= _____

RIGHT TRIANGLE	RIGHT TRIANGLE
 <p style="margin-left: 100px;">Area = ?</p>	 <p style="margin-left: 100px;">X = ?</p>
49= _____	50= _____

51. $\left[\frac{\sqrt{\sqrt{0.0199 - 0.014}}}{-(213 - 222)} \right]^3 [12600 + 10700]$ -----51= _____

52. $\left[\frac{4410 + 1500 + \sqrt{8.40 \times 10^6 + 4.22 \times 10^6}}{41.3/133} \right]^4$ -----52= _____

53. $\left[\frac{16.2 - 11.9 + \sqrt{2.84/1.09}}{-255 + 423} \right]^5$ -----53= _____

54. $0.955 + \sqrt{(1630)/(851)} - (0.622 + 0.605)^2$ -----54= _____

55. $(0.39)(1.96 \times 10^8)^{1/4} - [(319)(2470)]^{1/4}$ -----55= _____

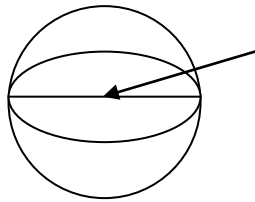
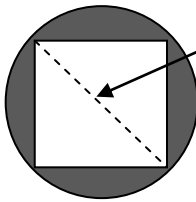
56. $1770 + \sqrt{(928)(1570)} - (1080 + 245)$ -----56= _____

57. $\sqrt{\frac{1/(5370 - 1860)}{(1360)(35.4 + 80.9)^6}}$ -----57= _____

58. $(\text{deg}) \sin(82.1^\circ) + (268/330)$ -----58= _____

59. The diameter of a hemisphere is 21.8 feet. Calculate the volume of the hemisphere in feet cubed. -----59= _____ ft.³

60. A jar of marbles contains seven red, two blue, eight yellow and one black. Calculate the probability of reaching in the jar and pulling out the black marble. -----60= _____

<p style="text-align: center;">SPHERE</p> <div style="display: flex; align-items: center; justify-content: center;">  <div style="margin-left: 20px;"> <p>0.0057</p> <p>Ratio of volume to surface area = ?</p> </div> </div> <p>61= _____</p>	<p style="text-align: center;">CIRCLE AND SQUARE</p> <div style="display: flex; align-items: center; justify-content: center;">  <div style="margin-left: 20px;"> <p>Diagonal of square=0.0101</p> <p>Shaded Area = ?</p> </div> </div> <p>62= _____</p>
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63. $\frac{10!}{18!}$ -----63= _____

64. $(5.42 - \pi)e^{0.578}$ -----64= _____

65. (deg) $\frac{\cos(25.1^\circ)}{3210}$ -----65= _____

66. (rad) $\frac{\sin(60.9)}{1460/1500}$ -----66= _____

67. (deg) $(3.03 - 22.2)\cos(3.23^\circ) + 4.15$ -----67= _____

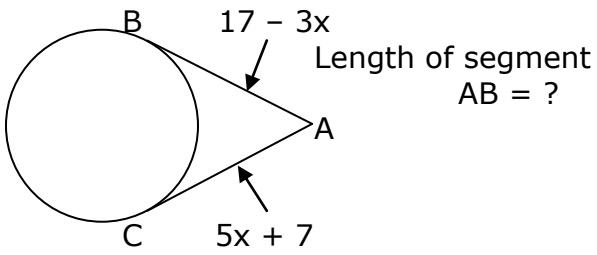
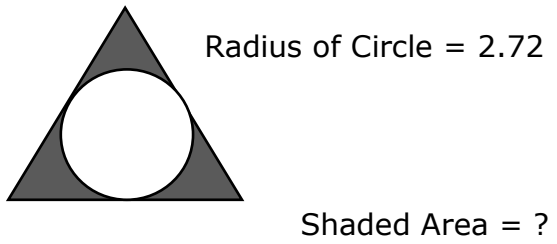
68. (rad) $(24000)\sin(40.4)$ -----68= _____

69. (deg) $\frac{\tan(25.2^\circ)}{1520 + 5750}$ -----69= _____

70. $\left[(1090) \left(\frac{36.3}{(65.1)(\pi)} \right) \right]^{7/2}$ -----70= _____

71. Calculate the one hundred sixth pentagonal number. -----71= _____ INT.

72. Smitty jogged to school at a rate of 4.25 miles per hour. His Father dropped off his bike and he rode it home at a rate of 10.8 miles per hour. The round trip took him 45 minutes. Calculate how far it is from the school to his house in miles. -----72= _____ mi.

<p style="text-align: center;">CIRCLE AND TANGENT LINES</p>  <p style="text-align: right;">Length of segment AB = ?</p> <p>73= _____</p>	<p style="text-align: center;">EQUILATERAL TRIANGLE AND CIRCLE</p>  <p style="text-align: right;">Radius of Circle = 2.72</p> <p style="text-align: right;">Shaded Area = ?</p> <p>74= _____</p>
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75. $\frac{0.0203 + \sqrt{(0.0383)(0.0165)} + (0.0513)(0.249)}{\sqrt{\sqrt{0.25 + 0.0726}}}$ -----75= _____

76. $\frac{\text{Log}(6.66 \times 10^7 + 2.74 \times 10^8)}{36.7}$ -----76= _____

77. $\text{Log} \sqrt{\frac{92.5 - 27.8}{(2.72)(0.86)}}$ -----77= _____

78. $\text{Ln} \left[\frac{10.9 + 14 + 2.45}{137 - 3.56 - 26.2} \right]$ -----78= _____

79. $1 + 3 + 5 + \dots + 687$ -----79= _____

80. $(0.42) - \frac{(0.42)^2}{2} + \frac{(0.42)^3}{3} - \frac{(0.42)^4}{4}$ -----80= _____

2015-2016 TMSCA Middle School Calculator Test #5 Answer Key

Page 1	Page 2	Page 3	Page 4
1 = 5180 = 5.18×10^3	14 = 81.4 = 8.14×10^1	27 = -8.22×10^6	39 = 1.60×10^{10}
2 = -9.00 = -9.00×10^0	15 = 7.73×10^{10}	28 = 2.25×10^{-12}	40 = 1.56×10^9
3 = 1040 = 1.04×10^3	16 = -1200 = -1.20×10^3	29 = 0.532 = 5.32×10^{-1}	41 = 6.78 = 6.78×10^0
4 = -28.9 = -2.89×10^1	17 = 0.478 = 4.78×10^{-1}	30 = 58.1 = 5.81×10^1	42 = 4.24 = 4.24×10^0
5 = 2830 = 2.83×10^3	18 = 26.6 = 2.66×10^1	31 = 5.00×10^{-11}	43 = 1.64 = 1.64×10^0
6 = -55.6 = -5.56×10^1	19 = 7.44 = 7.44×10^0	32 = 0.0338 = 3.38×10^{-2}	44 = 1.61 = 1.61×10^0
7 = 7.42 = 7.42×10^0	20 = 0.000455 = 4.55×10^{-4}	33 = 1.98×10^6	45 = 0.977 = 9.77×10^{-1}
8 = -6.80 = -6.80×10^0	21 = 0.103 = 1.03×10^{-1}	34 = 189 = 1.89×10^2	46 = 1.06×10^6
9 = 8.22×10^6	22 = 4.14×10^{-5}	35 = 104 INT.	47 = 83.1 = 8.31×10^1
10 = 2.10×10^{11}	23 = -1.11×10^8	36 = 492 = 4.92×10^2	48 = 2.00 = 2.00×10^0
11 = 10 INT.	24 = 95 INT.	37 = 44.9 = 4.49×10^1	49 = 0.0000508 = 5.08×10^{-5}
12 = 19.0 = 1.90×10^1	25 = 8.75 = 8.75×10^0	38 = 11.1 = 1.11×10^1	50 = 4.49 = 4.49×10^0
13 = -18.4 = -1.84×10^1	26 = 0.571 = 5.71×10^{-1}		

2015-2016 TMSCA Middle School Calculator Test #5 Answer Key

Page 5

$$51 = 0.680$$
$$= 6.80 \times 10^{-1}$$

$$52 = 8.62 \times 10^{17}$$

$$53 = 5.41 \times 10^{-8}$$

$$54 = 0.833$$
$$= 8.33 \times 10^{-1}$$

$$55 = 16.4$$
$$= 1.64 \times 10^1$$

$$56 = 1650$$
$$= 1.65 \times 10^3$$

$$57 = 2.91 \times 10^{-10}$$

$$58 = 1.80$$
$$= 1.80 \times 10^0$$

$$59 = 2710$$
$$= 2.71 \times 10^3$$

$$60 = 0.0556$$
$$= 5.56 \times 10^{-2}$$

Page 6

$$61 = 0.000950$$
$$= 9.50 \times 10^{-4}$$

$$62 = 0.0000291$$
$$= 2.91 \times 10^{-5}$$

$$63 = 5.67 \times 10^{-10}$$

$$64 = 4.06$$
$$= 4.06 \times 10^0$$

$$65 = 0.000282$$
$$= 2.82 \times 10^{-4}$$

$$66 = -0.961$$
$$= -9.61 \times 10^{-1}$$

$$67 = -15.0$$
$$= -1.50 \times 10^1$$

$$68 = 10200$$
$$= 1.02 \times 10^4$$

$$69 = 6.47 \times 10^{-5}$$

$$70 = 1.01 \times 10^8$$

$$71 = 16801 \text{ INT.}$$

$$72 = 2.29$$
$$= 2.29 \times 10^0$$

Page 7

$$73 = 13.3$$
$$= 1.33 \times 10^1$$

$$74 = 15.2$$
$$= 1.52 \times 10^1$$

$$75 = 0.0772$$
$$= 7.72 \times 10^{-2}$$

$$76 = 0.232$$
$$= 2.32 \times 10^{-1}$$

$$77 = 0.721$$
$$= 7.21 \times 10^{-1}$$

$$78 = -1.37$$
$$= -1.37 \times 10^0$$

$$79 = 118000$$
$$= 1.18 \times 10^5$$

$$80 = 0.349$$
$$= 3.49 \times 10^{-1}$$

TMSCA 15-16 MS CA Test #5 Solutions to Word and Geometry Problems

11. $\frac{12.5}{2} \div \frac{5}{8}$

12. $\frac{25.6b}{2} = 242.78$
base = $242.78(2) \div 25.6$

13. On RPN calculator
-28 left shift 7 key changes
Celsius to Fahrenheit.

24. $97 - 2$

25. $x(1127.99) = 98.70$
This gives the answer .0875
which is 8.75%

26. Vertical angles are equal
in measure. RPN calculator
32.7 left shift 9 key changes
the degrees to radians.

35. $\frac{n(n-3)}{2} = \frac{16(16-3)}{2}$

36. $6(47 + 35)$

37. $side = \sqrt{125.879}$
Perimeter = $4\sqrt{125.879}$

38. $\frac{20}{17+21} = \frac{x}{21}$

$$x = \frac{20(21)}{(17 + 21)}$$

47. Distance = $r(t) = 57(8.75)$
New rate = $\frac{57(8.75)}{6}$

48. $f^{-1}(7)$ means find value of
 x when $f(x) = 7$.
 $7 = 2x + 3$ so $4 = 2x$; $x = 2.00$

49. height = $\sqrt{.015^2 - .008^2}$
Area = $\frac{bh}{2} = \frac{.008h}{2} =$

$$\frac{.008(\sqrt{.015^2 - .008^2})}{2}$$

50. $\frac{\tan 66}{1} = \frac{10.09}{x}$
 $x = \frac{10.09}{\tan 66}$

59. $V = \frac{2}{3}\pi r^3 = \frac{2}{3}\pi\left(\frac{21.8}{2}\right)^3$

60. $\frac{1}{7+2+8+1}$

61. You could calculate the
Volume and Area and then
find the ratio OR you could
find the ratio of the formulas.

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

$$SA = 4\pi r^2$$

The ratio of these = $\frac{\frac{4}{3}r}{4}$

$$\frac{4\left(\frac{.0057}{2}\right)}{4}$$

62. Diameter = .0101

Area of circle = $\left(\frac{.0101}{2}\right)^2 \pi$

Area of square = $\frac{d^2}{2}$

Shaded area = $\left(\frac{.0101}{2}\right)^2 \pi -$
 $\frac{(.0101)^2}{2}$

71. Pentagonal number
formula: $\frac{n(3n-1)}{2}$

$$\frac{106[3(106) - 1]}{2}$$

72.

	Rate	Time	Dist
To	4.25	x	4.25x
F	10.8	$\frac{3}{4} - x$	$\frac{10.8}{4} - x$
R			
O			
M			

Solve:

$$4.25x = 10.8\left(\frac{3}{4} - x\right)$$

$$x = \frac{8.1}{15.05} \text{ hours}$$

$$\text{Distance} = 4.25\left(\frac{8.1}{15.05}\right)$$

73. $17 - 3x = 5x + 7$

So $x = \frac{10}{8}$

$$\overline{AB} = 17 - 3\left(\frac{10}{8}\right)$$

74. Height of triangle =
3(2.72)

Area of triangle = $\frac{h^2\sqrt{3}}{3} =$

$$\frac{[3(2.72)]^2\sqrt{3}}{3}$$

Area of circle = $2.72^2\pi$

Shaded area =

$$\frac{[3(2.72)]^2\sqrt{3}}{3} - 2.72^2\pi$$