

1st Score: _____	2nd Score: _____	3rd Score: _____	_____. ____ Final Score
S & G _____	S & G _____	S & G _____	
Grader: _____	Grader: _____	Grader: _____	

PLACE LABEL BELOW

Name: _____ School: _____

SS/ID Number: _____ City: _____

Grade: 4 5 6 7 8 Classification: 1A 2A 3A 4A 5A 6A



TMSCA MIDDLE SCHOOL CALCULATOR KICK-OFF TEST ©

2020

GENERAL DIRECTIONS

I. About this test:

- A. You will be given 30 minutes to take this test. There are 80 problems on this test.
- B. ALL calculators must be cleared. HP Prime and Casio Prizm calculators are NOT permitted.**

II. How to write the answers:

- A. For all problems except stated problem as noted below write three significant digits.
 1. Examples (* means correct, but not recommended)
 Correct: 12.3, 123, 123.*, 1.23x10*, 1.23x10⁰*, 1.23x10¹, 1.23x10⁰¹, .0190, 1.90x10⁻²
 Incorrect: 12.30, 123.0, 1.23(10)², 1.23·10², 1.230x10², 1.23*10², 0.19, 1.9x10⁻², 19.0x10⁻³, 1.90E-02
 2. Plus or minus one digit error in the third significant digit is permitted.
- B. For stated problems:

1. Except for integer, dollar sign, and significant digit problems, as detailed below, answers to stated problems should be written with three significant digits.
2. Integer problems are indicated by (integer) in the answer blank. Integer problems answers must be exact, no plus or minus one digit, no decimal point or scientific notation.
3. Dollar sign (\$) problems should be answered to the exact cent, but plus or minus one cent error is permitted. The decimal point and cents are required for exact dollar answers.

III. Some symbols used on the test.

- A. Angle measure: rad means radians; deg means degrees.
- B. Inverse trigonometric functions: arcsin for inverse sine, etc.
- C. Special numbers: π for 3.14159 . . . ; e for 2.71828.
- D. Logarithms: Log means common (base 10); Ln means natural (base e).

IV. Scoring:

- A. All problems answered correctly are worth FIVE points. FOUR points will be deducted for all problems answered incorrectly or skipped before the last problem attempted.

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1. $-340 - 975$ ----- 1=_____

2. $58 + 81 - 43$ ----- 2=_____

3. $1260 + 1070 - 1220$ ----- 3=_____

4. $\pi - 12 - 5 - 12$ ----- 4=_____

5. $44 + 40 - 58 - 121$ ----- 5=_____

6. $-284 + 51.1 - 143 - 106 - 202$ ----- 6=_____

7. $4.41 - \pi + 5.01 - 5.76 - 1.96$ ----- 7=_____

8. $-0.718 + 2.29 - 2.34 + 0.661 + 2.65$ ----- 8=_____

9. $55.6 \times 123 \times 195$ ----- 9=_____

10. $463 \times 1520 \times 160 \times 6730$ ----- 10=_____

11. Allie and Kate went deep sea fishing and caught seven fish that weighed 23.8, 18.7, 19.2, 31.6, 11.9, 15.6, and 22.5 pounds. Calculate the mean weight of the seven fish. ----- 11=_____lbs.

12. Calculate the area of a square in square inches with a perimeter of 175 inches. ----- 12=_____in.²

13. Convert 173.26 centimeters to inches. ----- 13=_____in.

14. $(-127)[364 \times 49 \times 122]$ ----- 14=_____

15. $-303/[434 \times 445 \times 619]$ ----- 15=_____

16. $\{442/545\} \left[\frac{553}{756 + 503} \right]$ ----- 16=_____

17. $\{(27)(40 - 36)(53)\} - 5710$ ----- 17=_____

18. $\frac{(484/87) + (243/180)}{(0.0023 - 9.57 \times 10^{-4})}$ ----- 18=_____

19. $\left[\frac{(1360/463) - (1300/969)}{498/(292)} \right]$ ----- 19=_____

20. $(37.3)[144/79 \times 19/123] - 3.11$ ----- 20=_____

21. $\frac{(\pi)(80/10)(81/36)}{646}$ ----- 21=_____

22. $\frac{(0.405 + 0.318 - 0.244)}{\{(1150 - 205)/(3530)\}}$ ----- 22=_____

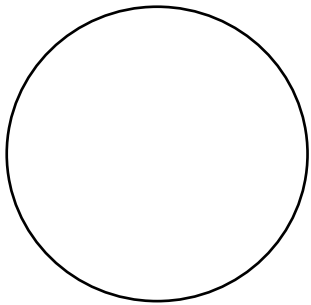

23. $\frac{(\pi)(117/31)(107/106)}{(104/34)}$ ----- 23=_____

24. Phillip completed every problem to and including number 57 on his calculator test. If he missed a total of 10 problems, calculate his score. ----- 24=_____INT.

25. An item has a regular price of \$49.95. There is a sale of 1/3 off for this item. Calculate the sale price of this item. ----- 25=\$_____

26. The ratio of bears to squirrels in the forest is 7 to 43. If there are 301 bears in the forest calculate the number of squirrels. ----- 26=_____INT.

27. $(0.00323) \left[(2.21/2.47)(\pi + 14.1) \right]$ ----- 27=_____
28. $(0.931) \left[[0.0346/(0.047)] [0.0221/(0.0245)] \right]$ ----- 28=_____
29. $\frac{(17.7 - 20.6)(22.6 + 24.8)}{(3.00 \times 10^{11})}$ ----- 29=_____
30. $\frac{1}{151} + \frac{1}{(\pi)(765 - 488)}$ ----- 30=_____
31. $\frac{1}{-381} + \frac{1}{(138 - 262)}$ ----- 31=_____
32. $\frac{(0.0633 + 0.109)}{(1.75 \times 10^{11})}$ ----- 32=_____
33. $1/(0.172 - 0.227) - 1/(-0.0519)$ ----- 33=_____
34. $\left[\frac{1/2660}{1/3160} \right] [1.40 \times 10^6]$ ----- 34=_____
35. An equilateral triangle and a circle have the same area. If the radius of the circle is 8.88 inches calculate the length of a side of the triangle in inches. ----- 35=_____in.
36. A sequence is made using the following equation $a_n = n/(7 - 4n)$. Calculate the value of the 20th term. ----- 36=_____

<p>37.</p> <p style="text-align: center;">CIRCLE</p> <div style="text-align: center;">  </div> <p style="text-align: right;">Radius = 76.2</p> <p style="text-align: right;">Circumference = ?</p> <p>37=_____</p>	<p>38.</p> <p style="text-align: center;">RECTANGLE</p> <div style="text-align: center;">  </div> <p style="text-align: right;">0.00125</p> <p style="text-align: center;">Area = 5.08×10^{-6} Length = ?</p> <p>38=_____</p>
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39. $\sqrt[3]{\frac{654 + 662}{0.293 - 0.167}}$ ----- 39=_____

40. $\left[\frac{1740 + (1/(6.80 \times 10^{-4}))}{(1880/2550) - 0.282} \right]^2$ ----- 40=_____

41. $(3.7 + 2.24 + 2.31)^2(240 + 699)^2$ ----- 41=_____

42. $(308)\sqrt{188 + 159 + 155}$ ----- 42=_____

43. $\sqrt{232 - 112 + 213} - \sqrt{124}$ ----- 43=_____

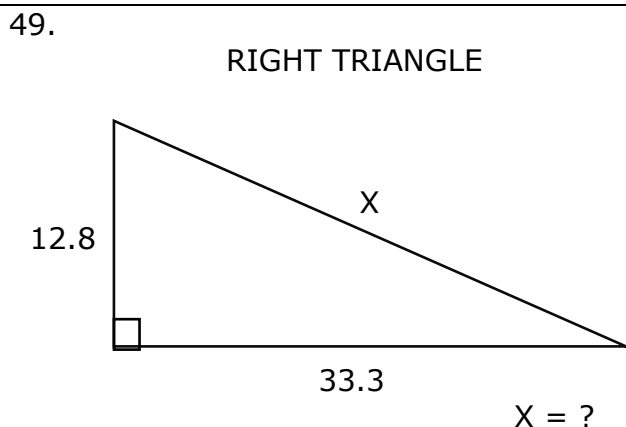
44. $(1/\pi)\sqrt{\frac{0.701 + 0.657}{0.256 - 0.202}}$ ----- 44=_____

45. $\frac{1}{\sqrt{19.6 + 101 + 133}} + \left(\frac{1}{\sqrt{3.81}} \right)^4$ ----- 45=_____

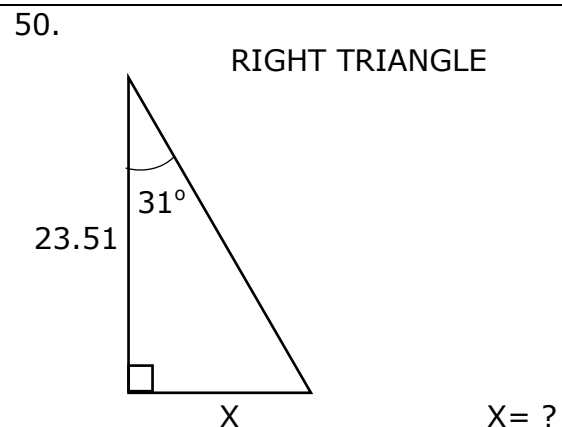
46. $(176)\sqrt[4]{739 + 940 - 140}$ ----- 46=_____

47. Martha has \$875 in a savings account. She "forgets" about it for 3 years while away with the Peace Corps. If it earns 2.125% simple interest, calculate the amount in the account after those 3 years. 47=\$_____

48. The angles in a isosceles triangle are in the ratio of 2:2:30.
Calculate the measure of the largest angle in degrees. ----- 48=_____°



49=_____



50=_____

51. $\sqrt{\frac{0.0437}{(640)(0.0349)}} + \frac{(0.0127 - 0.00574)}{(0.0777 + 0.0735)}$ ----- 51=_____

52. $\left[\frac{\sqrt{\sqrt{139 - 120}}}{-(0.0279 - 0.0406)} \right]^3 [0.0923 + 0.104]$ ----- 52=_____

53. $\frac{(27.2 + 40.9 - 65.7)^3}{\sqrt{0.0604 + 0.174 + 0.196}}$ ----- 53=_____

54. $0.976 + \sqrt{(2990)/(2710)} - (0.926 + 0.392)^2$ ----- 54=_____

55. $(0.601)^2 \sqrt{(165)/(0.993)} - (3.79 + 2.05)$ ----- 55=_____

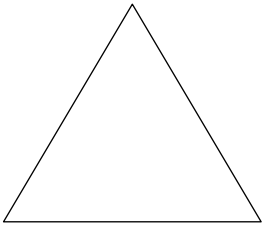
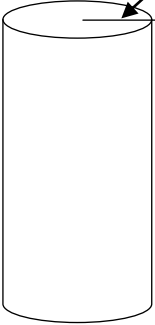
56. $\sqrt{\frac{(17200)(65000)}{(4010)(2.11 \times 10^5)}} - 0.252 + 1.07$ ----- 56=_____

57. $(\text{deg}) \sin(7470^\circ) + (2.95/1.21)$ ----- 57=_____

58. $\sqrt{\frac{(38.2)(10.6)}{(449) + (86.7)}} - 1.22$ ----- 58=_____

59. The product of a number and 7 is added to -37. The result is 255.
Calculate the value of the number. ----- 59=_____

60. Calculate the probability of drawing a red face card from a
standard deck of playing cards. ----- 60=_____

<p>61. EQUILATERAL TRIANGLE</p>  <p style="text-align: center; margin-left: 100px;">52.8</p> <p style="text-align: right;">Area = ?</p> <p>61= _____</p>	<p>62. CYLINDER</p>  <p style="text-align: right;">Total Surface Area = ?</p> <p>62= _____</p>
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63. $\frac{13!}{11!}$ ----- 63= _____

64. $(413 - \pi)e^{0.355}$ ----- 64= _____

65. $(\deg) (321 - 345)\cos(369^\circ)$ ----- 65= _____

66. $(\deg) (11.7 - 7.46)\sin(1.2^\circ) + 0.0668$ ----- 66= _____

67. $(\deg) [11.5]\tan(98.9^\circ - 136^\circ)$ ----- 67= _____

68. $(\deg) \frac{\sin(5.4^\circ)}{\tan(5.4^\circ)} [38.7]$ ----- 68= _____

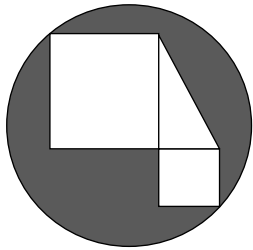
69. $(\deg) \frac{\tan(18.6^\circ)}{2380 + 2490}$ ----- 69= _____

70. $\left[(237) \left(\frac{1900}{(1550)(\pi)} \right) \right]^{3/2}$ ----- 70= _____

71. Calculate the slope of the line that passes through the points $(-7, 10)$ and $(9, -5)$. ----- 71= _____

72. Calculate the discriminate of the following quadratic equation $3x^2 - 8x + 7 = 0$ ----- 72= _____

73. CIRCLE, SQUARES, RIGHT TRIANGLE

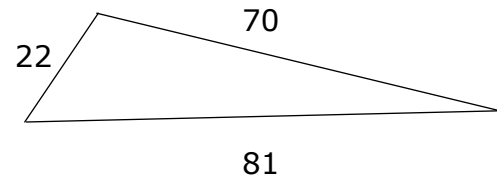


Legs of right triangle are 2.1 and 1.1

Shaded Area = ?

73= _____

74. SCALENE TRIANGLE



Area = ?

74= _____

75.
$$\frac{0.0305 + \sqrt{(0.0356)(0.0437) + (0.172)(0.454)}}{\sqrt{\sqrt{28.6 + 19.2}}} \text{ ----- } 75 = \underline{\hspace{2cm}}$$

76.
$$\frac{(0.996)^{0.722}(4.47)^{0.622}}{(24.4 - 22.9)^{-7}} \text{ ----- } 76 = \underline{\hspace{2cm}}$$

77.
$$(4690)10^{(0.802)(\pi)} \text{ ----- } 77 = \underline{\hspace{2cm}}$$

78.
$$\frac{(e^{0.699})(e^{0.338})(e^{0.229})}{\ln(253 + 195)} \text{ ----- } 78 = \underline{\hspace{2cm}}$$

79.
$$1 + 3 + 5 + \dots + 763 \text{ ----- } 79 = \underline{\hspace{2cm}}$$

80.
$$\frac{1}{(0.32)} + \frac{1}{3(0.32)^3} + \frac{1}{5(0.32)^5} + \frac{1}{7(0.32)^7} \text{ ----- } 80 = \underline{\hspace{2cm}}$$

2020 – 2021 TMSCA Middle School Calculator Kick-Off Answer Key

Page 1	Page 2	Page 3	Page 4
1 = -1310 = -1.31×10^3	14 = -2.76×10^8	27 = 0.0498 = 4.98×10^{-2}	39 = 21.9 = 2.19×10^1
2 = 96.0 = 9.60×10^1	15 = -2.53×10^{-6}	28 = 0.618 = 6.18×10^{-1}	40 = 4.97×10^7
3 = 1110 = 1.11×10^3	16 = 0.356 = 3.56×10^{-1}	29 = -4.58×10^{-10}	41 = 6.00×10^7
4 = -25.9 = -2.59×10^1	17 = 14.0 = 1.40×10^1	30 = 0.00777 = 7.77×10^{-3}	42 = 6900 = 6.90×10^3
5 = -95.0 = -9.50×10^1	18 = 5150 = 5.15×10^3	31 = -0.0107 = -1.07×10^{-2}	43 = 7.11 = 7.11×10^0
6 = -684 = -6.84×10^2	19 = 0.936 = 9.36×10^{-1}	32 = 9.85×10^{-13}	44 = 1.60 = 1.60×10^0
7 = -1.44 = -1.44×10^0	20 = 7.39 = 7.39×10^0	33 = 1.09 = 1.09×10^0	45 = 0.132 = 1.32×10^{-1}
8 = 2.54 = 2.54×10^0	21 = 0.0875 = 8.75×10^{-2}	34 = 1.66×10^6	46 = 1100 = 1.10×10^3
9 = 1.33×10^6	22 = 1.79 = 1.79×10^0		
	23 = 3.91 = 3.91×10^0		
10 = 7.58×10^{11}		35 = 23.9 = 2.39×10^1	47 = \$930.78
11 = 20.5 = 2.05×10^1	24 = 195 INT.	36 = -0.274 = -2.74×10^{-1}	48 = 159 = 1.59×10^2
12 = 1910 = 1.91×10^3	25 = \$33.30	37 = 479 = 4.79×10^2	49 = 35.7 = 3.57×10^1
13 = 68.2 = 6.82×10^1	26 = 1849 INT.	38 = 0.00406 = 4.06×10^{-3}	50 = 14.1 = 1.41×10^1

2020 – 2021 TMSCA Middle School Calculator Kick-Off Answer Key

Page 5

$$51 = 0.0903$$
$$= 9.03 \times 10^{-2}$$

$$52 = 872000$$
$$= 8.72 \times 10^5$$

$$53 = 21.1$$
$$= 2.11 \times 10^1$$

$$54 = 0.289$$
$$= 2.89 \times 10^{-1}$$

$$55 = -1.18$$
$$= -1.18 \times 10^0$$

$$56 = 1.97$$
$$= 1.97 \times 10^0$$

$$57 = 1.44$$
$$= 1.44 \times 10^0$$

$$58 = -0.351$$
$$= -3.51 \times 10^{-1}$$

$$59 = 41.7$$
$$= 4.17 \times 10^1$$

$$60 = 0.115$$
$$= 1.15 \times 10^{-1}$$

Page 6

$$61 = 1210$$
$$= 1.21 \times 10^3$$

$$62 = 5620$$
$$= 5.62 \times 10^3$$

$$63 = 156$$
$$= 1.56 \times 10^2$$

$$64 = 585$$
$$= 5.85 \times 10^2$$

$$65 = -23.7$$
$$= -2.37 \times 10^1$$

$$66 = 0.156$$
$$= 1.56 \times 10^{-1}$$

$$67 = -8.70$$
$$= -8.70 \times 10^0$$

$$68 = 38.5$$
$$= 3.85 \times 10^1$$

$$69 = 6.91 \times 10^{-5}$$

$$70 = 889$$
$$= 8.89 \times 10^2$$

$$71 = -0.938$$
$$= -9.38 \times 10^{-1}$$

$$72 = -20.0$$
$$= -2.00 \times 10^1$$

Page 7

$$73 = 9.31$$
$$= 9.31 \times 10^0$$

$$74 = 712$$
$$= 7.12 \times 10^2$$

$$75 = 0.0563$$
$$= 5.63 \times 10^{-2}$$

$$76 = 43.2$$
$$= 4.32 \times 10^1$$

$$77 = 1.55 \times 10^6$$

$$78 = 0.581$$
$$= 5.81 \times 10^{-1}$$

$$79 = 146000$$
$$= 1.46 \times 10^5$$

$$80 = 489$$
$$= 4.89 \times 10^2$$

TMSCA 2020-2021 MS CA Kick-Off Solutions to Word and Geometry Problems

<p>11. $\frac{23.8+18.7+19.2+31.6+11.9+15.6+22.5}{7}$</p> <p>12. $\left(\frac{175}{4}\right)^2$</p> <p>13. On HP RPN calculator: 173.26 enter "orange key" 6. This changes cm to inches. Without RPN calculator, $\frac{173.26}{2.54}$ because 1 inch is ≈ 2.54 cm</p> <p>24. $57(5) - 9(10)$</p> <p>25. 1/3 off, pay 2/3 $\\$49.95 \left(\frac{2}{3}\right)$</p> <p>26. $\frac{7}{43} = \frac{301}{x}$ so $x = \frac{301(43)}{7}$</p> <p>Use the show key to see all digits for INT problem.</p> <p>35. Area of circle = πr^2 Area of equilateral triangle when given the side = $\frac{s^2\sqrt{3}}{4}$ Circle = $\pi(8.88)^2 = \frac{s^2\sqrt{3}}{4}$ Side = $\sqrt{\frac{\pi(8.88)^2(4)}{\sqrt{3}}}$</p> <p>36. $20/(7 - 4 \cdot 20)$</p> <p>37. $C = 2\pi r = 2\pi(76.2)$</p> <p>38. $L = \frac{A}{W} = \frac{5.08 \times 10^{-6}}{.00125}$</p>	<p>47. $875 + 875(3)(.02125)$</p> <p>48. $2x + 2x + 30x = 180$ $34x = 180, x = \frac{180}{34}$ Largest angle = $30x = 30\left(\frac{180}{34}\right)$</p> <p>49. $x = \sqrt{(12.8)^2 + (33.3)^2}$</p> <p>50. $\tan 31 = \frac{x}{23.51}$ $x = 23.51[\tan(31)]$</p> <p>59. $7n + (-37) = 255$ $n = \frac{255 + 37}{7}$</p> <p>60. There are 6 red face cards. $\frac{6}{52}$</p> <p>61. Use $A = \frac{side^2\sqrt{3}}{4} = \frac{52.8^2\sqrt{3}}{4}$</p>	<p>62. $2\pi rh + 2\pi r^2$ $2\pi(12.8)(57.1) + 2\pi(12.8)^2$</p> <p>71. $\frac{10 - (-5)}{-7 - 9} = \frac{15}{-16}$</p> <p>72. discriminant = $b^2 - 4ac$ in $ax^2 + bx + c = 0$ $(-8)^2 - 4(3)(7)$</p> <p>73. radius = $\frac{1}{2}$ sum of diagonals $r = \frac{1}{2}(2.1\sqrt{2} + 1.1\sqrt{2})$ $A = \pi r^2 - 2.1^2 - 1.1^2 - \frac{1}{2}(2.1)(1.1)$ Substitute the value of r into the equation for Area</p> <p>74. $A = \sqrt{s(s-a)(s-b)(s-c)}$ $s = \text{semiperimeter}$ $s = \frac{22+70+81}{2} = 86.5$ Area = $\sqrt{86.5(86.5-22)(86.5-70)(86.5-81)}$</p> <p>79. For odds beginning with 1 $\left(\frac{n+1}{2}\right)^2 = \left(\frac{763+1}{2}\right)^2$</p>
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