

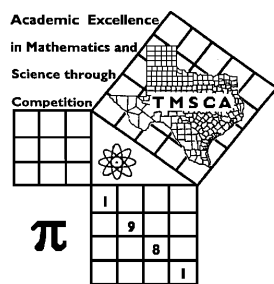
1st Score: _____	2nd Score: _____	3rd Score: _____	_____. ____ <b>Final Score</b>
S & G _____	S & G _____	S & G _____	
Grader: _____	Grader: _____	Grader: _____	

## 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

TEST # 11 ©

FEBRUARY 9, 2019

### 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\*, 1.23x10<sup>0\*</sup>, 1.23x10<sup>1</sup>, 1.23x10<sup>01</sup>, .0190, 1.90x10<sup>-2</sup>

Incorrect: 12.30, 123.0, 1.23(10)<sup>2</sup>, 1.23·10<sup>2</sup>, 1.230x10<sup>2</sup>, 1.23\*10<sup>2</sup>, 0.19, 1.9x10<sup>-2</sup>, 19.0x10<sup>-3</sup>, 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.

**2018-2019 TMSCA Middle School Calculator Test 11**

1.  $5510 - 2690$  ----- 1= \_\_\_\_\_

2.  $27 + 22 + 24$  ----- 2= \_\_\_\_\_

3.  $483 + 267 + 362$  ----- 3= \_\_\_\_\_

4.  $41 - 71 - 61 - 83$  ----- 4= \_\_\_\_\_

5.  $246 - 300 - 409 - 357$  ----- 5= \_\_\_\_\_

6.  $98.1 - 144 - 211 - 158 + 214$  ----- 6= \_\_\_\_\_

7.  $-3.6 - 5.35 + 1.45 - 3.29 - 4.89$  ----- 7= \_\_\_\_\_

8.  $(0.796 - 1.28) + (\pi - 4.61 - 0.775)$  ----- 8= \_\_\_\_\_

9.  $612 \times 183 \times 42$  ----- 9= \_\_\_\_\_

10.  $1830 \times 1810 \times 3600 \times 1120$  ----- 10= \_\_\_\_\_

11. Nat purchased a dozen new knobs for his dresser at \$2.49 each, 6 new drawer slides at \$5.99 each and a can of stain for \$8.99. Calculate the total cost of his purchase not including tax. ----- 11= \$ \_\_\_\_\_

12. Calculate the volume of a box in cubic inches that measures 85 cm by 23 cm by 45 cm. ----- 12= \_\_\_\_\_ in<sup>3</sup>

13. Calculate the fifteenth term in the Fibonacci Sequence. ----- 13= \_\_\_\_\_ INT.

14.  $(381)[185 \times 255 \times 310]$  -----14= \_\_\_\_\_
15.  $(148)[47 \times 66/139]$  -----15= \_\_\_\_\_
16.  $(677 + 375)[456 - 295 - 508]$  -----16= \_\_\_\_\_
17.  $\left[\frac{963}{632}\right][(572/698) - 0.801]$  -----17= \_\_\_\_\_
18.  $\frac{[0.00826/(0.00391)]/1.51}{(205 \times 153)(0.00843)}$  -----18= \_\_\_\_\_
19.  $\left[\frac{(0.00179 + 0.0015)}{549/94}\right]\left[\frac{0.0204}{0.164}\right]$  -----19= \_\_\_\_\_
20.  $\frac{(1950)(2190)}{0.669} (8.95 - 5.59)$  -----20= \_\_\_\_\_
21.  $(12.7)[86/85 \times 113/82] - 12.7$  -----21= \_\_\_\_\_
22.  $\frac{(0.00437 + 0.001 - 0.00217)}{\{(0.403 - 0.0749)/(0.211)\}}$  -----22= \_\_\_\_\_
23.  $\frac{(\pi)(36/79)(79/62)}{(60/74)}$  -----23= \_\_\_\_\_

24. Calculate the number of miles in one million inches. -----24= \_\_\_\_\_ mi.

25. Calculate the sum of the interior angles of a polygon with 22 sides. 25= \_\_\_\_\_ °

26. There are four consecutive odd integers such that six times the sum of the first and third is three more than five times the opposite of the fourth. Calculate the value of the largest integer. -----26= \_\_\_\_\_ INT.

27.  $[3130 - (4550 + 3170)] + [(-0.712)(3830 - 822)]$  -----27= \_\_\_\_\_

28.  $\frac{(\pi + 0.79)(0.0534 + 0.0149)}{(3.91 \times 10^{12})}$  -----28= \_\_\_\_\_

29.  $\frac{(37.2 - 24)(0.422 + 3.9)}{(1.82 \times 10^{11})}$  -----29= \_\_\_\_\_

30.  $(13.6)[(3.23 \times 10^6) - (2.12 \times 10^6)]$  -----30= \_\_\_\_\_

31.  $[286] \left[ \frac{1/\pi}{1/(3.19)} \right]$  -----31= \_\_\_\_\_

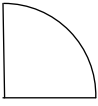

32.  $\frac{1}{0.241} + \frac{1}{(0.129 - 0.0503)}$  -----32= \_\_\_\_\_

33.  $1/(0.00594 - 0.0179) - 1/(-0.0108)$  -----33= \_\_\_\_\_

34.  $\frac{1}{595} - \frac{1}{(464 + 135)}$  -----34= \_\_\_\_\_

35. Levi ran his best 400 meters in 46 seconds. Calculate his speed in miles per hour. -----35= \_\_\_\_\_ mph

36. Calculate how many Pi radians are in  $333^\circ$ . -----36= \_\_\_\_\_

<p style="text-align: center;"><b>QUARTER CIRCLE</b></p> <div style="display: flex; align-items: center; justify-content: center;"> <div style="margin-right: 10px;">32.3</div>  </div> <p style="text-align: center; margin-top: 20px;">Area = ?</p> <p style="margin-top: 20px;">37= _____</p>	<p style="text-align: center;"><b>RECTANGLE</b></p> <div style="display: flex; align-items: center; justify-content: center;">  <div style="margin-left: 10px;"> <p>Perimeter = 320</p> <p>Width = ?</p> </div> </div> <p style="text-align: center; margin-top: 10px;">102.9</p> <p style="margin-top: 20px;">38= _____</p>
---	--

39.  $\left[ \frac{3000 + (1/(2.30 \times 10^{-4}))}{(3030/2070) - 1.21} \right]^2$  -----39= \_\_\_\_\_

40.  $\frac{(21600 + 15600)^2}{(0.0579 - 0.0161)^3}$  -----40= \_\_\_\_\_

41.  $(0.888 + 0.573)^2(8.35 + 77.2)^2$  -----41= \_\_\_\_\_

42.  $\sqrt{7.57} + \sqrt{19.1 + 13.9} - (\pi)\sqrt{24.6}$  -----42= \_\_\_\_\_

43.  $\sqrt{9520 - 6360 + 11300} - \sqrt{46000}$  -----43= \_\_\_\_\_

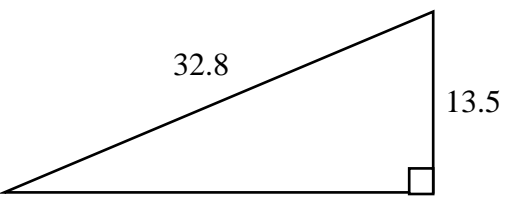
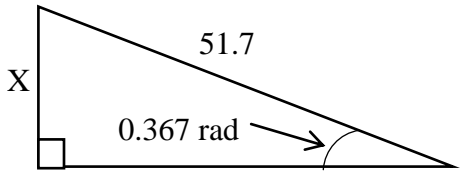
44.  $(1/\pi)\sqrt{\frac{0.0638 + 0.0699}{0.0295 - 0.0148}}$  -----44= \_\_\_\_\_

45.  $\frac{1}{\sqrt{1300 + 3920 + 5330}} + \left(\frac{1}{\sqrt{9.35}}\right)^3$  -----45= \_\_\_\_\_

46.  $\sqrt{0.906 - 160/265} + 1/\sqrt{9.28 + 9.67}$  -----46= \_\_\_\_\_

47. Pressure varies inversely as the volume according to Boyle's Law. When the pressure is 200 Pascals, the volume is 50 liters. Calculate the volume if the pressure is reduced to 130 Pascals. -----47= \_\_\_\_\_ l

48. Two motorcyclists leave the same rest area, one heading east and the other heading west. One rider travels at 68 mph and the other at 72 mph. Calculate how many hours it will take them to be 500 miles apart. -----48= \_\_\_\_\_ hrs.

<p><b>RIGHT TRIANGLE</b></p>  <p style="text-align: center;">Area = ?</p> <p>49= _____</p>	<p><b>RIGHT TRIANGLE</b></p>  <p style="text-align: center;">X = ?</p> <p>50= _____</p>
---	---

51.  $\left[ \frac{\sqrt{\sqrt{1.28 \times 10^5 - 51600}}}{-(0.182 - 0.257)} \right]^2 [0.302 + 0.357]$  ----- 51= \_\_\_\_\_

52.  $\left[ \frac{1290 + 1230 + \sqrt{2.08 \times 10^6 + 5.41 \times 10^6}}{96.2/48.7} \right]^2$  ----- 52= \_\_\_\_\_

53.  $\sqrt{\frac{2.63 \times 10^{-11}}{(0.0862)(0.148)} + \frac{(0.0144 - 0.0146)}{(0.275 + 0.853)}}$  ----- 53= \_\_\_\_\_

54.  $\sqrt{\frac{1/(77.9 - 39.2)}{(134)(16.7 + 61)^4}}$  ----- 54= \_\_\_\_\_

55.  $(0.066)(2.67 \times 10^7)^{1/2} - [(156)(418)]^{1/2}$  ----- 55= \_\_\_\_\_

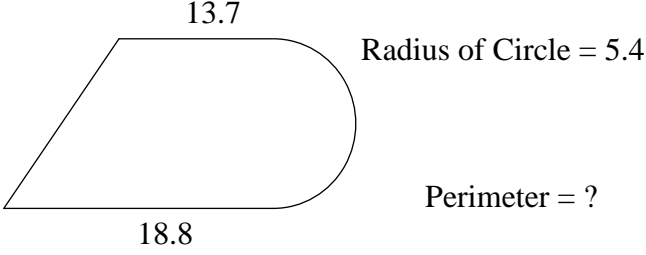
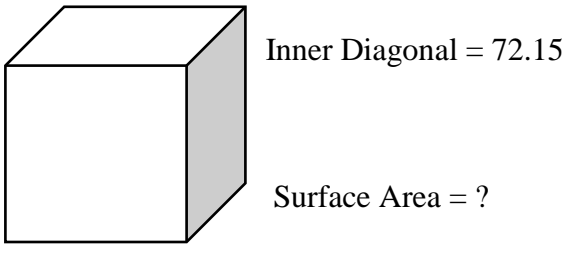
56.  $\sqrt{\frac{(66500)(6840)}{(5.56 \times 10^5)(12600)}} - 0.234 + 0.076$  ----- 56= \_\_\_\_\_

57.  $(\text{deg}) \tan(264^\circ) + (3280/1110)$  ----- 57= \_\_\_\_\_

58.  $\sqrt{\frac{1/(2530 - 1510)}{(2890)(357 + 863)^2}}$  ----- 58= \_\_\_\_\_

59. Kenny rode his bike from his house to the lake at 12 mph. His friend, who met him at the lake, didn't have a bike so they walked back to Kenny's house at 3mph. The round trip took 3 hours. Calculate the distance from Kenny's house to the lake. ----- 59= \_\_\_\_\_ mi.

60. Fran rows her boat downstream with the current 10 miles in 4 hours. Against the current, she rowed her boat upstream the same distance in 5.5 hours. Calculate the speed of the current in miles per hour. ----- 60= \_\_\_\_\_ mph

TRAPEZOID AND SEMICIRCLE	CUBE
 <p style="text-align: right;">Radius of Circle = 5.4</p> <p style="text-align: right;">Perimeter = ?</p> <p>61= _____</p>	 <p style="text-align: right;">Inner Diagonal = 72.15</p> <p style="text-align: right;">Surface Area = ?</p> <p>62= _____</p>

63.  $\frac{24!}{26!} + 0.00384$  -----63= \_\_\_\_\_

64. (deg)  $(134 - 74.8)\tan(133^\circ)$  -----64= \_\_\_\_\_

65.  $(263 - \pi)e^{0.569}$  -----65= \_\_\_\_\_

66. (rad)  $\cos\left[\frac{(40.5)(\pi)}{(63)(46)}\right]$  -----66= \_\_\_\_\_

67. (deg)  $(38800 - 80600)\cos(6.65^\circ) + 9470$  -----67= \_\_\_\_\_

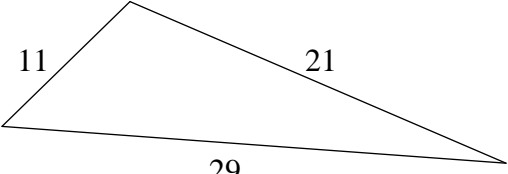
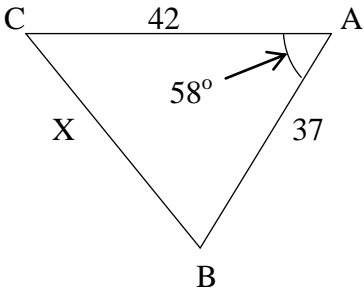
68. (deg)  $\frac{\sin(57.7^\circ)}{\tan(57.7^\circ)}[70.9]$  -----68= \_\_\_\_\_

69. (deg)  $\frac{\sin(94.7^\circ) - \tan(94.7^\circ)}{\sin(94.7^\circ)}$  -----69= \_\_\_\_\_

70.  $(32.4 - 35.6)e^{\pi - 0.723}$  -----70= \_\_\_\_\_

71. The area of a circle is 1271 square inches. Calculate the area of the circle in square inches if the radius is tripled. -----71= \_\_\_\_\_ in<sup>2</sup>

72. Calculate the odds of drawing an ace from a standard deck of cards with no jokers. -----72= \_\_\_\_\_

<p>SCALENE TRIANGLE</p>  <p style="text-align: center;">Area = ?</p> <p>73= _____</p>	<p>SCALENE TRIANGLE</p>  <p style="text-align: right;">X = ?</p> <p>74= _____</p>
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75.  $\frac{(32.5)^{0.215}(2.66)^{0.699}}{(8.67 - 8.55)^{-9}}$  -----75= \_\_\_\_\_
76.  $\ln\left[\frac{345 + 407 + 267}{58.5 + 93.9 - 18.6}\right]$  -----76= \_\_\_\_\_
77.  $(23100)_{10}^{(0.222)(2.12)}$  -----77= \_\_\_\_\_
78.  $\ln\left[\frac{16.2 + 33.5 + 11.7}{1050 - 389 - 383}\right]$  -----78= \_\_\_\_\_
79.  $1 + 3 + 5 + \dots + 649$  -----79= \_\_\_\_\_
80.  $-\frac{1}{(2.29)} + \frac{1}{3(2.29)^3} - \frac{1}{5(2.29)^5} + \frac{1}{7(2.29)^7}$  -----80= \_\_\_\_\_



## 2018-2019 TMSCA Middle School Calculator Test 11 Answer Key

Page 1	Page 2	Page 3	Page 4
1 = 2820 = $2.82 \times 10^3$	14 = $5.57 \times 10^9$	27 = -6730 = $-6.73 \times 10^3$	39 = $8.38 \times 10^8$
2 = 73.0 = $7.30 \times 10^1$	15 = 3300 = $3.30 \times 10^3$	28 = $6.87 \times 10^{-14}$	40 = $1.89 \times 10^{13}$
3 = 1110 = $1.11 \times 10^3$	16 = -365000 = $-3.65 \times 10^5$	29 = $3.13 \times 10^{-10}$	41 = 15600 = $1.56 \times 10^4$
4 = -174 = $-1.74 \times 10^2$	17 = 0.0282 = $2.82 \times 10^{-2}$	30 = $1.51 \times 10^7$	42 = -7.09 = $-7.09 \times 10^0$
5 = -820 = $-8.20 \times 10^2$	18 = 0.00529 = $5.29 \times 10^{-3}$	31 = 290 = $2.90 \times 10^2$	43 = -94.2 = $-9.42 \times 10^1$
6 = -201 = $-2.01 \times 10^2$	19 = $7.01 \times 10^{-5}$	32 = 16.9 = $1.69 \times 10^1$	44 = 0.960 = $9.60 \times 10^{-1}$
7 = -15.7 = $-1.57 \times 10^1$	20 = $2.14 \times 10^7$	33 = 8.98 = $8.98 \times 10^0$	45 = 0.0447 = $4.47 \times 10^{-2}$
8 = -2.73 = $-2.73 \times 10^0$	21 = 5.01 = $5.01 \times 10^0$	34 = $1.12 \times 10^{-5}$	46 = 0.779 = $7.79 \times 10^{-1}$
9 = $4.70 \times 10^6$	22 = 0.00206 = $2.06 \times 10^{-3}$	35 = 19.5 = $1.95 \times 10^1$	47 = 76.9 = $7.69 \times 10^1$
10 = $1.34 \times 10^{13}$	23 = 2.25 = $2.25 \times 10^0$	36 = 1.85 = $1.85 \times 10^0$	48 = 3.57 = $3.57 \times 10^0$
11 = \$74.81	24 = 15.8 = $1.58 \times 10^1$	37 = 819 = $8.19 \times 10^2$	49 = 202 = $2.02 \times 10^2$
12 = 5370 = $5.37 \times 10^3$	25 = 3600 = $3.60 \times 10^3$	38 = 57.1 = $5.71 \times 10^1$	50 = 18.6 = $1.86 \times 10^1$
13 = 610 INT.	26 = 3 INT.		

## 2018-2019 TMSCA Middle School Calculator Test 11 Answer Key

### Page 5

$$\begin{aligned} 51 &= 32400 \\ &= 3.24 \times 10^4 \\ 52 &= 7.08 \times 10^6 \\ 53 &= -0.000132 \\ &= -1.32 \times 10^{-4} \\ 54 &= 2.30 \times 10^{-6} \\ 55 &= 85.7 \\ &= 8.57 \times 10^1 \\ 56 &= 0.0968 \\ &= 9.68 \times 10^{-2} \\ 57 &= 12.5 \\ &= 1.25 \times 10^1 \\ 58 &= 4.77 \times 10^{-7} \\ 59 &= 7.20 \\ &= 7.20 \times 10^0 \\ 60 &= 0.341 \\ &= 3.41 \times 10^{-1} \end{aligned}$$

### Page 6

$$\begin{aligned} 61 &= 61.4 \\ &= 6.14 \times 10^1 \\ 62 &= 10400 \\ &= 1.04 \times 10^4 \\ 63 &= 0.00538 \\ &= 5.38 \times 10^{-3} \\ 64 &= -63.5 \\ &= -6.35 \times 10^1 \\ 65 &= 459 \\ &= 4.59 \times 10^2 \\ 66 &= 0.999 \\ &= 9.99 \times 10^{-1} \\ 67 &= -32000 \\ &= -3.20 \times 10^4 \\ 68 &= 37.9 \\ &= 3.79 \times 10^1 \\ 69 &= 13.2 \\ &= 1.32 \times 10^1 \\ 70 &= -35.9 \\ &= -3.59 \times 10^1 \\ 71 &= 11400 \\ &= 1.14 \times 10^4 \\ 72 &= 0.0833 \\ &= 8.33 \times 10^{-2} \end{aligned}$$

### Page 7

$$\begin{aligned} 73 &= 92.1 \\ &= 9.21 \times 10^1 \\ 74 &= 38.5 \\ &= 3.85 \times 10^1 \\ 75 &= 2.16 \times 10^{-8} \\ 76 &= 2.03 \\ &= 2.03 \times 10^0 \\ 77 &= 68300 \\ &= 6.83 \times 10^4 \\ 78 &= -1.51 \\ &= -1.51 \times 10^0 \\ 79 &= 106000 \\ &= 1.06 \times 10^5 \\ 80 &= -0.412 \\ &= -4.12 \times 10^{-1} \end{aligned}$$

TMSCA 18-19 MS CA Test #11 Solutions to Word and Geometry Problems

**11.**  $12(2.49) + 6(5.99) + 8.99$

**12.**  $V = 85(23)(45) \text{ cm}^3$

If your calculator has a conversion key to change to inches, use it 3 times.  
Otherwise: divide by  $(2.54)^3$

**13.** Start with 1 1. Then add the preceding 2 terms to get the next term. 1 1 2 3 55  
8 13 21 34 55 89 144  
233 377 **610.**

**24.**  
 $1,000,000 \text{ in} \cdot \frac{1 \text{ ft}}{12 \text{ in}} \cdot \frac{1 \text{ mi}}{5280 \text{ ft}}$

**25.**  $180(n-2) = 180(20)$

**26.**  $x = 1^{\text{st}}$ ;  $x+2 = 2^{\text{nd}}$ ;  $x+4 = 3^{\text{rd}}$ ;  $x+6 = 4^{\text{th}}$   
 $6(x+x+4) = 5(-x-6)+3$ . Solve for  $x$ .  $x = -3$ . Largest integer is  $x+6$  or 3

**35.**  
 $\frac{400 \text{ m}}{46 \text{ sec}} \cdot \frac{1 \text{ km}}{1000 \text{ m}} \cdot \frac{1 \text{ mi}}{1.609 \text{ km}} \cdot \frac{3600 \text{ sec}}{1 \text{ hr}}$

**36.**  $\pi \text{ radians} = 180 \text{ degrees}$   
 $333 \text{ deg} \cdot \frac{\pi}{180 \text{ deg}}$   
Answer is left in terms of  $\pi$  so just calculate  $\frac{333}{180}$

**37.**  $\frac{\pi(32.3)^2}{4}$

**38.**  $w = \frac{320 - 2(102.9)}{2}$

**47.**  $P_1(V_1) = P_2(V_2)$   
 $200(50) = 130V$   
 $V = \frac{10000}{130}$

**48.**  $72h + 68h = 500$   
 $h = \frac{500}{72 + 68}$

**49.** Base of triangle =  $\sqrt{32.8^2 - 13.5^2}$   
 $A = \frac{1}{2}(\sqrt{32.8^2 - 13.5^2})(13.5)$

**50.** Put the calculator in radian mode.

$\frac{\sin(.367)}{1} = \frac{x}{51.7}$   
 $x = 51.7 \sin(.367)$

**59.**

	Rate	Time	Dist
riding	12	x	12x
walk	3	3-x	9-3x

$12x = 9 - 3x$   
 $x = \frac{9}{15}$  so distance =  $12\left(\frac{9}{15}\right)$

**60.**

	Rate	Time	Dist
Down	b+c	4	4(b+c)
Up	b-c	5.5	5.5(b-c)

$\begin{cases} 4(b+c) = 10 \\ 5.5(b-c) = 10 \end{cases} \Rightarrow \begin{cases} b+c = \frac{10}{4} \\ b-c = \frac{10}{5.5} \end{cases}$

Solve the system  
 $c = \left(\frac{10}{4} - \frac{10}{5.5}\right) \div 2$

**61.** Draw a height in the trapezoid to form a triangle. The base of the triangle is  $18.8 - 13.7 = 5.1$ .

Hypotenuse of this triangle is the left side of the trapezoid =

$\sqrt{10.8^2 + 5.1^2}$   
 $\frac{1}{2} \text{ Circumference} = \pi(5.4)$   
Perimeter =  $\sqrt{10.8^2 + 5.1^2} + 13.7 + 18.8 + \pi(5.4)$

**62.**  $2d^2 = 2(72.15)^2$

**71.**  $1271(3^2)$

**72.** 4 aces, 48 not aces

Odds =  $\frac{4}{48}$

**73.** Area of a scalene triangle of sides a,b,c and semi-perimeter s

$\frac{\sqrt{s(s-a)(s-b)(s-c)}}{2}$   
 $s = \frac{11 + 21 + 29}{2} = 30.5$   
 $\sqrt{30.5(30.5 - 11)(30.5 - 21)(30.5 - 29)}$

**74.**  
 $x = \sqrt{a^2 + b^2 - 2ab \cos C}$   
 $x =$

$\sqrt{42^2 + 37^2 - 2(42)(37)(\cos 58)}$