

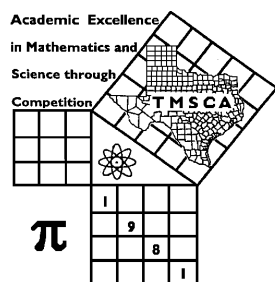
1st Score: _____	2nd Score: _____	3rd Score: _____	_____. ____ <b>Final Score</b>
S & G _____	S & G _____	S & G _____	
Grader: _____	Grader: _____	Grader: _____	

## 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 # 6 ©

DECEMBER 1, 2018

### 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. TI-Nspire and HP Prime 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 6**

1.  $262 - 619$  ----- 1= \_\_\_\_\_

2.  $0.5 + 2.1 + 2.1$  ----- 2= \_\_\_\_\_

3.  $220 - 69 - 215$  ----- 3= \_\_\_\_\_

4.  $20 + 15 - \pi - 18$  ----- 4= \_\_\_\_\_

5.  $33 - 77 + 26 - 86$  ----- 5= \_\_\_\_\_

6.  $52.7 - 29.7 - 179 - 166 + 201$  ----- 6= \_\_\_\_\_

7.  $(1.16 + \pi - 4.49) - (1.64 + 3.61)$  ----- 7= \_\_\_\_\_

8.  $(1.17 - 0.62) + (0.511 - 0.5 - 0.363)$  ----- 8= \_\_\_\_\_

9.  $113 \times 112 \times 338$  ----- 9= \_\_\_\_\_

10.  $4370 \times 660 \times 117 \times 250$  ----- 10= \_\_\_\_\_

11. Priya attempted every problem on her calculator test through number 62. She missed only 2 problems. Calculate her score. ----- 11= \_\_\_\_\_ INT.

12. The mean of 8 numbers is 92.7. If a one hundred and an eighty-one are added to the group of numbers, calculate the new mean. ----- 12= \_\_\_\_\_

13. The area of a square is 1241 square feet. Calculate the perimeter of the square in feet. ----- 13= \_\_\_\_\_ ft.

14.  $(-29)[67 \times 44 \times 28]$  -----14= \_\_\_\_\_

15.  $(101)[130 \times 137/30]$  -----15= \_\_\_\_\_

16.  $\{562/465\} \left[ \frac{207}{82 + 751} \right]$  -----16= \_\_\_\_\_

17.  $\left[ \frac{52}{64} \right] [(42/99) - 0.106]$  -----17= \_\_\_\_\_

18.  $\frac{(485/137) + (77/464)}{(0.0033 - 0.004)}$  -----18= \_\_\_\_\_

19.  $\frac{[0.106/(0.0385)]/0.0736}{(0.02 \times 0.0145)(61.9)}$  -----19= \_\_\_\_\_

20.  $\frac{(38.1)(341)}{216} (6.45 \times 10^{-5} - 2.18 \times 10^{-5})$  -----20= \_\_\_\_\_

21.  $\frac{30.9 + 30.9 + 27.7}{(36.4)(1030)(13.4)}$  -----21= \_\_\_\_\_

22.  $\frac{(2830 \times 4530)/2420}{(2690 \times 4.64) + 11300}$  -----22= \_\_\_\_\_

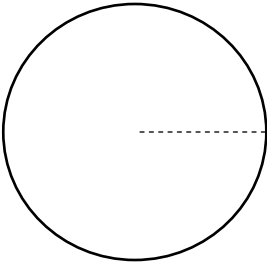
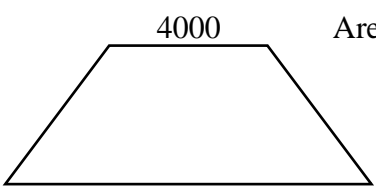
23.  $\frac{(6.85 \times 10^{-4} + 4.53 \times 10^{-4} - 0.0026)}{\{(10.1 - 9.98)/(1630)\}}$  -----23= \_\_\_\_\_

24. Calculate the measure of an exterior angle of a dodecagon. -----24= \_\_\_\_\_ °

25. From 5 pm to midnight the temperature dropped 41 degrees.  
Calculate the average degree change per hour. -----25= \_\_\_\_\_ °

26. A certain pine tree grows at a constant rate of 22 inches per year.  
If the pine tree is 4 feet tall, calculate how many years it will take  
the tree to reach a height of 42 feet. -----26= \_\_\_\_\_ yrs.

27.  $[3800 - (5770 + 4080)] + [(-1.67)(5160 - 3660)]$  -----27= \_\_\_\_\_
28.  $\frac{(0.0959 + 0.155)(0.00936 + 0.00748)}{(2.35 \times 10^{11})}$  -----28= \_\_\_\_\_
29.  $(0.198)[[1.11/(1.39)][0.153/(0.108)]]$  -----29= \_\_\_\_\_
30.  $\frac{1}{4.35} + \frac{1}{(\pi - 4.29)}$  -----30= \_\_\_\_\_
31.  $[103]\left[\frac{1/0.105}{1/(0.1)}\right]$  -----31= \_\_\_\_\_
32.  $\frac{1}{0.0803} + \frac{1}{(\pi)(0.655 - 0.61)}$  -----32= \_\_\_\_\_
33.  $\left[\frac{1/304}{1/149}\right][3.97 \times 10^5]$  -----33= \_\_\_\_\_
34.  $\frac{1}{510} - \frac{1}{(185 + 93.4)}$  -----34= \_\_\_\_\_
35. Calculate  $123^{222}$ . -----35= \_\_\_\_\_
36. The football booster club ordered foam fingers to sell at cost of \$2 each. They sold all but 5 at \$5 each. If the clubs' profit was \$1475, calculate the number of foam fingers they sold. -----36= \_\_\_\_\_ INT.

CIRCLE	TRAPEZOID
 <p style="text-align: right; margin-right: 50px;">Radius = 0.0215</p> <p style="text-align: right;">Circumference = ?</p>	 <p style="text-align: right; margin-right: 50px;">Area = <math>3.33 \times 10^7</math></p> <p style="text-align: right;">Height = ?</p>
37= _____	38= _____

39.  $\left[ \frac{749 + (1/(8.79 \times 10^{-4}))}{(805/681) - 0.735} \right]^2$  -----39= \_\_\_\_\_

40.  $\frac{(67700 + 35200)^2}{(0.0108 - 0.0123)^3}$  -----40= \_\_\_\_\_

41.  $(0.664 + 1.36)^2(0.276 + 0.172)^2$  -----41= \_\_\_\_\_

42.  $\sqrt{(275/362) + 0.411 - 0.36}$  -----42= \_\_\_\_\_

43.  $\sqrt{18.8} + \sqrt{45.3 + 9.94} - (\pi)\sqrt{36.3}$  -----43= \_\_\_\_\_

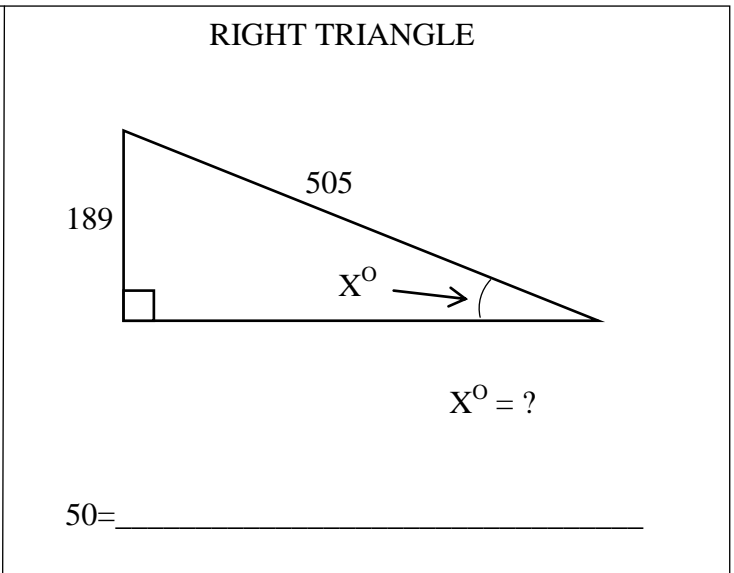
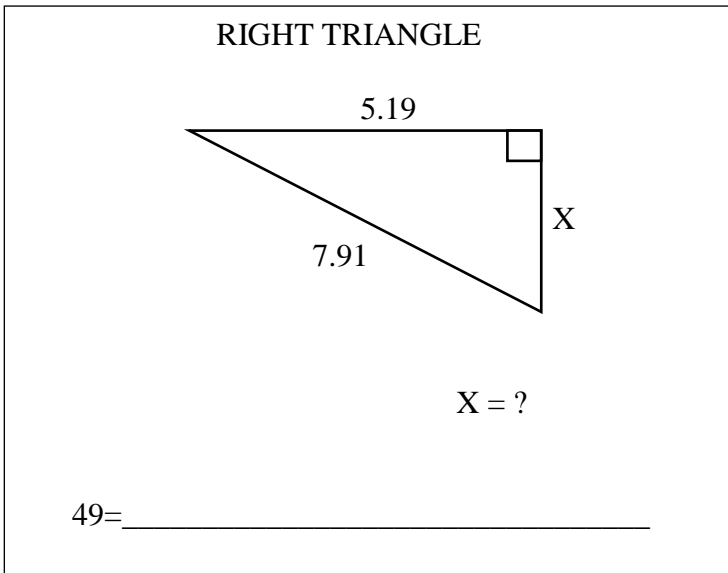
44.  $(5010)\sqrt{2600 + 2620 + 4040}$  -----44= \_\_\_\_\_

45.  $\sqrt{2.52 - 376/184} + 1/\sqrt{0.753 + 3.28}$  -----45= \_\_\_\_\_

46.  $\left[ 4\sqrt{(373/188)(0.23)} \right]^5$  -----46= \_\_\_\_\_

47. Calculate the degree measure of an angle if it is 13° less than three times the measure of its supplement. -----47= \_\_\_\_\_°

48. Calculate the length of the longest diagonal in a regular octagon with a side length of 285.47 inches. -----48= \_\_\_\_\_ in.



51.  $\left[ \frac{25300 + 12400 + \sqrt{6.52 \times 10^8 + 1.23 \times 10^9}}{62.9/178} \right]^2$  -----51= \_\_\_\_\_

52.  $\sqrt{\frac{4.33 \times 10^9}{(322)(5.58 \times 10^5)} + \frac{(12800 - 19800)}{(670 + 278)}}$  -----52= \_\_\_\_\_

53.  $\left[ \frac{687 - 662 + \sqrt{2600/5.54}}{-6.2 + 8.4} \right]^3$  -----53= \_\_\_\_\_

54.  $(6.43)^2 \sqrt{(0.771)/(0.434)} - (8.22 + 45.2)$  -----54= \_\_\_\_\_

55.  $3100 + \sqrt{(3690)(576)} - (3600 + 3610)$  -----55= \_\_\_\_\_

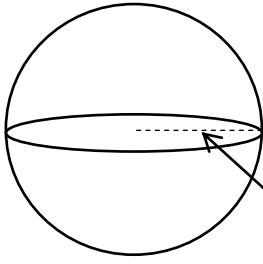
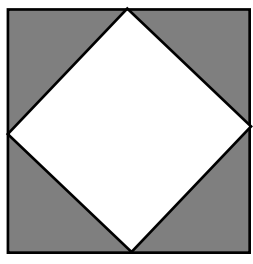
56.  $\sqrt{\frac{1/(18.9 - 16.9)}{(189)(9.11 + 5.73)^6}}$  -----56= \_\_\_\_\_

57.  $\sqrt{\frac{(687)(367)}{(20.1) + (44.4)}} - 69$  -----57= \_\_\_\_\_

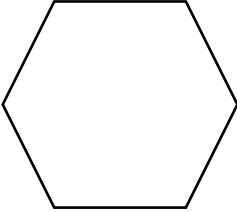
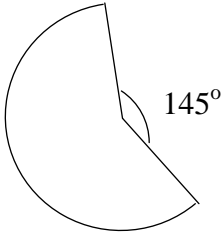
58.  $(\text{rad}) \sin(4.34) + (1.73/14.4)$  -----58= \_\_\_\_\_

59. Calculate the larger of two consecutive negative integers whose product is 8010. -----59= \_\_\_\_\_ INT.

60. Simon makes 5 <sup>3</sup>/<sub>4</sub>% commission on all his sales. He made a total of \$35,289 in sales for the month of June. Calculate how much he made in commission for the month of June. -----60=\$ \_\_\_\_\_

<p style="text-align: center;"><b>SPHERE</b></p>  <p style="text-align: right;">Volume = 929.85</p> <p style="text-align: right;">Radius = ?</p> <p>61= _____</p>	<p style="text-align: center;"><b>SQUARES</b></p>  <p style="text-align: right;">Shaded Area = 692</p> <p style="text-align: right;">Side length of large square = ?</p> <p>62= _____</p>
--	---

63.  $\frac{15!}{12!} + 7!$  -----63= \_\_\_\_\_
64. (deg)  $(555 + 1770)\tan(11.9^\circ)$  -----64= \_\_\_\_\_
65. (deg)  $(7.92 - 4.66)\tan(5.69^\circ)$  -----65= \_\_\_\_\_
66. (rad)  $\frac{\tan(159)}{130/780}$  -----66= \_\_\_\_\_
67. (deg)  $(26400 - 10500)\sin(3.5^\circ) + 780$  -----67= \_\_\_\_\_
68. (deg)  $\frac{\sin(14.4^\circ)}{\tan(14.4^\circ)} [50]$  -----68= \_\_\_\_\_
69. (rad)  $(112)\sin(297)$  -----69= \_\_\_\_\_
70.  $(2250 - 897 + 1080)^{1/3}$  -----70= \_\_\_\_\_
71. A multiple choice test has 25 questions. Each question has 4 choices, A,B,C or D. Calculate the number of possible outcomes for the test. -----71= \_\_\_\_\_
72. Julie has a circular dial combination lock. The dial has 30 numbers on it. Calculate the maximum number of 3 number combinations this lock has if the numbers in the combination cannot be repeated. -----72= \_\_\_\_\_ INT.

<p style="text-align: center;"><b>REGULAR HEXAGON</b></p> <p style="text-align: center;">1295</p>  <p style="text-align: right;">Area = ?</p> <p>73= _____</p>	<p style="text-align: center;"><b>SECTOR OF A CIRCLE</b></p>  <p style="text-align: right;">Radius = 12.91</p> <p style="text-align: right;">Area = ?</p> <p>74= _____</p>
---	--

75.  $\frac{(16)^{0.831}(18.3)^{0.648}}{(10.4 - 3.02)^{-9}}$  ----- 75= \_\_\_\_\_

76.  $\frac{\text{Log}(1.27 \times 10^9 + 8.51 \times 10^8)}{6.91}$  ----- 76= \_\_\_\_\_

77.  $\text{Log} \sqrt{\frac{0.918 - 0.159}{(0.784)(18.3)}}$  ----- 77= \_\_\_\_\_

78.  $\text{Ln} \left[ \frac{419 + 435 + 173}{1400 - 365 - 171} \right]$  ----- 78= \_\_\_\_\_

79.  $1 + 3 + 5 + \dots + 617$  ----- 79= \_\_\_\_\_

80.  $1 + \frac{(0.579)^4}{2} - \frac{(0.579)^6}{6} + \frac{(0.579)^8}{24} - \frac{(0.579)^{10}}{120}$  ----- 80= \_\_\_\_\_



## 2018-2019 TMSCA Middle School Calculator Test 6 Answer Key

Page 1	Page 2	Page 3	Page 4
1 = -357 = $-3.57 \times 10^2$	14 = $-2.39 \times 10^6$	27 = -8560 = $-8.56 \times 10^3$	39 = $1.78 \times 10^7$
2 = 4.70 = $4.70 \times 10^0$	15 = 60000 = $6.00 \times 10^4$	28 = $1.80 \times 10^{-14}$	40 = $-3.14 \times 10^{18}$
3 = -64.0 = $-6.40 \times 10^1$	16 = 0.300 = $3.00 \times 10^{-1}$	29 = 0.224 = $2.24 \times 10^{-1}$	41 = 0.822 = $8.22 \times 10^{-1}$
4 = 13.9 = $1.39 \times 10^1$	17 = 0.259 = $2.59 \times 10^{-1}$	30 = -0.641 = $-6.41 \times 10^{-1}$	42 = 0.900 = $9.00 \times 10^{-1}$
5 = -104 = $-1.04 \times 10^2$	18 = -5290 = $-5.29 \times 10^3$	31 = 98.1 = $9.81 \times 10^1$	43 = -7.16 = $-7.16 \times 10^0$
6 = -121 = $-1.21 \times 10^2$	19 = 2080 = $2.08 \times 10^3$	32 = 19.5 = $1.95 \times 10^1$	44 = 482000 = $4.82 \times 10^5$
7 = -5.44 = $-5.44 \times 10^0$	20 = 0.00257 = $2.57 \times 10^{-3}$	33 = 195000 = $1.95 \times 10^5$	45 = 1.19 = $1.19 \times 10^0$
8 = 0.198 = $1.98 \times 10^{-1}$	21 = 0.000178 = $1.78 \times 10^{-4}$	34 = -0.00163 = $-1.63 \times 10^{-3}$	46 = 0.375 = $3.75 \times 10^{-1}$
9 = $4.28 \times 10^6$	22 = 0.223 = $2.23 \times 10^{-1}$	35 = $9.10 \times 10^{463}$	47 = 132 = $1.32 \times 10^2$
10 = $8.44 \times 10^{10}$	23 = -19.9 = $-1.99 \times 10^1$	36 = 495 INT.	48 = 746 = $7.46 \times 10^2$
11 = 292 INT.	24 = 30.0 = $3.00 \times 10^1$	37 = 0.135 = $1.35 \times 10^{-1}$	49 = 5.97 = $5.97 \times 10^0$
12 = 92.3 = $9.23 \times 10^1$	25 = -5.86 = $-5.86 \times 10^0$	38 = 4000 = $4.00 \times 10^3$	50 = 22.0 = $2.20 \times 10^1$
13 = 141 = $1.41 \times 10^2$	26 = 20.7 = $2.07 \times 10^1$		

## 2018-2019 TMSCA Middle School Calculator Test 6 Answer Key

### Page 5

$$51 = 5.26 \times 10^{10}$$

$$52 = -2.47 \\ = -2.47 \times 10^0$$

$$53 = 9540 \\ = 9.54 \times 10^3$$

$$54 = 1.69 \\ = 1.69 \times 10^0$$

$$55 = -2650 \\ = -2.65 \times 10^3$$

$$56 = 1.57 \times 10^{-5}$$

$$57 = -6.48 \\ = -6.48 \times 10^0$$

$$58 = -0.811 \\ = -8.11 \times 10^{-1}$$

$$59 = -89 \text{ INT.}$$

$$60 = \$2029.12$$

### Page 6

$$61 = 6.05 \\ = 6.05 \times 10^0$$

$$62 = 37.2 \\ = 3.72 \times 10^1$$

$$63 = 7770 \\ = 7.77 \times 10^3$$

$$64 = 490 \\ = 4.90 \times 10^2$$

$$65 = 0.325 \\ = 3.25 \times 10^{-1}$$

$$66 = -16.5 \\ = -1.65 \times 10^1$$

$$67 = 1750 \\ = 1.75 \times 10^3$$

$$68 = 48.4 \\ = 4.84 \times 10^1$$

$$69 = 111 \\ = 1.11 \times 10^2$$

$$70 = 13.4 \\ = 1.34 \times 10^1$$

$$71 = 1.13 \times 10^{15}$$

$$72 = 24360 \text{ INT.}$$

### Page 7

$$73 = 4360000 \\ = 4.36 \times 10^6$$

$$74 = 313 \\ = 3.13 \times 10^2$$

$$75 = 4.28 \times 10^9$$

$$76 = 1.35 \\ = 1.35 \times 10^0$$

$$77 = -0.638 \\ = -6.38 \times 10^{-1}$$

$$78 = 0.173 \\ = 1.73 \times 10^{-1}$$

$$79 = 95500 \\ = 9.55 \times 10^4$$

$$80 = 1.05 \\ = 1.05 \times 10^0$$

TMSCA 18-19 MS CA Test #6 Solutions to Word and Geometry Problems

11.  $62(5) - 2(9)$

12.  $\frac{92.7(8) + 181}{10}$

13.  $4\sqrt{1241}$

24.  $\frac{360}{12}$

25.  $\frac{-41}{7}$

26. The tree needs to grow 42-4 or 38 feet.

$$22 \text{ in} = \frac{22}{12} \text{ ft.}$$

$$38 \div \frac{22}{12}$$

35.  $123^{222}$ .

222  123

*(Look at the digits to the left of the decimal. This gives 463 for the exponent. Write down  $10^{463}$ .) Then punch 463*

*(This gives 9.10 E0 which is the first part of your answer.*

*The answer is  $9.10 \times 10^{463}$ ).*

*This is done on the HP RPN calculator.*

36.  $x = \# \text{ sold};$

$x + 5 = \# \text{ purchased}$

$$5x - 2(x + 5) = 1475$$

$$3x - 10 = 1475$$

$$x = \frac{1485}{3}$$

37.  $2\pi r = 2\pi(.0215)$

38.  $A = \frac{1}{2}(b_1 + b_2)h$

$$h = A \div \left[ \frac{1}{2}(b_1 + b_2) \right] = 3.33 \times 10^7 \div \left[ \frac{1}{2}(4000 + 12666) \right]$$

47.  $x = \text{angle};$

$180 - x = \text{supplement}$

$$x = 3(180 - x) - 13$$

$$x = 540 - 3x - 13$$

$$4x = 527; x = \frac{527}{4}$$

48. With an even number of sides, the longest diagonal can be found using:

$$\frac{\text{side length}}{\sin\left(\frac{180}{n}\right)} = \frac{285.47}{\sin\left(\frac{180}{8}\right)}$$

49.  $\sqrt{7.91^2 - 5.19^2}$

50.  $\text{asin}\left(\frac{189}{505}\right)$

59. You could solve the following equation for  $x$ , using the quadratic formula:

$$x(x + 2) = 8010$$

OR find:  $\sqrt{8010} \approx 89.4986$

The integers must be -89 and -90. The larger is -89.

60.  $35289(.0575)$

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

$$929.85 = \frac{4}{3}\pi r^3$$

$$r = \sqrt[3]{\frac{929.85 \cdot 3}{4\pi}}$$

62. The shaded and unshaded areas are equal. The total area =  $692(2)$

Side =  $\sqrt{692(2)}$

71.  $4^{25}$

72.  $30(29)(28)$

73. 6 equilateral triangles =

$$6 \left[ \frac{1295^2 \sqrt{3}}{4} \right]$$

74.  $360 - 145 = 215$

Area of sector:

$$\frac{215}{360} \pi (12.91)^2$$