CONTESTANT ID #: _____

GRADE LEVEL: _____

PSIA
Private Schools
Interscholastic
Association

Calculator Applications
DISTRICT Contest
Grades 6-8

2017

Grader #1 Score: _____

Grader #2 Score:_____

Grader #3 Score: _____

FINAL SCORE: _____

(Please do not open test until the signal is given to begin.)

1:    170 + 523 + 340   --- 1=_____

2:    368 + 319 – 840 – 115   --------------------------------------- 2=_____

3:    228 + 231 – 229 + 302   --------------------------------------- 3=_____

4:    571000 + 95500 – 98600 + 86000   --------------------------- 4=_____

5:    –8.93 – 6.07 – 60.7 – 0.528   -------------------------------- 5=_____

6:    7030 + 13800 – 9220 – 7760 + 57200   ---------------------- 6=_____

7:    –0.424 + 0.00238 – 0.382 + 0.00264 – 0.00643   ----------- 7=_____

8:    531 + 677 + 63.9 – 9.28 + 245   ------------------------------ 8=_____

9:    $\pi \times 9.12 \times 9.13$ -- 9=_____

10:    0.229 x 226 x 4.07 x 2.59   --------------------------------- 10=_____

11:    What is the product of π, $\sqrt{5}$, and one-seventh?   ------------------- 11=_____

12:    Kasey baked six dozen cookies to take to school. If each classmate received
two cookies, how many classmates does Kasey have? --------------------------- 12=_____(integer)

13:    Find the remainder when 1256 is divided by 37. ------------------------ 13=_____(integer)

14:     $782 + [948 / \pi + 100]$ ------------------------------------- 14=_____

15:     $940 + [136 + 66.5 / 7.02]$ ---------------------------------- 15=_____

16:     $0.418 \times 5.17 \times 0.525$ -------------------------------- 16=_____

17:     $\left[\dfrac{2480}{12600}\right][2720 + 526000 + 9400]$ ----------------- 17=_____

18:     $\left[\dfrac{26.4}{382}\right][387 - 93.5 - 48.9 - 7100]$ ---------------- 18=_____

19:     $\left[\dfrac{0.475 / 4.74}{-0.878 + 0.473}\right]\{0.906 + 0.931 + 0.476\}$ --------------- 19=_____

20:     $\left(3.11 \times 10^5 - 4.92 \times 10^5\right) / 9.74$ ---------------------- 20=_____

21:     $\left[\dfrac{(93)(3.66)}{(0.223)(0.403)} + 6.55\right](40.8 + 0.459)$ ------------------- 21=_____

22:     $\left[\dfrac{(30 + 893)(-6390 - 86.3)}{1.98 \times 10^7}\right](73.7 - 966)$ ---------------- 22=_____

23:     $\dfrac{(-106000 + 48900) - (-730000 - 8000)}{(222000 / 3260)} + \dfrac{950000}{7490 - 7450}$ ------------- 23=_____

24:     What is the average of 37, 42, 61, 32, 48, and 5? ----------------------- 24=_____

25:     Each DVD costs \$15.99 and each video game costs \$27.99. What is the total
cost of six video games and eight DVDs? -------------------------------------- 25=\$_____

26:     A car travels at 64 mph. How long will it take to travel 30 miles? ---------- 26=_____min

27: $\dfrac{5.66 \times 10^{-10}}{1.26 \times 10^{-10}} - \dfrac{4.11 \times 10^{-10}}{8.98 \times 10^{-8}} + 45.6$ ---------------------------------- 27=_____

28: $[-0.00306 + (0.394)(1.56)(0.00373)] + [0.0053 + 0.0967]$ ------------- 28=_____

29: $(0.346)(0.697)(5.05)(5.29 + 1.79)(-214 - 942)$ ----------------------- 29=_____

30: $\dfrac{1/47400}{1/3250} + \dfrac{1/49000}{1/339}$ -- 30=_____

31: $\left[1.65 \times 10^5 - 1.84 \times 10^7\right]\left(\dfrac{1}{1.74 \times 10^5}\right)$ ------------------------ 31=_____

32: $\left[\dfrac{(75500) - (1/0.0319)}{(1/0.0633) + 618}\right](45.3)$ ------------------------- 32=_____

33: $1/(35.7 + 896 - 647) - 1/(930 - 8170)$ -------------------------- 33=_____
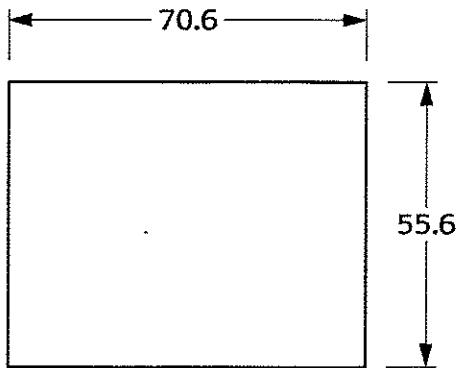
34: $\dfrac{1}{8470} + \dfrac{1}{77600} + \dfrac{1}{71700 + 4170}$ -------------------------------- 34=_____

35: Angela scored 490 on the math section of the SAT the first time she took it and 560 the second time she took it. What was the percent increase in her score? - 35=_____ %

36: The length of a square is increased from 21 cm to 21.4 cm. What is the increase in area? --- 36=_____ cm^2

---

37. RECTANGLE

70.6

55.6
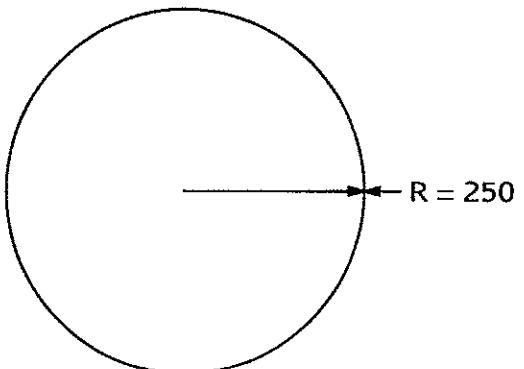
Perimeter = ?

37. _____

---

38. CIRCLE

R = 250

Area = ?

38. _____

39:     $(6.73)^2 + (-49.1)^2 + (46.9 + 9.89)^2$ -------------------------------------- 39=_____

40:     $(-9.13 - 0.374 + 4.66)^2 / (9.36 - 1.81 + 0.647)^2$ ------------------ 40=_____

41:     $\sqrt{\dfrac{3.46 - 875}{8.1 - 670}}$ -- 41=_____

42:     $\sqrt{130} + \sqrt{211 + 60700} + \sqrt{50200 - 43000}$ ------------- 42=_____

43:     $(79.8)\sqrt{850 + 9140} + \sqrt{906 + 1230}$ --------------------- 43=_____

44:     $\sqrt{\dfrac{(1930)(4770)(9410)}{(8090)(54200)}} - \sqrt{\dfrac{1}{6.74}}$ -------------------- 44=_____

45:     $\dfrac{\left(2.72\times10^5 + 8.77\times10^5\right)^{1/2}}{8.51\times10^2} + (12.5)(43.7)$ --------------------- 45=_____
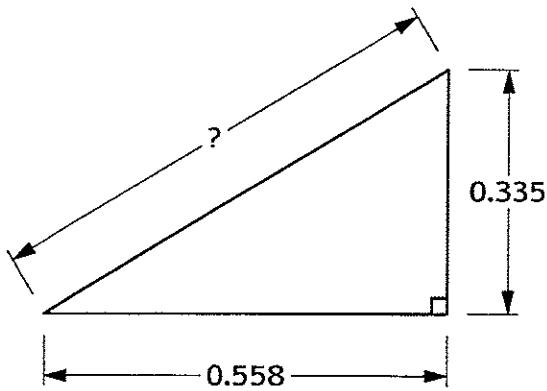
46:     $1/\sqrt{5.26 + 8.88} + 1/\sqrt{0.875 + 3.47}$ -------------------- 46=_____

47:     If $x + y = 72$ and $xy = 996$, what is the value of $x^2 + y^2$? ------------------ 47=_____

48:     Emma can paint 100 ft^2 of fencing in 45 minutes. Julia can paint 100 ft^2 of fencing in 52 minutes. How long will it take them working together to paint both sides of a 6-ft tall fence that is 80 feet long? ----------------------------------- 48=_____ hr
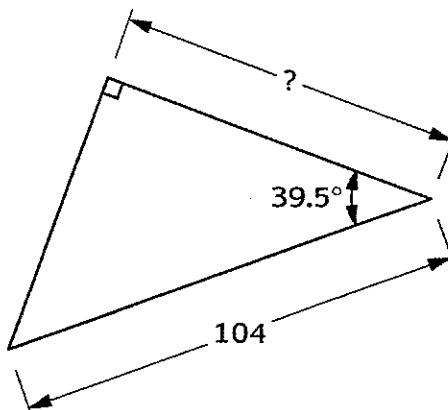
49.   RIGHT TRIANGLE

49. _____

50.   RIGHT TRIANGLE

50. _____

51:    $\dfrac{\sqrt{0.817} - \sqrt{0.777}}{(14.9 + 0.201 - 0.224)^2}$ --------------------------------------- 51=_____

52:    $\dfrac{(271 - 743)^3}{\sqrt{3.94 \times 10^{12}}} + \dfrac{1}{1/1940}$ ------------------------------------ 52=_____

53:    $(8.79)^2 \sqrt{2.78 - 0.783} - (6.26)^3 \sqrt{0.651}$ ------------------------ 53=_____

54:    $(0.0808 + 0.979 - 0.0754)^2 (0.178 - 3.19 - 0.014)^2$ ------------------ 54=_____

55:    $\sqrt{\dfrac{(68800) + (8710)}{(3000) - (-2590)}} - \dfrac{8.52 \times 10^{-3}}{1.39 \times 10^{-3}}$ --------------------------------- 55=_____

56:    $1/(0.0713)^2 + (2.31 - 0.479)\left(4.59 - 8.16 \times 10^3\right)$ ------------------------ 56=_____

57:    $\left[\dfrac{738000 / 30300}{33000 / 95700}\right]^2 - \dfrac{1/(4740 - 8320)}{1/(466000 + 82400)}$ ------------------------ 57=_____
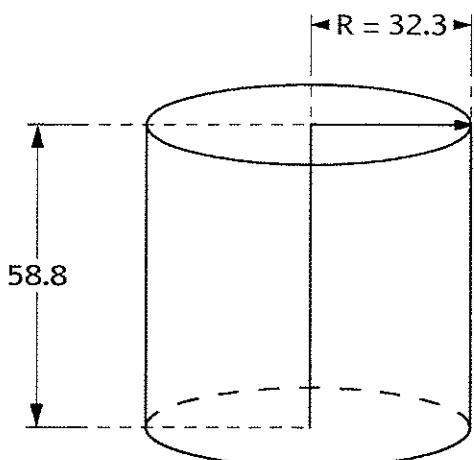
58:    $\sqrt[3]{\dfrac{0.176 + 0.909 + 2.42}{1.9}} + (0.255)(0.257)$ --------------------------- 58=_____

59:    Alejandra has two urns. The first urn has 3 gold coins and 2 white coins. The second urn has 5 gold coins and 20 white coins. One coin is picked at random from each urn. What is the probability of getting two gold coins? --------------------- 59=_____

60:    Calculate 850^{1706}. --- 60=_____

61. RIGHT CIRCULAR CYLINDER

R = 32.3

58.8
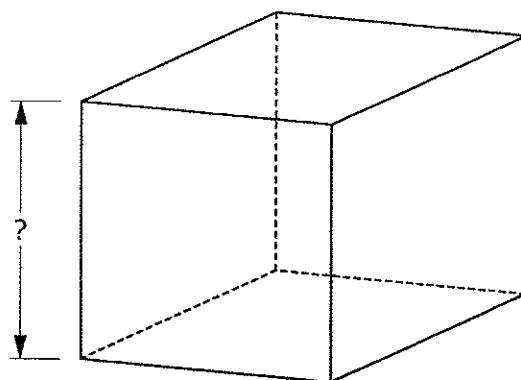
Volume = ?

61. _____

62. CUBE

?

Volume = 4830

62. _____

63: $\sqrt[4]{\dfrac{99900 + 4420}{0.0553}} + (72200)^{0.752}$ ----------------------------- 63=_____

64: (deg) $\sin(51° - 21°)$ ----------------------------- 64=_____

65: (deg) $\cos(331°) + \cos(306°) + \dfrac{516}{853}$ ----------------------------- 65=_____

66: (rad) $(1430)\tan(0.68\pi) - (160)\tan(1.31\pi)$ ----------------------------- 66=_____

67: (rad) $\dfrac{\tan(0.54) + \sin(0.905)}{(1.24)\cos(0.782)}$ ----------------------------- 67=_____

68: $(0.363 + 3.06 + 0.381)^{0.423 - 0.576} + 3.76 \times 10^{-1}$ ----------------------------- 68=_____

69: $\left(4.41 \times 10^5 + 3.48 \times 10^5\right)^8 \left(1.58 \times 10^{-45}\right)$ ----------------------------- 69=_____
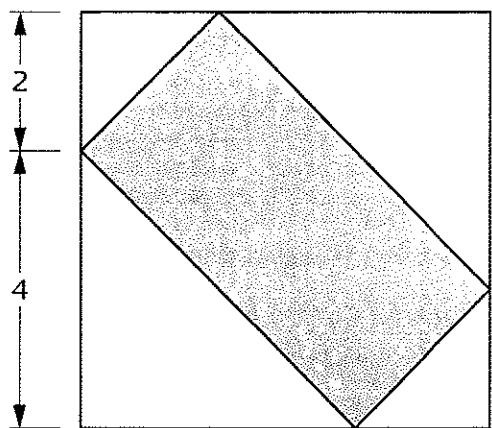
70: (rad) $\left[\dfrac{\sin(2.25) + \tan(0.496)}{\cos(0.995) + \sin(-0.503)}\right][\cos(-0.194)]$ ----------------------------- 70=_____

71: A parabola passes through the points $(2, 18)$, $(3, 11)$, and $(5, 12)$. What is the y-intercept of this parabola? ----------------------------- 71=_____

72: The population of a city is modeled by the function $P(x) = 1200(1.0278)^x$, where x is the number of years since 2010. What is the (positive) difference in population between 2010 and 2015? ----------------------------- 72=_____

73. SQUARE AND RECTANGLE
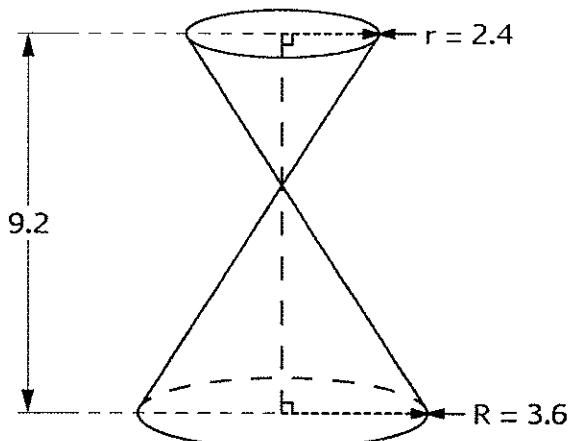
$$\frac{\text{Shaded Area}}{\text{Square Area}} = ?$$

73. _____

74. SIMILAR CONES

$r = 2.4$

9.2

$R = 3.6$

Total Volume = ?

74. _____

75: $\text{Ln}\left[\dfrac{427000 - 21900 + 4250}{(833000)(9500)}\right]$ ---------------------------- 75= _____

76: $\dfrac{\text{Log}\left[7.62 \times 10^{-5} - 6.28 \times 10^{-6}\right]}{0.0161 - (0.0828)(19)}$ ---------------------------- 76= _____

77: $\sqrt{e^{0.508}(962)^{0.832}\left[3560 + 1080 - \text{Ln}(9760)\right]^{0.585}}$ ------------------- 77= _____

78: $\dfrac{1}{3}\text{Ln}\left[\left(\dfrac{4.52 \times 10^{-6} + 8.38 \times 10^{-6}}{3.2 \times 10^{-7}}\right)^{3}\right]$ ---------------------------- 78= _____

79: $1 - 0.121 + \dfrac{(0.121)^2}{2} - \dfrac{(0.121)^3}{6} + \dfrac{(0.121)^4}{24}$ ---------------------- 79= _____

80: (rad) $\sin(19.1)\cos(29) + \cos(19.1)\sin(29)$ ---------------------- 80= _____

ANSWERS

1= 1030
1.03×10^3

2= −268
-2.68×10^2

3= 532
5.32×10^2

4= 654000
6.54×10^5

5= −76.2
-7.62×10^1

6= 61100
6.11×10^4

7= −0.807
-8.07×10^{-1}

8= 1510
1.51×10^3

9= 262
2.62×10^2

10= 546
5.46×10^2

11= 1.00
1.00×10^0

12= 36 (integer)

13= 35 (integer)

14= 1180
1.18×10^3

15= 1090
1.09×10^3

16= 1.13
1.13×10^0

17= 106000
1.06×10^5

18= −474
-4.74×10^2

19= −0.572
-5.72×10^{-1}

20= −18600
-1.86×10^4

21= 157000
1.57×10^5

22= 269
2.69×10^2

23= 33700
3.37×10^4

24= 37.5
3.75×10^1

25= $ 295.86

26= 28.1
2.81×10^1

27= 50.1
5.01×10^1

28= 0.101
1.01×10^{-1}

29= −9970
-9.97×10^3

30= 0.0755
7.55×10^{-2}

31= −105
-1.05×10^2

32= 5390
5.39×10^3

33= 0.00365
3.65×10^{-3}

34= 0.000144
1.44×10^{-4}

35= 14.3
1.43×10^1

36= 17.0
1.70×10^1

37= 252
2.52×10^2

38= 196000
1.96×10^5

ANSWERS

39= 5680 5.68×10^3

40= 0.349 3.49×10^{-1}

41= 1.15 1.15×10^0

42= 343 3.43×10^2

43= 8020 8.02×10^3

44= 13.7 1.37×10^1

45= 548 5.48×10^2

46= 0.746 7.46×10^{-1}

47= 3190 3.19×10^3

48= 3.86 3.86×10^0

49= 0.651 6.51×10^{-1}

50= 80.2 8.02×10^1

51= 0.000101 1.01×10^{-4}

52= 1890 1.89×10^3

53= -88.7 -8.87×10^1

54= 8.87 8.87×10^0

55= -2.41 -2.41×10^0

56= -14700 -1.47×10^4

57= 5140 5.14×10^3

58= 1.29 1.29×10^0

59= 0.120 1.20×10^{-1}

60= 3.87×10^{4997}

61= 193000 1.93×10^5

62= 16.9 1.69×10^1

63= 4540 4.54×10^3

64= 0.500 5.00×10^{-1}

65= 2.07 2.07×10^0

66= -2490 -2.49×10^3

67= 1.58 1.58×10^0

68= 1.19 1.19×10^0

69= 237 2.37×10^2

70= 20.7 2.07×10^1

71= 47.0 4.70×10^1

72= 176 1.76×10^2

73= 0.444 4.44×10^{-1}

74= 97.1 9.71×10^1

75= -9.87 -9.87×10^0

76= 2.67 2.67×10^0

77= 265 2.65×10^2

78= 3.70 3.70×10^0

79= 0.886 8.86×10^{-1}

80= -0.828 -8.28×10^{-1}