1. P={314159265}. (product of roots)=G/A=range/median=(9-1)/4=2 **B**
2. There are a total of 4!=24 arrangements. \_ \_ \_ \_ Each of the digits (1,2,3,4) appear 6 times per digit place (since if you were to fix one digit place, then 3!=6 arrangements can be made). Thus, the sum of S is 6(1111+2222+3333+4444)=66660. The mean is 66660/24=2777.5 **B**
3. From I, you get that for sure.

From II, you get

From III, you get from mean,

from IQR, and from range.

Solving the system, you get . The product of the number is 66150. **D**

1. x and y were not stated to be independent. **E**
2. Since the data is concave down, would linearize the data. **A** or **C**
3. **A**
4. I is false because correlation doesn’t imply causation. II is false because r=0 via linear regression implies no LINEAR relationship, not no relationship at all. III is true by definition. IV is true mathematically. V is true via formula. VI is false because standard deviation is always non-negative. 3 **B**

Let X represent the event that Snow knocks out Scales first. F represents failure and S represents success:

So

**C**

1. and . Solving the system, you get . The variance equals 247.25. **C**
2. The Venn Diagram below is the solution:

30

4

15

4

20

7

43

37

8

10

N

M

K

C

The Venn Diagram above is from solving the system:

c+d+10+4+4+7+30=117

c+d+b+4+10+37+15=162

c+b+4+4+8+37+10=116

b+a+4+8+10+7+4=71

solving yields (a,b,c,d)=(4,34,19,43)

a+2b+3c+4d=301 **B**

1. **B**
2. **A**
3. f(x) is a quarter circle => **C**
4. A, C, and D follow from the definition of independence. B is just the definition of union (which is not sufficient enough for independence)
5. Use geometry:
6. I is true by formula. II is false; sample is subset, not superset. III is true by definition. IV is false; Chi-Squared distribution is right-skewed. V is false by formula. 2 **B**
7. 2014 in base 3 is 2202121. So, probabilities of 0, 1, and 2 are 1/7, 2/7, and 4/7. So, expect count:

|  |  |
| --- | --- |
| Digit | Frequency |
| 0 | 300/7 |
| 1 | 600/7 |
| 2 | 1200/7 |

**D**

1. Confidence interval is unreliable. Since population mean is known, there’s no reason to use confidence interval. **E**
2. A is geometric – false; B is binomial – false; C is hypergeometric - false; D is geometric – false. None are true. **E**
3. **C or E**
4. The summation is just (Binomial Expected Value for n=2014, p=.2)+(Geometric Expected Value for p=.2)=(2014)(.2)+1/(.2)=407.8 **A**
5. z-score for rejection:

raw score for rejection:

Power= **A**

1. **D**
2. The expected count for No Drug with No Effect is (11)(10)/23=4.78…<5 so conditions of test are not met. **C**
3. Run linear regression: a=3/2, b=13/6, a+b=11/3 **B**
4. **A**
5. r=0.8 or r=-0.8. Adding the two equals 0. **A**
6. Systematic sampling **A**
7. Since the jersey numbers describe positions, they are qualitative. **D**