**Question 1:**

IQR: Q1 = 49 and Q3 = 56.5. The IQR is Q3 - Q1 = 56.5 - 49 = 7.5.

Mean: 744 / 13 = 57.23

Std: variance= 963.3077/13 = 74.1775, therefore std = 8.613

Range: 77 - 48 = 29

**Question 2:**

Correlation

|  |  |  |
| --- | --- | --- |
| x̄ = | 45+49+53+49+43+45+52+53+58+60+61+70 | = 53.1667 |
| 12 |

|  |  |  |
| --- | --- | --- |
| ȳ = | 4+6+8+7+8+9+11+14+13+15+17+20 | = 11 |
| 12 |

Σ(x - x̄)2 = (45-53.17)2+(49-53.17)2+(53-53.17)2+(49-53.17)2+(43-53.17)2+(45-53.17)2+(52-53.17)2+(53-53.17)2+(58-53.17)2+(60-53.17)2+(61-53.17)2+(70-53.17)2 = 687.6667  
  
Σ(y - ȳ)2 = (4-11)2+(6-11)2+(8-11)2+(7-11)2+(8-11)2+(9-11)2+(11-11)2+(14-11)2+(13-11)2+(15-11)2+(17-11)2+(20-11)2 = 258  
  
Σ(x - x̄)(y - ȳ) = (45-53.17)\*(4-11)+(49-53.17)\*(6-11)+(53-53.17)\*(8-11)+(49-53.17)\*(7-11)+(43-53.17)\*(8-11)+(45-53.17)\*(9-11)+(52-53.17)\*(11-11)+(53-53.17)\*(14-11)+(58-53.17)\*(13-11)+(60-53.17)\*(15-11)+(61-53.17)\*(17-11)+(70-53.17)\*(20-11) = 377

|  |  |  |
| --- | --- | --- |
|  |  |  |

|  |  |
| --- | --- |
| r = | Σ(xi - x̄)(yi - ȳ)/ |
| √(Σ( xi - x̄)2Σ(yi - ȳ)2 ) |

|  |  |  |
| --- | --- | --- |
| r = | 377/ | = **0.895** |
| √(687.6667\*258) |

find the equation of linear regression:

Sum of *X* = 638  
Sum of *Y* = 132  
Mean *X* = 53.1667  
Mean *Y* = 11  
Sum of squares (*SSX*) = 687.6667  
Sum of products (*SP*) = 377  
  
Regression Equation = ŷ = *bX* + *a*  
  
*b* = *SP*/*SSX* = 377/687.67 = 0.54823  
  
*a* = MY - *b*MX = 11 - (0.55\*53.17) = -18.1476  
  
ŷ = 0.54823*X* - 18.1476

**Question 3**

r = ∑(X - mean(X))(Y - mean(Y)) / √[∑(X - mean(X))^2 ∑(Y - mean(Y))^2]

Calculating the Pearson correlation coefficient for each pair of boys, we get:

r(X,Y) = 0.6

r(X,Z) = 0.4

r(Y,Z) = 0.8

Based on these results, we can conclude the following:

* Boy Y is the best judge, as he has the highest Pearson correlation coefficient (0.8) with the true ranks of the objects.
* Boys Y and Z are most in agreement, as they have the highest Pearson correlation coefficient (0.8) with each other.

**Question 4**

(42 + 39 + 53.3 + 37.79) / (59.28 + 49.99 + 62.2 + 48.2) = (172.09) / (219.47) = 0.7844

This means that, according to the Laspeyres Price Index, the basket of goods in June 2017 was 22.56% cheaper than in June 2016.

**Question 5**

P(4) = (8 C 4) \* (0.65^4) \* (1-0.65)^(8-4) = (70) \* (0.275625) \* (0.35^4) = 0.2458

**Question 6**

z = (3.75 - 5) / (0.5) = -2

The area under the curve to the right of -2 is approximately 2.28%. This means that you would expect approximately 2.28% of painters to take more than 3 hours and 45 minutes to complete the task.

**Question 7**

P(1) = (5^1 \* e^(-5)) / 1! = (5 \* 0.00674) = 0.03370

**Top of Form**