Date

Hours formula

1) Min-Max Normalization: - ~~value~~ - [0,1]

$$\frac{\text{Value} - \min(\text{New max} - \text{new min})}{\max - \min} + 0$$

2) Z-Score Normalization = $\frac{\text{value} - \text{mean}}{\text{S.D}}$

3) Relative frequency = ~~frequency~~ $\frac{\text{Total Frequency}}{\text{Sample size}}$

4) Mean = $\frac{\Sigma x_i}{N} = \frac{x_1 + x_2 + x_3 \cdots x_N}{N}$

5) Median = Middle value of sorted data.

6) Expected value = ~~mp~~ $\Sigma n_i p_i$

7) Median = $L_1 + \left(\frac{(n/2) - \Sigma(\text{freq})_i}{\text{freq median}}\right) \cdot \text{width}$

L_1 = Lower bound of median interval
n - Numbers of values
$\Sigma(\text{freq})_i$ is sum of frequencies
freq median = median interval freq
width = Width of median interval

8) Mean - mode = 3(mean - median)

9) Interquartile range $= Q_3 - Q_1$

10) ~~Inner~~ Lower inner fence $= Q_1 - 1.5\,IQR$
Lower outer fence $= Q_1 - 3(IQR)$
Upper inner fence $= Q_3 - 1.5\,IQR$
Upper outer fence $= Q_3 - 3\,IQR$

11) Standard deviation $\sigma = \sqrt{\sum_{i=1}^{N} \frac{(x_i - \bar{x}_i)^2}{N}}$

12) Variance $= \sigma^2$

13) Covariance $(x, y) = \frac{\Sigma(x_i - \bar{x})(y_i - \bar{y})}{N}$

16) Regression $a + bx$

$$\frac{a(\Sigma y)(\Sigma x^2) - (\Sigma x)(\Sigma xy)}{n(\Sigma x^2) - (\Sigma x)^2}$$

$$b = \frac{n\Sigma(xy) - (\Sigma x)(\Sigma y)}{n(\Sigma x^2) - (\Sigma x)^2}$$

17) Coeffecient of correlation $r = \frac{n(\Sigma xy) - (\Sigma x)(\Sigma y)}{\sqrt{[n\Sigma x^2 - (\Sigma x)^2][n\Sigma y^2 - (\Sigma y)^2]}}$

No need to remember ~~17~~ Regression of a

as $a = \frac{\Sigma y - b(\Sigma x)}{N}$

18) Correlation coefficient = $\frac{\text{Covariance}(x,y)}{\sigma x \, \sigma y}$

19) Mean deviation = $\frac{1}{N} \sum_{i=1}^{n} x_i f_i$

20) $Q_r = l_1 + \frac{r\left(\frac{N}{4}\right) - C}{f} \cdot (l_2 - l_1)$

~~l_1 = lower~~ l_1, l_2 = Lower, Upper limit of quartile class

C = Cumulative Frequency

F = The Frequency of class

21) T-test

$t = \frac{\bar{x}_1 - \bar{x}_2}{S_A}$ $\quad S_A = \sqrt{\frac{S_1^2}{n_1} + \frac{S_2^2}{n_2}}$

22) Standard deviation = $\sqrt{\frac{\sum (x_i - \bar{x})^2}{n-1}}$

23) Zscore = $\frac{x - \bar{x}}{\sigma}$

24) Skewness = $g = \frac{\sum (x_i - \bar{x})^3}{(n-1)s^3}$ $\quad s$ = standard deviation