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**Assignment** : **Statistical inference**

Q 2)

$$\mu = 150, \sigma = 6.5$$

$$P(138 < X < 162) = ?$$

sol:

$$P(X > 138) = ?$$

$$Z_1 = \frac{x - \mu}{\sigma}$$

$$= \frac{138 - 150}{6.5}$$

$$= -1.846$$

$$P(X > 138) = P(Z > -1.846)$$

~~$P(Z > -1.846)$~~

$$P(X < 162) = ?$$

$$Z_1 = \frac{162 - 150}{6.5} = \boxed{1.846}$$

$$Z_1 = 1.846$$

$$P(X < 162) = P(Z < 1.846) - P(Z < -1.846)$$
$$= 0.9671 - 0.0329$$

$$= \boxed{0.9342}$$

$$Q2: P(Z > -1.25) = 0.1056$$

$$P(Z < 2.05) = 0.9878$$

$$P(-2.25 \leq Z \leq 2.25)$$

$$= 0.9878 - 0.1056$$

$$P(-1.25 \leq Z \leq 2.25)$$

$$= 0.8822$$

Q 4:

$$P(Z > 2.06) \\ = 0.9803$$

$$P(Z < -3.11) \\ = 0.00094$$

$$0.9803 - 0.00094 \\ = \boxed{0.97936}$$

$$\mu = 12.5, \quad \sigma = 3.5$$

$$X = ?$$

$$X = Z(\sigma) + \mu$$

$$X = 2.06(3.5) + 12.5$$

$$X = 19.71$$

$$X = Z(\sigma) + \mu$$

$$X = -3.11(3.5) + 12.5$$

$$\boxed{X = 1.615}$$