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ASSIGNMENT - 2.

Q.1. $\mu = 72$ bpm

$\sigma = 10$ bpm.

a.) Population mean = 72 bpm

Sample mean = 69 bpm

b.) Null hypothesis → $H_0: r \geqq 72$ bpm

Alternative hypothesis → $H_1: r < 72$ bpm

Here, $r \Rightarrow$ resting heart rate.

c.) $$S.E = \frac{\text{population mean} - \text{sample mean}}{\text{sample size}}$$

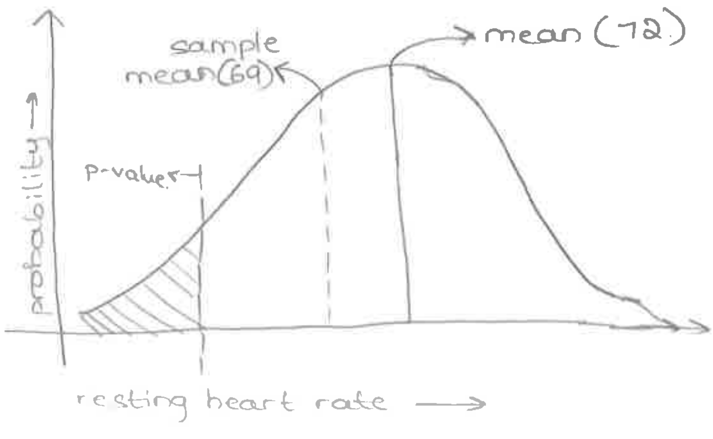
$$= \frac{72 - 69}{64} = \underline{\underline{21.3}}$$

21.3
$3 \overline{)64}$
04
3
10

Standard error is distance between or how far sample means are from eachother.

d.) $$z\text{-score} = \frac{72 - 69}{21.3} = \underline{\underline{7.1\ s.e.}}$$

e.)



Q.2. $$P(A|B) = \frac{P(B|A).\,P(A)}{P(B|A)\cdot P(A) + P(B|-A).P(-A)}$$

a.)

The prior probability here is P(A).
The value of prior probability is 0.20.

b.) Posterior probability in the equation is P(A|B).
Prosterior probability is the update belief after multip-lyin the prior /original belief with the evidence factor. Here, multiply 0.20 with ~~w~~ evidence factor

where, $m = s \rightarrow p = 0.9$
$m \neq s \rightarrow p = 0.05$

$P(A|\overset{\text{spam}}{B}) = 0.9$
$P(A|\overset{\text{not spam}}{-B}) = 0.05$

c.) Total probability ⇒ $P(B) = P(B \cap A) + P(B \cap -A)$
$= P(B|A).P(A) + P(B|-A)\cdot P(-A)$

$$P(B|A) = \frac{P(B \cap A)}{P(A)}$$

$P(B|A) = 0.9$
$P(-B|A) = 0.05$.

d.) The posterior will be higher because the probability of spam given marked as spam is 90%.