

Answers for Quiz 2

Multiple Choice

1. A
2. C
3. C
4. B
5. D
6. B
7. C
8. C
9. B
10. C
11. B
12. B
13. B
14. B
15. D
16. B
17. D
18. B
19. B
20. B
21. B
22. B
23. C
24. C
25. B

Answer the Questions

1.
$$\frac{70 - 60}{5} = 2$$

Above, since z-score > 0

2. a) $50000 * 0.2 = 10000$

b) $(0.15 + 0.1) - 0.2 = 0.05$

$$50000 * 0.05 = 2500$$

3.

$$\begin{aligned} P(pos) &= P(pos|dis) * P(dis) + P(pos|\neg dis) * P(\neg dis) \\ &= 0.9 * 0.1 + 0.2 * 0.9 = 0.27 \\ P(dis|pos) &= \frac{P(pos|dis)P(dis)}{P(pos)} \\ &= \frac{0.9 * 0.1}{0.27} \simeq 33.33\% \end{aligned}$$

4.

$$\begin{aligned} L(x_1, x_2, x_3|\theta) &= \left(\frac{\theta}{2}\right)^2 \left(1 - \frac{\theta}{2}\right)^1 \\ \theta = 0 : \\ L(1, 0, 1|\theta) &= 0 \\ \theta = 1 : \\ L(1, 0, 1|\theta) &= \frac{1}{4} \cdot \frac{1}{2} = \frac{1}{8} \\ \theta = 2 : \\ L(1, 0, 1|\theta) &= 0 \end{aligned}$$

When $\theta = 1$, the probability is the largest.

5. a)

$$\frac{12 + 14 + 10 + 16 + 13}{5} = 13$$

b)

$$\begin{aligned} \text{Variance} &= \frac{1 + 1 + 9 + 9 + 0}{5 - 1} = 5 \\ \text{Standard deviation} &= \sqrt{5} \end{aligned}$$

c)

$$\frac{13 - 11}{\sqrt{5}/\sqrt{5}} = 2$$