When family with three children is chosen at random eight equally likely outcomes are possible. Complete the sample space below where b denotes a boy and g denotes a girl:

\[
\{ \text{ggb} \ , \ \text{bgg} \ , \ \text{gbb} \ , \ \text{bbb} \}\]

Let

\( A = \text{event that there are at most two girls.} \)

\( B = \text{event that the second child is a girl.} \)

\( C = \text{event that the third child is a boy.} \)

\( D = \text{event that there is no boy in the family.} \)

Compute

1. \( P(A) = \)

2. \( P(B) = \)

3. \( P(\text{not } D) = \)

4. \( P(B \text{ or } C) = \)
5. \( P(C \text{ or } D) = \)

6. Are \( A, C \) mutually exclusive? Why?

7. Are \( C, D \) mutually exclusive? Why?

8. (i) \( P(B \mid A) = \)

(ii) \( P(D \mid C) = \)

9. Are \( B, C \) independent? Why?

10. Are \( B \) and \( D \) independent? Why?

11. At a large university, 75\% of all students have their own laptop computers. If six students from that university are selected at random, find the probability that

(a) exactly 4 of them have their own laptop computers

(b) at least 4 of them have their own laptop computers.