



- 4) Describe the sample spaces for the following experiments. You need to use  $H$  as head and  $T$  as tail.
- A fair coin is tossed three times.
  - A fair coin is tossed repeatedly until a tail turns up.
- 5) Let  $A$  and  $B$  be events with probabilities  $\mathbf{P}(A) = \frac{1}{3}$  and  $\mathbf{P}(B) = \frac{3}{4}$ . Show that  $\frac{1}{12} \leq \mathbf{P}(A \cap B) \leq \frac{1}{3}$ , and give examples to show that both extremes are possible. Find corresponding bounds for  $\mathbf{P}(A \cup B)$ .
- 6) Out of the students in a class, 60% do not love comics, 70% love chocolate, and 30% love both comics and chocolate. Determine the probability that a randomly selected student is neither a comic lover nor a chocolate lover.