6. A mug contains equal number of yellow marbles, blue marbles and red marbles. Two marbles are selected at random from the bag one at a time with replacement.

(a) Represent the sample space using a tree diagram.

(b) Hence, find the probability of selecting

(i) a yellow marble first followed by a blue marble,

(ii) a yellow marble and a blue marble,

(iii) two marbles of the same colour,

(iv) two marbles of different colours,

(v) two marbles which are not yellow.

7. Five cards are numbered 1 to 5. Two cards are drawn at random one at a time with replacement.

(a) Draw a tree diagram, showing at each branch the two events: 'drawing a 3' and 'others'.

(b) Hence, calculate the probability of drawing

(i) two 3's,

(ii) no 3's,

(iii) a 3 followed by a card which is not numbered 3,

(iv) exactly one 3,

(v) at least one 3,

(vi) at most one 3.

8. A jar contains 4 lemon flavoured sweets and 6 strawberry flavoured sweets. Two sweets are selected at random from the jar, one by one, without replacement.

(a) Represent the sample space using a tree diagram.

(b) Hence, calculate the probability of selecting

(i) two sweets of the same flavour,

(ii) two sweets of different flavour,

(iii) a lemon flavoured sweet on the second selection,

(iv) a strawberry flavoured sweet on the second selection.

9. The masses of 16 bars of the same dimensions are recorded below.

Mass (x g)	Frequency
$80 \leq x < 90$	3
$90 \leq x < 100$	4
$100 \leq x < 110$	5
$110 \leq x < 120$	4

Two bars are randomly selected, one by one, without replacement. Find the probability of selecting

(a) two bars that each weighs less than 90 g,

(b) two bars that each weighs at least 100 g,

(c) a bar that weighs less than 90 g and a bar that weighs at least 100 g.

10. In a two-match competition between team Alpha and team Beta, the probability of team Alpha winning a match is $\frac{1}{4}$. The probability of team Alpha losing a match is $\frac{1}{5}$. Calculate the probability of team Alpha

(a) neither winning nor losing the two matches,

(b) winning only one of the two matches,

(c) winning only the second match,

(d) winning the second match,

(e) winning the competition.