

HBL Probability Assignment

Name: _____ () Class: _____ Date: _____

1. A bag contains 4 red discs, 10 white discs and 6 blue discs. Two discs 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 red disc first and a blue disc next,
 - (ii) a red disc and a blue disc,
 - (iii) two discs of the same colour,
 - (iv) two discs of different colours.

2. Two fair dice each with 5 faces numbered 1 to 5 and 2 to 6 respectively are tossed.
 - (a) Represent the sample space using a possibility diagram.
 - (b) Find the probability that the sum of the two numbers shown
 - (i) is a prime number,
 - (ii) is at most 7,
 - (iii) is a prime number and is at most 7.

3.
 - (a) A fair die with 6 faces numbered 1 to 6 is rolled 3 times. Draw a tree diagram to show the possibilities of getting a two in each roll.
 - (b) Hence, calculate the probability of getting
 - (i) 3 twos,
 - (ii) a two,
 - (iii) at least a two.

4. 4 mobile phones that are fully charged are mixed with 6 other mobile phones that are partially charged. 3 mobile phones are randomly selected one at a time without replacement after all the mobile phones are switched off.
 - (a) Represent the sample space using a tree diagram.
 - (b) Find the probability that
 - (i) 3 fully charged mobile phones are selected,
 - (ii) none of the fully charged mobile phones is selected,
 - (iii) at least 2 fully charged mobile phones are selected,
 - (iv) a fully charged mobile phone is selected only on the 3rd selection.

5. The probability of a soccer team winning or losing any match is 0.4 and 0.25 respectively. Find the probability of the team
 - (a) not winning or losing a particular match,
 - (b) winning only one of two consecutive matches,
 - (c) first winning only at the third match.

6. 6 out of 15 bulbs in a box are defective.
- (a) Suppose the bulbs are randomly drawn one at a time without replacement until a defective bulb is first drawn. Find the probability that the first defective bulb is drawn
- in the 3rd draw,
 - in the 8th draw,
 - in the 11th draw.
- (b) Find the probability of drawing at least one good bulb in the first 5 draws.
7. The surface of a circular disc is sub-divided into 4 numbered sectors as shown in the figure below.
- (a) Find the value of w .
- (b) The circular disc is spun twice. For each spin, the number on the sector the pointer indicates is noted when the disc stops. Find the probability that the
- two numbers have the same value,
 - two numbers have a sum of at least 7,
 - product of the two numbers is 0.

