

6 Freddie has two bags of marbles.

Bag *X* contains 7 red marbles and 3 blue marbles.

Bag *Y* contains 4 red marbles and 1 blue marble.

Freddie chooses one of the bags at random. A marble is removed at random from that bag and not replaced. A new red marble is now added to each bag. A second marble is then removed at random from the same bag that the first marble had been removed from.

- (a) Draw a tree diagram to represent this information, showing the probability on each of the branches. [3]

- (b)** Find the probability that both of the marbles removed from the bag are the same colour. [4]

This image shows a full page of white paper with horizontal dashed lines, typical of primary school writing paper. The lines are evenly spaced and run across the width of the page. There are no margins, text, or other markings on the paper.

- (c) Find the probability that bag Y is chosen given that the marbles removed are **not** both the same colour. [2]

[illegible]