3 Tim has two bags of marbles, *A* and *B*.

Bag *A* contains 8 white, 4 red and 3 yellow marbles.

Bag *B* contains 6 white, 7 red and 2 yellow marbles.

Tim also has an ordinary fair 6-sided dice. He rolls the dice. If he obtains a 1 or 2, he chooses two marbles at random from bag *A*, without replacement. If he obtains a 3, 4, 5 or 6, he chooses two marbles at random from bag *B*, without replacement.

(a) Find the probability that both marbles are white. [3]

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(b) Find the probability that the two marbles come from bag B given that one is white and one is red.

[4]