

- 5 Eric has three coins. One of the coins is fair. The other two coins are each biased so that the probability of obtaining a head on any throw is  $\frac{1}{4}$ , independently of all other throws. Eric throws all three coins at the same time.

Events  $A$  and  $B$  are defined as follows.

$A$ : all three coins show the same result

$B$ : at least one of the biased coins shows a head

- (a) Show that  $P(B) = \frac{7}{16}$ . [2]

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- (b) Find  $P(A | B)$ . [2]

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The random variable  $X$  is the number of heads obtained when Eric throws the three coins.

- (c) Draw up the probability distribution table for  $X$ .

[3]

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.