

A unit cube $ABCDEFGH$ (see the *figure*) is cut by a plane \mathcal{S} that intersects the edges AB and AD at the points P and Q respectively, such that $AP = AQ = x$ ($0 < x < 1$). Let the common point of the edge BF and \mathcal{S} be R . What is the distance BR if $\angle QPR = 120^\circ$?

