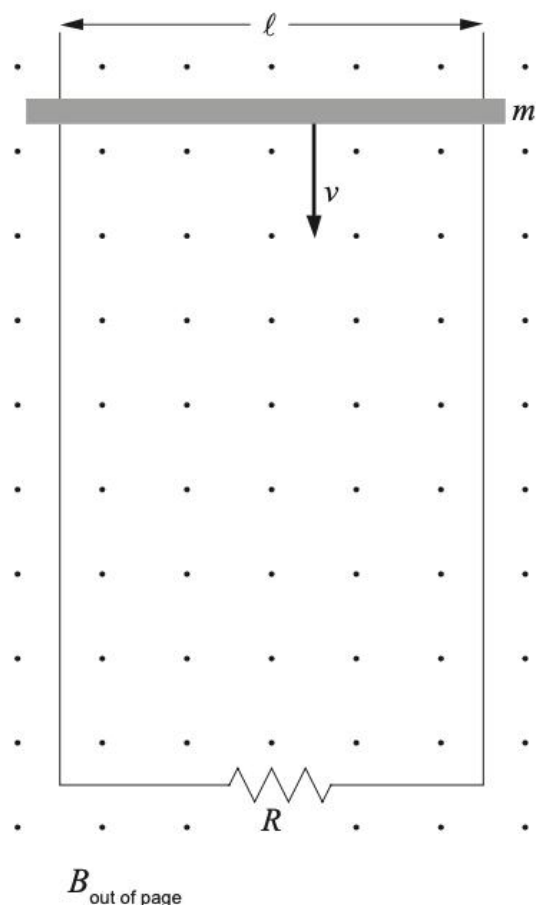


Question 12

(6 marks)

A metal bar of mass m is falling through a uniform horizontal magnetic field of strength B . The effective length of the bar in the field is ℓ . The bar, which maintains contact with the frictionless wire, completes an external circuit with a resistance of R . Derive an expression for the velocity of the bar in terms of m , g , R , B and ℓ given the velocity is constant.



Answer: $v =$ _____