6 A ball is such that when it is dropped from a height of 1 metre it bounces vertically from the ground to a height of 0.96 metres. It continues to bounce on the ground and each time the height the ball reaches is reduced. Two different models, A and B, describe this.

　Model A : The height reached is reduced by 0.04 metres each time the ball bounces.

　Model B : The height reached is reduced by 4% each time the ball bounces.

  (i) Find the total distance travelled vertically (up and down) by the ball from the 1st time it hits the ground until it hits the ground for the 21st time,

  (a) using model A, [3]

  (b) using model B. [3]

  (ii) Show that, under model B, even if there is no limit to the number of times the ball bounces, the total vertical distance travelled after the first time it hits the ground cannot exceed 48 metres.