26 A small ball is thrown into the air from a point that is 1 m above horizontal ground.

The ball moves vertically upwards so that at time t seconds after the ball was thrown, the height, h metres, of the ball above the ground is given by

$$h = 1 + kt - 5t^2 \qquad \text{where } k \text{ is a constant.}$$

At time t seconds after the ball was thrown, the velocity of the ball is v m/s.

(a) Find an expression for v in terms of k and t.

.....

(1)

Given that the total distance travelled by the ball between the instant when the ball is thrown and when it hits the ground for the first time is 161 m,

(b) calculate the value of k.

(5)

$k =$ .....

(Total for Question 26 is 6 marks)

TOTAL FOR PAPER IS 100 MARKS