



Let  $Y$  represent the number of guests from a random sample who rated the hotel less than 3 stars.  $Y$  can be modelled using a binomial distribution.

- (d) The hotel's managers randomly select a group of 20 guests. Calculate the probability that:

- (i) exactly *two* guests rate the hotel less than 3 stars.

(1 mark)

- (ii) more than *five* guests rate the hotel less than 3 stars.

(2 marks)

- (e) Managers are concerned that the hotel is receiving ratings of less than 3 stars and they decide to interview past guests.

How large a group of randomly selected guests is needed for the managers to have a greater than 90% chance of having at least *one* guest who has rated the hotel less than 3 stars?

(3 marks)