1. Sam is playing a computer game.

When Sam earns a reward in the game, she randomly receives either a Silver reward or a Gold reward.

Each time that Sam earns a reward, the probability of receiving a Gold reward is 0.4

One day Sam plays the computer game and earns 11 rewards.

(a) Find the probability that she receives

(i) exactly 2 Gold rewards,

(2)

(ii) at least 5 Gold rewards.

(2)

In the next month Sam earns 300 rewards.

She decides to use a Normal distribution to estimate the probability that she will receive at least 135 Gold rewards.

(b) (i) Find the mean and variance of this Normal distribution.

(2)

(ii) Estimate the probability that Sam will receive at least 135 Gold rewards.

(2)