12 A firm claims that no more than 2% of their packets of sugar are underweight. A market researcher believes that the actual proportion is greater than 2%. In order to test the firm's claim, the researcher weighs a random sample of 600 packets and carries out a hypothesis test, at the 5% significance level, using the null hypothesis $p = 0.02$.

(a) Given that the researcher's null hypothesis is correct, determine the probability that the researcher will conclude that the firm's claim is incorrect. [5]

(b) The researcher finds that 18 out of the 600 packets are underweight. A colleague says

"18 out of 600 is 3%, so there is evidence that the actual proportion of underweight bags is greater than 2%."

Criticise this statement. [1]