Leave blank

5. A greengrocer is investigating the weights of two types of orange, type *A* and type *B*. She believes that on average type *A* oranges weigh greater than 5 grams more than type *B* oranges. She collects a random sample of 40 type *A* oranges and 32 type *B* oranges and records the weight, *x* grams, of each orange.

The table shows a summary of her data.

	n	$\bar{x}$	$\sum x^2$
Type *A* oranges	40	140.4	790 258
Type *B* oranges	32	134.7	581 430

(a) Calculate unbiased estimates for the variance of the weights of the population of type *A* oranges and the variance of the weights of the population of type *B* oranges.

(3)

(b) Test, at the 5% level of significance, the greengrocer's belief. You should state the hypotheses and the critical value used for this test.

(7)

(c) Explain how you have used the fact that the sample sizes are large in your answer to part (b).

(2)

DO NOT WRITE IN THIS AREA
DO NOT WRITE IN THIS AREA
DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA
DO NOT WRITE IN THIS AREA
DO NOT WRITE IN THIS AREA

Leave blank

Question 5 continued

Leave blank

Question 5 continued

DO NOT WRITE IN THIS AREA
DO NOT WRITE IN THIS AREA
DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA
DO NOT WRITE IN THIS AREA
DO NOT WRITE IN THIS AREA

Leave blank

Question 5 continued

Q5

(Total 12 marks)