

Subject 25
Sequences

Please do not write on the exam paper.

In 2000 a population of 32 koalas is left on a large island in the Pacific Ocean. It is estimated that the size of the group will increase each year by about 10%.

A koala eats an average of 146 kg of eucalyptus leaves per year, and it is its unique food. Since eucalyptuses don't grow on this island, scientists decide to produce eucalyptus leaves. Their initial output is 5000 kg (in 2000), and they estimate that they can increase their production by 500 kg each year.

All answers may be rounded to the nearest kilogramme.

1. How many kilogrammes of eucalyptus leaves are needed in
a) 2000? b) 2001? c) 2005?
2. Define a sequence to model the need for eucalyptus leaves per year.
3. How many kilogrammes of eucalyptus leaves are produced in
a) 2000? b) 2001? c) 2005?
4. Define a sequence to model the output of eucalyptus leaves per year.
5. Using your calculator, determine the first year in which the output won't be able to provide enough eucalyptus leaves to feed the population of koalas.