Repeated Percentage Change

(a) A small plant is 5 cm tall. It increases its height by 10% each day. How tall will it be after one week?

(b) The penguin population of an island in 2013 is 1500. It increases at 15% per year. What will the population be in 2019?

(c) A sycamore tree is 40 cm tall. It grows at a rate of 8% per year. How tall is the tree after 10 years? Give your answer in metres.

(d) A car is worth £18000 when new. It depreciates at a rate of 17% per year. What is its value after 5 years?

(e) The population of Ainsworth is 500, and it is decreasing at a rate of 0.5% per year. What will the population by in 20 years' time?

(f) A 12 kg lump of radioactive material loses mass at a rate of 1% per day as it decays. What is its mass after 90 days? Give your answer to the nearest gram.

(g) A population of birds is growing at 9% per year. How many years does it take the population to double?

(h) If the population of a country increases by 2% per year, by what percentage would the population increase over 20 years?

(i) Mary invested £1200 in a savings account. She receives 5% per year compound interest. After n years she has £1608.11 in her account. Work out the value of n.

(j) At 10am a scientist places a small number of bacteria in a petri dish. The number of bacteria doubles every hour. The petri dish is full by 7pm. At what time was the petri dish half full of bacteria?