

- 1** A local zoo starts a breeding program to ensure the survival of a species of mongoose. From a previous program, the expected population in n years' time is given by $P = 40 \times 2^{0.2n}$.
- a** What is the initial population purchased by the zoo?
 - b** What is the expected population after:
 - i** 3 years
 - ii** 10 years
 - iii** 30 years?
 - c** Graph P against n .
 - d** How long will it take for the population to reach 100?
- 2** In Tasmania a reserve is set aside for the breeding of echidnas. The expected population size after t years is given by $P = 50 \times 2^{\frac{t}{3}}$.
- a** What is the initial breeding colony size?
 - b** Find the expected colony size after:
 - i** 3 years
 - ii** 9 years
 - iii** 20 years.
 - c** Graph P against t .
 - d** How long will it take for the echidna population to reach 150?

