chapter

7　　**Algebra 3**

Section 7.8 Exponential functions

INPUT　　OUTPUT

Geometric Sequence

$T_n = ar^{n-1}$

r = ratio

PROJECT MATHS
Text & Tests 6

246

Example 1

A bacterial colony doubles every hour. If 10 bacteria cells were present at the start of an experiment, (i) complete the following table (ii) draw a graph of the number of bacteria present up to 5 hours.

x
y

Time in hours	0	1	2	3	4	5	6
Number of bacteria	10	20	40	80	160	320	640

×2　　+320

(iii) By how many would the population increase in the 6th hour?

(iv) What percentage increase in the population occurred in the 6th hour by comparison to the first hour?

(v) Write an expression for the size of the population (N) after t hours.

$f(x) = A a^{nx}$

STARTING VALUE　　ratio

BACTERIA

$f(x) = 10 \, (2)^t$

300

200

100

Time (h)

(iii) Population increase in 6th hour　$640 - 320 = 320$

(iv) 1st hour Increase $= 20 - 10 = 10$

% Increase 6th Compared to 1st hour $= \dfrac{320}{10} = 3200\%$