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| **Topic 1: Number and Algebra** | **Exponential Functions** | |
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| 1. Students in a Biology class were studying the growth rate of E. coli. They observed the growth of the E. coli over a 10 hour period and collected data at the end of each hour. They modeled the function , where is the number of hours since the start of the observation.    1. Find the population of E. coli       1. At the start of the observation       2. After 6 hours    2. Calculate the time for the population to increase above 160.    3. How many hours would it take to triple the amount of E. coli? | | (3 marks)  (2 marks)  (2 marks) |
| Mark scheme:   1. 1. 82 2. Solving by graphing or use of logs.  hours 3. Solving by graphing or use of logs.  hours | | (A1)  (M1)   (A1)    (M1)  (A1)  (M1)  (A1) |