**Graphing a Bacterial Population Growth Curve**

In this activity you will

* Interpret a scientific method as a “Read to Write” exercise
* Graph data from a study in which the growth of a bacteria population was measured.
* Analyse the pattern (trend) in the graph to reach conclusions

# Question

What is the shape of a bacterial population growth curve? Why does it have that shape?

|  |  |
| --- | --- |
| **Time (h)** | **Population** |
| 0 | 150 |
| 1 | 190 |
| 2 | 380 |
| 3 | 700 |
| 4 | 1450 |
| 5 | 3000 |
| 6 | 5600 |
| 7 | 7000 |
| 8 | 7600 |
| 9 | 7650 |
| 10 | 7400 |
| 11 | 6600 |
| 12 | 6100 |
| 13 | 5500 |
| 14 | 5300 |
| 15 | 5400 |
| 16 | 5600 |
| 17 | 5500 |
| 18 | 5300 |
| 19 | 5400 |
| 20 | 5500 |

1. The following passage describes (in some complex language) the scientific method used to grow and count bacteria. Below this passage write the method using simpler words – so an average Yr 6 student may understand it.

A suitable nutrient medium was inoculated with a small number of a certain species of bacterium. The resulting culture was incubated at the optimum temperature for this organism. Every hour the number of bacteria in a drop of the culture was counted. A sampling method was used, so the scientist did not actually count every bacterium.

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# Graphing

1. Study the table to the right closely. It contains the data measuring the population of a bacteria colony over 20 hours.
2. Graph the data in the table. Put the time in hours on the horizontal axis and the population number on the vertical axis.
3. Draw a **TREND line** for the data. Mark the following regions on it:
   1. **region of slow but progressive population growth**
   2. **region of rapid population growth**
   3. **region of population decline**
   4. **region of population stability**

# Discussion/Conclusion

**BACKGROUND INFORMATION**

Scientists study bacteria generally because bacteria cause disease and understanding bacteria is a very important part of fighting diseases. Bacteria seem unusual to most people because they are so small they are invisible to our eyes – however bacteria act much like other organisms in many ways. One way in which bacteria are very similar to other organisms is in population growth. While bacteria reproduce asexually, the population of bacteria can only grow if there is enough food/water/air available and there is nothing to kill them. This is pretty much true for all animals and plants.

1. Explain the region of the graph where the bacteria grew at the greatest rate. That is, why did the population grow quickly at this point in time?

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1. Explain the region of the graph where the population growth (rate of increase) slows down. That is, why would this occur?

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1. Why does the population of bacteria eventually level out and not increase any further?

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1. \*\*Human population is at the rapid increase phase (nearly 7 billion and climbing rapidly). Will we eventually have the same pattern of population growth as the bacteria? Justify your answer.

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