# Culturing Microorganisms

GCSE Biology · Written to the shared content for AQA, Edexcel and OCR

Name _____ Class _____ Date _____

## 1. Worked example

**Explain why the inoculating loop is passed through a flame before use. (2 marks)**

Step 1 · What it does

The heat kills any microorganisms on the loop.

Step 2 · Why it matters

So the culture is not contaminated by unwanted microorganisms that could compete with the bacteria being studied or be harmful.

**Answer: To sterilise it and prevent contamination of the culture**

Check: Let it cool before touching the culture.

## 2. Now try one with the steps

**A bacterium divides every 20 minutes. How many bacteria are produced from one cell after 4 hours? (2 marks)**

Step 1 · Divisions

Step 2 · Number

**Answer:**

## 3. Practice

Show your working. The marks tell you how much is expected.

1. Name the type of cell division bacteria use to reproduce. [1]

2. Name a substance used to make a solid culture medium for bacteria. [1]

3. State the maximum temperature at which cultures should be incubated in a school laboratory. [1]

4. Explain why the Petri dish lid is taped but not completely sealed. [2]

**5.** Give two things bacteria need from a culture medium. [2]

**6.** A bacterium divides every 30 minutes. How many bacteria are there after 3 hours, starting from one? [2]

**7.** A clear zone has a diameter of 20 mm. Calculate its area in $mm^2$ to 1 decimal place. [2]

**8.** Explain why a larger clear zone means an antiseptic is more effective. [2]

**9.** Explain why a disc soaked in sterile water is included. [2]

**10.** Explain why Petri dishes are incubated upside down. [1]

**11.** Starting with 500 bacteria and a division time of 15 minutes, calculate the number after 2 hours. [3]

**12.** Write 128 000 in standard form. [1]

**13.** Suggest why real bacterial populations stop doubling after some time. [2]

**14.** Two clear zones have radii of 3 mm and 6 mm. How many times larger is the area of the bigger zone? [2]

## 4. Before you hand it in

**Using the diameter in $\pi r^2$**

Halve the diameter first: r = d ÷ 2.

**"The number of bacteria = start × number of divisions."**
Number = start × $2^n$, where n is the number of divisions.

**"Incubate at 37 °C so the bacteria grow fastest."**
Schools incubate at no more than 25 °C for safety.

**Sealing the lid all the way round**
Use two short strips of tape so oxygen can enter.