

# High School Biology

## Experiment: Rate of decay worksheet

### Investigating moisture and temperature

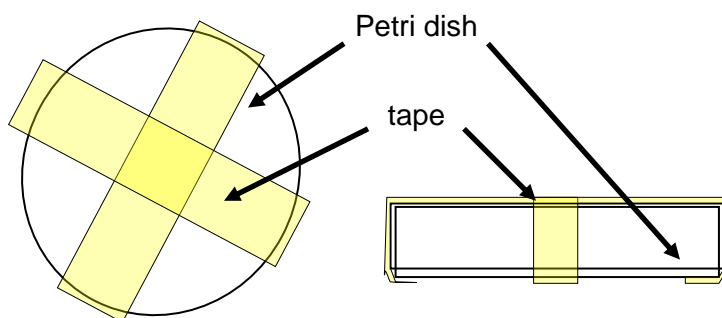
You are going to conduct an experiment to investigate rates of decay. This experiment will look at how levels of moisture and temperature affect how quickly a piece of bread goes mouldy. You will look at three different moisture levels and three different temperatures. Read through the method below, and then answer the questions.

### Apparatus

- knife
- six Petri dishes and lids
- sticky tape
- cutting board
- measuring cylinder
- graph paper acetate
- ruler
- sticky labels and pens.

### Method

1. You need to cut the slices of bread into equal sized squares or circles. They need to fit into Petri dishes, so you could use a Petri dish as a template to cut around or use one like it is a pastry cutter. You need to cut out six.
2. Place each piece of bread in a separate dish. You need to label each dish differently following the list below. You should also add your name to the label.
  - a. high temperature
  - b. low temperature
  - c. room temperature
  - d. some moisture
  - e. constant moisture
  - f. no moisture



Add 50ml of water into the first five Petri dishes.

You should leave the last one with no water added. Add lids to your Petri dishes and tape the lid on following the diagram. Do not use too much tape, as you want to be able to see into the Petri dish.

3. Weigh each one and write the starting weight in the table below.
4. Give the Petri dishes labelled 'a' and 'b' to your teacher. They will be placing them in the appropriate temperatures and will give them back to you during another lesson.

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5. The other four Petri dishes will be left at room temperature in your classroom. The Petri dish labelled 'e' should be kept moist at all times. You and your teacher should keep an eye on it. When it looks dry, undo the tape and add another 50ml of water to it. You should try not to lift the lid off completely. Lift it on a slant so that it is still covers most of the dish and bread, and then add the water. Tape it back up as before, and wash your hands straight away.

### Questions

1. Why did you have to make sure that all the pieces of bread were the same size?

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2. Why did you add the same amount of water to the first three Petri dishes?

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3. Why did you have to put a lid on the Petri dishes?

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4. Why have you weighed the dishes?

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5. Why must you wash your hands after point five?

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6. What effect do you predict temperature will have on the amount of mould?  
Explain your answer using scientific ideas.

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7. What effect do you predict moisture will have on the amount of mould? Explain  
your answer using scientific ideas.

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### One week later

6. Your teacher will give all of your Petri dishes back. You do not need to remove the lids. Leave them stuck on. You should weigh each one and note its final weight in the table.
7. For each dish, you need to estimate the area that is covered with mould. To do this, place one of the acetates marked with a grid over each Petri dish. Count the number of squares with mould on them, and take into account those squares that are partially filled with mould. Complete the results table below. You should also make any observations about the types of moulds growing, for instance, how many different types you can see.

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### Results

	Plate	Starting weight (g)	Finish weight (g)	Percentage covered by mould	Observations
a	High temperature				
b	Low temperature				
c	Room temperature				
d	Some moisture				
e	Constant moisture				
f	No moisture				

### Discussion

1. Describe the effect that temperature had on the results:

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**2. Was your prediction correct?**

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**3. Can you explain the results using scientific ideas?**

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**4. Describe the effect that moisture had on the results:**

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**5. Was your second prediction correct?**

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**6. Can you explain the results using scientific ideas?**

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**7. What would the ideal conditions for decay be?**

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**8. What problems did you have, if any?**

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**9. What would you keep and what would you change in a similar experiment?**

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