



Which temperature is best for dough to rise?


You are going to investigate how temperature affects the rising of bread dough. Yeast is a microbe that is added to bread dough. When the yeast cells respire they produce carbon dioxide, which makes the dough rise. Respiration is a chemical reaction that happens in all living cells including yeast cells.

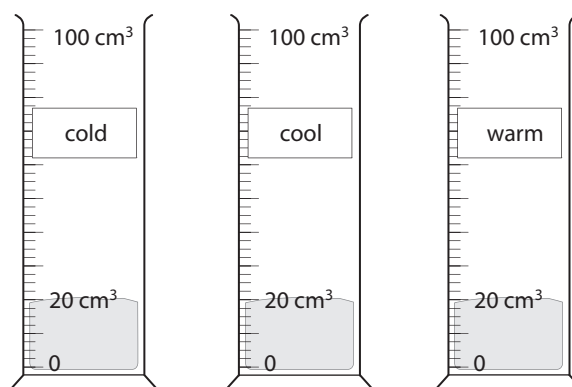
Prediction

- 1 a Do you think the dough will rise furthest in cold or warm conditions?
- b Why do you think this?

Apparatus

- three measuring cylinders
- bread flour
- dried yeast
- large beaker
- stirring rod
- sugar
- tablespoon
- thermometer
- water

Do not eat any dough. 



Method

- A** Measure out 5 g of sugar, 3.5 g of yeast and 100 g of bread flour. Add them all to a large beaker.
- B** Now measure out 65 cm³ of water.
- C** Pour the water, a little bit at a time, into the beaker. Each time you have added some water, stir the mixture using the spoon.
- D** Keep stirring until the mixture is a smooth paste. Now very slowly pour or spoon 20 cm³ of the mixture into a measuring cylinder. Put another 20 cm³ of mixture into each of the other two measuring cylinders. Push any bits that get stuck to the side down to the bottom with the stirring rod.
- E** Label the cylinders to show the different temperatures they will be placed at – ‘cold’, ‘cool’ and ‘warm’.
- F** Record the volume of dough in each cylinder.
- G** Put the cylinders in the different places for the different temperatures. Use a thermometer to measure the exact temperature in each area.
- H** Leave them for 1 hour.
- I** Now read the new volume of the dough in each cylinder.

Recording your results

2 Record your results in a table like this:

Temperature of the area the dough was left in (°C)	Volume of dough at the start of the experiment (cm ³)	Volume of dough at the end of the experiment (cm ³)	Increase in the volume of the dough (cm ³)
cold (_____)			
cool (_____)			
warm (_____)			

Considering your results/conclusions

3 Draw a bar chart to show the increase in volume of the dough at each temperature.

4 a Which was the best temperature for the rising of dough?

b How do you know this?

5 a Why does the dough rise?

b Why do you think it rises faster at some temperatures than others?

Evaluation

6 a Which was the trickiest part of the experiment?

b How do you think this might have affected your results?

c Try to think of a way of improving this part of the experiment.

7 How would you show that the bread needs yeast to make it rise?

I CAN...

- carry out a safe and fair investigation
- make careful observations
- present data as a bar chart
- draw a conclusion
- evaluate my method.