

S1 Sketch one flowchart to show how an enzyme normally works, and another to show what happens when the enzyme is **denatured**.



- 1
 - a Cut out the statements below and arrange them in the correct order to describe how an enzyme catalyses the breakdown of one substrate molecule into two product molecules.
 - b Compare the order you have produced with your partner's. Are there any statements in a different order? If so, which order do you think is more correct and why?
 - c Make sure your statements are in the right order before sticking them down.
- 2
 - a Circle the first statement in the list that won't happen if the enzyme is denatured.
 - b Write a note beside that statement to explain why it will not happen if the enzyme is denatured.
 - c Compare your answers to parts **a** and **b** with your partner. If there are differences in your answers, discuss between you which is the best answer.
- 3
 - a Now write a set of statements that describe how an enzyme catalyses the synthesis of two substrate molecules to form one product molecule. Use the order of statements you had for question **1c** to help you.
 - b Compare your set of statements with your partner's. Look for any gaps in each set, and discuss how to make both sets more complete. Make changes to your set if needed.
- 4
 - a Explain why enzymes are **specific** to a particular substrate.
 - b Compare your answer to part **a** with your partner's to see if you can improve the answer.

The product molecules are a different shape to the substrate, so they no longer fit into the **active site** and are released from the site.

One substrate molecule fits neatly into the active site of the enzyme, like a key into a lock.

The active site of the enzyme molecule is free to accept another substrate molecule.

A solution of the enzyme is mixed with a solution containing substrate molecules.

Some bonds in the substrate molecule break, causing the formation of two product molecules.