

## Knowledge check

Subject area: Organic chemistry

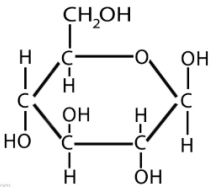
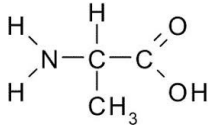
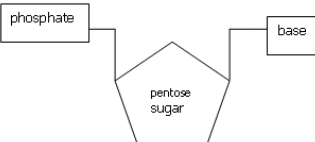
Level: 14–16 years (Higher)

Topic: Natural polymers

Source: rsc.li/3iF4Lvm

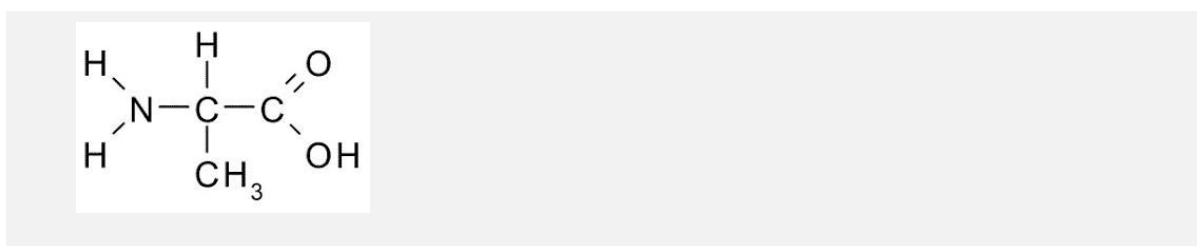
1. The table shows some naturally occurring monomers that can form polymers.

a) Complete the table.

			
Name of type of monomer			
Name of polymer type			

b) What is a functional group in a molecule?

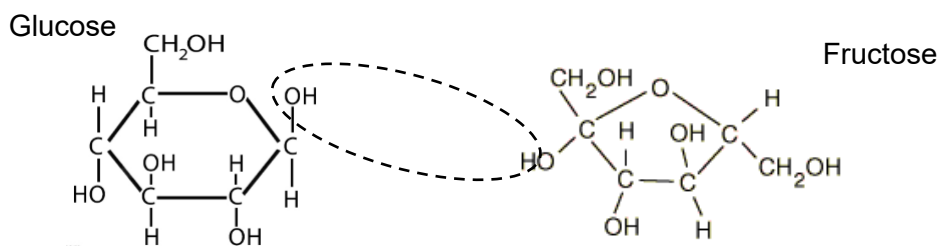
c) Circle the two functional groups in this molecule:



**2. Sucrose is a sugar called a disaccharide.**

This means that it is made of two sugar molecules joined together.  
Sucrose is made from two other sugars called glucose and fructose.

Here are the structures of glucose and fructose:



- a) Use the molecular structures of glucose and fructose to write their molecular formulas:

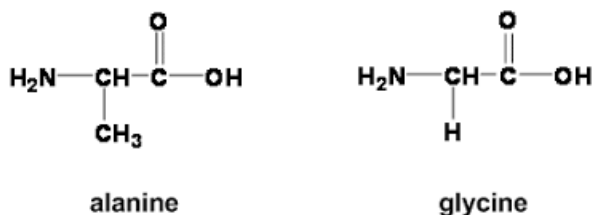
Glucose	
Fructose	

- b) On the diagram above, a dotted ring has been drawn around parts of the glucose and fructose molecules. This shows that a small molecule will be formed.

What is the name of this small molecule?

- c) Using the information in this question, write down the formula of the disaccharide formed called sucrose.

3. This question is about the two molecules shown.



a) These molecules belong to the same homologous series.

What is the name of the homologous series to which these molecules belong?

b) These molecules may react together to form a dipeptide.

A molecule of water is also formed.

Draw a ring around the parts of the molecules that would result in the formation of a molecule of water.

c) State the name of the type of reaction taking place when these two molecules react together in this way.

d) Draw the structure of the dipeptide formed when these molecules react according to the diagram above.

e) The dipeptide in part c) can be abbreviated to ala-gly.

i) Draw the structure of gly-ala.

ii) Using your answers to part i) and part c), is ala-gly the same dipeptide as gly-ala? Give a reason.

4. This question is about the structure of DNA.

Use some of the words from the box to complete the sentences below.

condensation	helix	polynucleotide	addition
intermolecular	four	water	nucleotide
ring-shaped	ionic	six	hydrogen chloride

DNA is an important polymer essential for life.

Monomers called  make DNA.

There are  different types of monomer.

When the nucleotide monomers join together to form DNA they also form .

This means that this type of reaction is called a  polymerisation.

The DNA strand is made of a double  of two very long strands that run in opposite directions.

These strands are held to each other by  forces.