

Exercise walk-through

Biological molecules ■ 4.1

eXercise

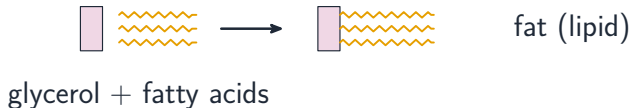
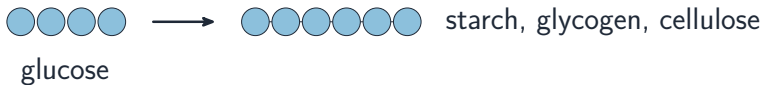
You must be able to

- give the elements in carbohydrates, fats and proteins
- state the small units that build starch, proteins and fats
- carry out the food tests and recall the DNA base pairs

Method — Building blocks and food tests

- carbohydrates/fats = C, H, O; proteins also contain **N**. DNA bases pair A–T, C–G.

Method — Building blocks and food tests



Small units joining into large molecules

Method — Building blocks and food tests

Food substance (test)	start	positive result
Starch (iodine)		 blue-black
Reducing sugar (Benedict's, heat)		 brick-red
Protein (biuret)		 purple
Fat (ethanol emulsion)		 cloudy white
Vitamin C (DCPIP)		 colourless

Food test colour changes

Practice 2.1 ■ 1 mark

Name the elements found in a protein.

Solution 2.1

Worked steps

carbon, hydrogen, oxygen and nitrogen **B1**.

Practice 2.2 ■ 1 mark

Name the small units that join to make a protein.

Solution 2.2

Method: Building blocks and food tests

Worked steps

amino acids **B1**.

Exam-style 3.1 ■ 1 mark

The test for a reducing sugar uses Benedict's solution and:

- A** cooling
- B** heat
- C** iodine
- D** no change

Solution 3.1

Method: Building blocks and food tests

A cooling

B heat



C iodine

D no change

Worked steps

B. Benedict's test needs heat.

Exam-style 3.2 ■ 2 marks

A student tests a food sample.

- (a) Describe the test for starch and its positive result.
- (b) Describe the test for protein and its positive result.

Solution 3.2

Method: Building blocks and food tests

Worked steps

- (a) add iodine solution **M1**; it turns from orange-brown to blue-black **A1**.
- (b) add biuret solution **M1**; it turns from blue to purple **A1**.

Exam-style 3.3 ■ 2 marks

One strand of DNA has the base sequence A–C–G–T. Write the sequence of the matching strand.

Solution 3.3

Worked steps

T–G–C–A **M1** **A1** *A–T pairing, C–G pairing* — each base pairs A–T and C–G.