A13 · Blood sugar: insulin, glucagon and diabetes mellitus · Worked examples and practice

Name: _____ Date: _____

Worked examples

Read these first. There is one for each kind of question in this lesson.

Example 1 · Choose between insulin and glucagon

A person has just eaten a large meal. Which hormone does the pancreas release, and what does it do?

1. After a meal, blood sugar is too high.
2. The beta cells release insulin.
3. Cells take in glucose, and the liver stores it as glycogen.

Answer: Insulin. It lowers blood sugar.

Example 2 · Read a blood sugar graph

Blood sugar is 5 mmol/L before a snack and 9 mmol/L at its highest. Find the rise.

1. Read the starting value and the highest value.
2. 9 − 5 = 4.

Answer: It rises by 4 mmol/L.

Practice

Questions 1 to 4 are easy. Questions 5 to 8 are medium. Questions 9 and 10 are harder.

EASY

1. Name the organ that releases insulin and glucagon.

EASY

2. Name the cells that release glucagon.

EASY

3. Name the stored form of glucose in the liver.

EASY

4. State the word for high blood sugar.

MEDIUM

5. State when glucagon is released and what it does.

MEDIUM

6. Blood sugar is 5 mmol/L before a snack and 9 mmol/L at its highest. Calculate the rise. Name the hormone that brings it back down.

MEDIUM

7. Explain why glucose appears in the urine of a person with untreated diabetes mellitus.

MEDIUM

8. State one difference in cause and one difference in treatment between type 1 and type 2 diabetes.

HARDER

9. A person with type 1 diabetes forgets an insulin injection and then eats a meal. Predict what happens to blood sugar. Explain.

HARDER

10. The alpha cells of a person stop working. The beta cells are normal. Predict what happens to blood sugar many hours after a meal. Explain.