

Name Class Date

B12 Homeostasis in action – Aiming for Grade 6

Aims

The aim of this lesson is to help you revise the main topics in Chapter B12.

Learning outcomes

After completing this activity, you should be able to:

- Describe the body's response to hot and cold conditions.
- Describe the processes that occur in the kidney.
- State the substances present in the blood entering and leaving the kidney, the kidney filtrate, and the urine.
- Describe the body's response to high and low water concentration in the blood.
- Describe the advantages and disadvantages of dialysis and kidney transplants.

Task

Question 1 You will be completing a table to show how the body responds when it is too hot and too cold.

Question 2 You will be answering questions on the substances present in the blood, kidney filtrate, and urine, and the processes that occur.

Question 3 In pairs you will be comparing the advantages and disadvantages of dialysis and kidney transplants.

Questions

1 Temperature control

Put two headings in your book – '**Too hot**' and '**Too cold**'. Write down the changes that happen to the body when it is too hot and too cold. Remember to include changes to the skin and blood vessels.

2 a The kidney

- i For each of the following substances say whether they are filtered, selectively reabsorbed, and/or removed in the urine.

urea

glucose

mineral ions

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- ii For each of the following substances say whether they are found in the blood entering the kidney, the blood leaving the kidney, in the kidney filtrate, and/or in the urine.

urea

glucose

protein

b Water concentration of the blood

Use your student book to help you draw a flow chart describing what happens when you consume a large volume of water. Hint: Start with your blood water concentration increasing.

Remember to include:

- names of the hormones involved and where they are released
- the area that detects the changes.

3 Dialysis versus kidney transplant

Work in pairs and use your student books to help you.

On an A3 piece of paper put the title '**Dialysis**' at the top then draw around both of your hands. Turn the paper over and put the title '**Kidney transplants**' and draw around both of your hands.

Write a description of how dialysis works around the hands on the dialysis side, and write a description of what a kidney transplant is around the hands on the kidney side of the sheet.

Write all the advantages for dialysis on one hand, and all the disadvantages of dialysis on the other. Do the same for kidney transplants.