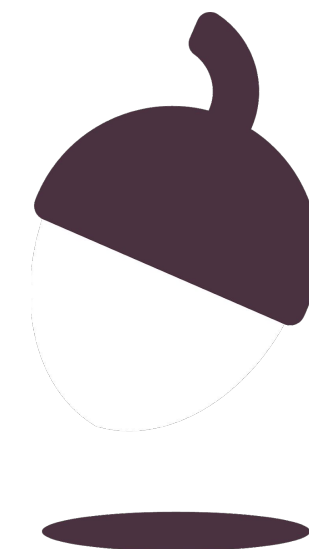Biology - KS4
Homeostasis and Response

The Kidney

Miss Ray

OAK
NATIONAL
ACADEMY

Answer the questions below

1. Name one way that water can enter the body

2. Name one way that water can exit the body

Answer the questions below

1. **Name one way that water can enter the body**

   Eating, drinking, respiration

2. **Name one way that water can exit the body**

   Exhaling water vapour, faeces, urine, sweat

Put the stages of urine production into the correct order.

A. Selective reabsorption
B. Filtration
C. Urine production

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Answer
1. Filtration
2. Selective reabsorption
3. Urine production

State whether each of the substances below would be selectively reabsorbed or excreted as urine.

Glucose, urea, excess water, salts.

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Answers
Glucose and salts are reabsorbed.
Excess water and urea are excreted as urine.

A man consumed the same amount of food and drink and completed the same activities for two days.

On the first day, he produced a smaller, more concentrated volume of urine. This first day was a hot day. Explain why this happened. [4]

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On the first day, he produced a smaller, more concentrated volume of urine. This first day was a hot day. Explain why this happened. [4]

Increased sweating in hot weather;

Increases dehydration/water levels decrease;

Pituitary gland releases more ADH;

Increased reabsorption of water in the nephron/kidney;

Small volume of concentrated urine produced.

Looking at data

	Concentration (g/dm³)	
Substance	**Blood plasma**	**Urine**
Protein	86	0
Glucose	1	0
Urea	0.2	17
Sodium ions	4	8

Example question

Calculate how many times more concentrated **sodium ions** are in the urine compared to the blood plasma.

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	Concentration (g/dm³)	
Substance	**Blood plasma**	**Urine**
Protein	86	0
Glucose	1	0
Urea	0.2	17
Sodium ions	4	8

Example question

Calculate how many times more concentrated **sodium ions** are in the urine compared to the blood plasma.

8 ÷ 4 = 2