A2 · The resting neuron · Worked examples and practice

Name: _____ Date: _____

Worked examples

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

Example 1 · Decide which way an ion diffuses

A sodium channel opens in a resting neuron. Which way do sodium ions move?

1. Find where the ion is crowded: there are more sodium ions outside the cell.
2. Diffusion goes from more to less.

Answer: Sodium ions move into the cell.

Example 2 · Tell diffusion from active transport

The pump moves potassium ions into the cell. Is this diffusion or active transport?

1. There are already more potassium ions inside.
2. Moving an ion to the side with more needs energy.

Answer: Active transport.

Practice

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

EASY

1. State the resting potential of a neuron, with its unit.

EASY

2. State which ion is found mostly outside a resting neuron.

EASY

3. Name the structure that ions must pass through to cross the cell membrane.

EASY

4. State what diffusion is.

MEDIUM

5. Explain what the minus sign in −70 mV tells you.

MEDIUM

6. Explain why more potassium ions leave a resting neuron than sodium ions enter.

MEDIUM

7. State the two things the sodium-potassium pump moves, and the direction of each.

MEDIUM

8. Explain why the sodium-potassium pump needs energy.

HARDER

9. A poison blocks every potassium channel in a resting neuron. Predict the effect on the resting potential. Explain.

HARDER

10. A cell has run out of energy. Predict what happens to its sodium ions and potassium ions over time. Explain.