

**Task 1**

Answer the questions about active transport. Try Tasks 2- if you need help answering the questions.

1. Why do cells which carry out a lot of active transport have numerous mitochondria?
2. Why does active transport require energy?
3. Where does the energy for active transport come from?
4. What do you think might limit the rate of active transport?
5. How is the digestion and absorption of sugar molecules in the gut connected to active transport?
6. If plant root hair cells are deprived of oxygen can you explain why they are unable to absorb mineral ions?
7. What do you think would limit the rate of osmosis and diffusion?

**Task 2**

Look at the statements and match them up with the correct process - diffusion, osmosis or active transport. Write your answers in the left hand column.

Moves larger molecules and ions into and out of cells.
They tend to move from a less concentrated solution to a more concentrated solution, diluting it.
Moves substances from areas of low concentration into areas of high concentration.
Molecules of water pass through a semi-permeable membrane.
Substances move from an area of high concentration to an area of low concentration.



When does a 'concentration gradient' occur?
What does active transport do?

When the number of particles dissolved in a solution ranges from a low number in one area of the liquid to a high number in another area.	The number of particles of a solute, such as glucose, that are dissolved in a (certain amount of) liquid.
It moves substances such as ions up a concentration gradient (from low to high).	How steep a sloping line or surface is.

### Task 6

Active transport requires energy. Match up the answers with the questions to find out how cells get energy for active transport.

What is respiration?
What are mitochondria?
What is the role of mitochondria in the process of respiration?
What do mitochondria require to carry out respiration?
How does oxygen get inside a cell?

How do glucose molecules get into a cell?

Oxygen and glucose.	By diffusion.
They are tiny structures found in the cytoplasm of plant and animal cells.	Respiration occurs inside mitochondria.
By active transport.	The chemical process which releases energy from glucose.

### Task 7

Complete the similes for the following structures.

Glucose is like...
Amino acids are like...
Mitochondria are like...
A semi-permeable membrane is like...
Carrier proteins are like...

a fence	power stations	gates	a fuel	building blocks
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