1. An **organelle** is…
   - ☐ a molecule of DNA
   - ☐ a type of cell
   - ☐ a small structure inside a cell with a specific job
   - ☐ a whole organ, like the heart
2. Why must most cells stay very small?
   - ☐ Small cells hold more DNA for each unit of volume
   - ☐ Big cells cannot hold water, so they would dry out
   - ☐ A small cell has a high surface-area-to-volume ratio for fast exchange
   - ☐ Small cells weigh less, so they float in the body fluids
3. The plasma membrane is built mainly from a…
   - ☐ sheet of DNA
   - ☐ phospholipid bilayer
   - ☐ solid wall of cellulose
   - ☐ single layer of protein
4. In **diffusion**, particles move…
   - ☐ only upward
   - ☐ from high concentration to low concentration
   - ☐ from low concentration to high concentration
   - ☐ only if pushed by a pump
5. **Passive transport** moves substances…
   - ☐ down the gradient, using no energy
   - ☐ up the gradient, using ATP
   - ☐ only into the cell
   - ☐ only when the cell is dead
6. Facilitated diffusion is still passive – it uses no ATP.

   ☐ True ☐ False

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☐ True ☐ False

8. Releasing material by fusing a vesicle with the membrane is called _____.

   _____
9. Organelles wrapped in their own membrane are described as _____-bound.

   _____
10. Mitochondria and chloroplasts contain their own DNA.

    ☐ True ☐ False

1. **a small structure inside a cell with a specific job**

   An **organelle** is a specialised structure inside a cell – like the nucleus or a mitochondrion – each doing a specific job.

2. **A small cell has a high surface-area-to-volume ratio for fast exchange**

   A small cell has a large **surface area** relative to its **volume**, so materials diffuse in and out fast enough.

3. **phospholipid bilayer**

   The membrane is a **phospholipid bilayer** – two layers of phospholipids with proteins embedded in them.

4. **from high concentration to low concentration**

   Diffusion is the net movement of particles down their **concentration gradient** – high to low.

5. **down the gradient, using no energy**

   Passive transport goes down the concentration gradient and costs the cell no energy.

6. **True**

   The protein only provides a route; the particles still move **down** their gradient, so no ATP is used.

7. **False**

   False. With less solute outside, water moves into the cell toward the higher solute concentration, so the cell swells and an animal cell may burst. Cells shrink in a hypertonic solution.

8. **exocytosis**

   In **exocytosis** a vesicle fuses with the membrane and dumps its contents outside.

9. **membrane**

   A **membrane-bound** organelle has its own membrane separating it from the cytoplasm.

10. **True**

    They keep a small circular genome, a leftover from their free-living bacterial past.

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