Year 9 Science: Diffusion, photosynthesis and respiration

Name: _____ Date: _____

Try these without your notes first, then check the answer key.

Practice

1. Explain, using the word concentration, why oxygen moves from the blood into a muscle cell.

2. Write the word equation for photosynthesis and name where in the cell it happens.

3. Jelly babies left in water swell up. Write a testable question about temperature and say what you would measure and keep the same.

4. Germinating peas in a sealed flask warm up, and limewater connected to the flask turns milky. Which process is happening and what two pieces of evidence show it?

5. Is a plant respiring at night, photosynthesising, or both? Explain.

Fix the mistake

6. Correct this statement: "Plants photosynthesise and animals respire."

7. Correct this statement: "Respiration is the same thing as breathing."

8. Correct this statement: "Particles diffuse because they want to spread out into empty space."

9. Correct this statement: "Photosynthesis makes energy for the plant."

Answer key (for parents and tutors)

1. Explain, using the word concentration, why oxygen moves from the blood into a muscle cell.
   The muscle cell uses oxygen in respiration, so its oxygen concentration is lower than in the blood, and oxygen diffuses from high to low concentration.
2. Write the word equation for photosynthesis and name where in the cell it happens.
   carbon dioxide + water → glucose + oxygen, using light and chlorophyll, in the chloroplasts.
3. Jelly babies left in water swell up. Write a testable question about temperature and say what you would measure and keep the same.
   For example: does water temperature change how much a jelly baby's mass increases in an hour? Measure the mass before and after; keep the jelly baby type, the volume of water and the time the same.
4. Germinating peas in a sealed flask warm up, and limewater connected to the flask turns milky. Which process is happening and what two pieces of evidence show it?
   Respiration: the heat shows energy being released, and the milky limewater shows carbon dioxide being produced.
5. Is a plant respiring at night, photosynthesising, or both? Explain.
   Only respiring. With no light it cannot photosynthesise, but respiration goes on all the time.
6. Correct this statement: "Plants photosynthesise and animals respire."
   Plants respire all the time in their mitochondria, just like animals; in light they also photosynthesise.
7. Correct this statement: "Respiration is the same thing as breathing."
   Respiration is the reaction in every cell that releases energy from glucose; breathing only moves air in and out of the lungs.
8. Correct this statement: "Particles diffuse because they want to spread out into empty space."
   Particles move randomly, and more leave a crowded area than enter it, so the overall movement is from higher to lower concentration.
9. Correct this statement: "Photosynthesis makes energy for the plant."
   Energy cannot be made; photosynthesis stores light energy in glucose, and respiration later releases it.