Year 10 Science: The water cycle part 1: Earth's spheres, the Sun and weather

Name: _____ Date: _____

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

Practice

1. Water is inside the leaves of a kauri tree. Which sphere is it in?

2. A puddle dries up on a sunny afternoon. Name the change of state, and say whether energy is taken in or given out.

3. Explain why the equator is warmer than Antarctica, using the idea of sunlight being spread out.

4. Dry air is about 21% oxygen. About how many litres of oxygen are there in 100 L of dry air?

5. Use the storage table to explain why water in the atmosphere is replaced much faster than water in the oceans.

Fix the mistake

6. Correct this statement: "The steam from a kettle and the clouds in the sky are water vapour."

7. Correct this statement: "Condensation cools the air, because it happens when things are cold."

8. Correct this statement: "Precipitation is the change of state from gas to liquid."

9. Correct this statement: "The equator is hotter because it is closer to the Sun."

Answer key (for parents and tutors)

1. Water is inside the leaves of a kauri tree. Which sphere is it in?
   The biosphere (living things).
2. A puddle dries up on a sunny afternoon. Name the change of state, and say whether energy is taken in or given out.
   Evaporation; energy is taken in from the Sun and the ground.
3. Explain why the equator is warmer than Antarctica, using the idea of sunlight being spread out.
   At the equator the Sun's rays arrive nearly straight on, so the energy is concentrated on a small area; near the poles the rays arrive at a low angle, so the same energy is spread over a much larger area (and passes through more air), heating each square metre less.
4. Dry air is about 21% oxygen. About how many litres of oxygen are there in 100 L of dry air?
   About 21 L.
5. Use the storage table to explain why water in the atmosphere is replaced much faster than water in the oceans.
   The atmosphere holds a tiny amount of water that stays about 9 days before falling as precipitation, while the oceans hold a huge amount that stays about 3000 years on average.
6. Correct this statement: "The steam from a kettle and the clouds in the sky are water vapour."
   Water vapour is an invisible gas; steam and clouds are tiny liquid droplets that formed when vapour condensed.
7. Correct this statement: "Condensation cools the air, because it happens when things are cold."
   Cooling starts condensation, but condensation itself gives out energy and warms the air; it is evaporation that takes energy in and cools.
8. Correct this statement: "Precipitation is the change of state from gas to liquid."
   That change is condensation; precipitation is water or ice falling from clouds, with no change of state needed.
9. Correct this statement: "The equator is hotter because it is closer to the Sun."
   The difference in distance is tiny; the equator is hotter because the Sun's rays arrive nearly straight on, so the same energy lands on a smaller area.