

# Carbon Cycle Caper

## Teacher crib sheet

### Introduction

Approx. 5 mins

Give an overview, and introduce the 'stations'. The balls represent carbon moving around the carbon cycle.

### Game 1

Where's carbon? (approx. 10 mins)

1. Read the 'Where's carbon?' questions; students run to the station they think answers the question. Get all students to move to the correct station.
2. Explore misconceptions, discuss forms of carbon found at each station (e.g. CO<sub>2</sub>, CH<sub>4</sub>).

### Game 2

Move that carbon! (processes of the carbon cycle, approx. 15 mins)

1. Illustrate the processes involved in the carbon cycle. Students role-play as forests, coal-fired power stations, etc.
2. Set up ten teams, each with a Challenge Quizmaster. The Quizmaster asks the team to identify the processes on each 'Move that carbon!' question card.  
**Note: Shuffle the cards**
3. One team member runs to the correct station, and moves one ball where necessary. Repeat for all challenge cards.

**Note: Place balls up to the lines in the ball containers before Game 3 (30 balls in each)**

### Game 3

Carbon cycle shuffle, before Industrial Revolution (approx. 20 mins)

1. Assign six Station Managers (your ball monitors) – one for each station.
2. Set up eight teams – one for each process: PHOTOSYNTHESIS, RESPIRATION, EATING, DYING, COMBUSTION, ABSORPTION, RELEASE and DECOMPOSITION.

Each team has a golden envelope with process information card and stickers.

3. Students stick labels on their foreheads, and move to the starting point for their process.
4. Teams work together, moving the right number of balls from the starting point to the end point within each ten-second cycle.
  - The RESPIRATION team divide in two, moving some balls from PLANTS, some from ANIMALS.
  - The COMBUSTION team move no balls this game.

**5. Practice cycle: one member of each team describes their process and what they are doing.**

6. Using a countdown timer, run through five cycles. At the end, Station Managers report back on their carbon container: levels should have remained the same.

### Game 4

Carbon cycle shuffle, after Industrial Revolution (approx. 10 mins)

**Note: Move each team round one process if you wish**

1. Repeat Game 3, but now the COMBUSTION team have something to do (move two balls each step). Give them a new process information card. Other teams continue as before.
2. Run five cycles again. Station Managers report back on carbon levels. FOSSIL FUELS should now be lower and ATMOSPHERE should have more, but the rest of the levels are about the same. Why do your students think that is?

### Wrap up

Approx. 10 mins

Discuss scenarios:

- Why is the amount of carbon dioxide in the atmosphere important?
- What if everyone switched to biofuels/ renewable energies?
- What if we stopped using fossil fuels today? Would the carbon cycle become balanced again, and would carbon dioxide levels in the atmosphere return to their preindustrial values? If so, how? And when?