

Name:

Grade:

School:

Date:

WithOnePlanet

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Review

Lesson 6

Student worksheet

What's at the end of the carbon cycle?

Years 7 to 8



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What's at the end of the carbon cycle?

Lesson 6: Student worksheet

Step 1: Carbon bingo – Prepare your game board

1. The orange squares on your game board need to be completed.

To do this, you will need to create a question for each square using the 'question starter' provided in that square. These 'question starters' relate to the green box which begins the row that the square is located in. You must read the description in each green box to make sure the questions you create match that description.

Each question you create needs to be based on the statement in the pink box which heads the column it is located in. You must read the description in each pink box to make sure the questions you create match these descriptions.

The already completed white squares on your game board provide you with plenty of examples of how to do this.

When you are happy with your questions, write them into the orange squares on your game board.

2. Every square on the game board that has a question also needs an answer.

To do this, you will need to review all the worksheets and other tasks that you have completed during the unit, and write an answer. If necessary, you may need to slightly update the question so that the answer is directly related to the areas you have learnt about. Remember, however, that the question still needs to be relevant to both the green and pink boxes.

Some of the questions may have more than one answer. For these questions, provide as many options for that answer as you can think of, but during the game, be prepared for any other responses that also correctly answer that question.

Write the answers to all the questions from your game board (including the questions you have created in the orange squares) on the answer sheet provided.

HINT: You may want to use your game board more than once. If so, it is a good idea to cover your game board in clear plastic (e.g. contact, plastic pocket etc.), so that any marks can be removed.

Gather your equipment.

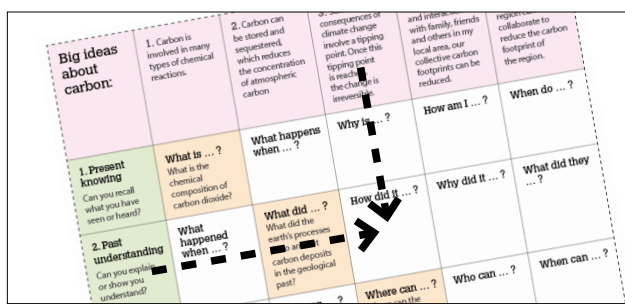
For this game you will need the following:

- > your game board and answer sheet
- > two dice – each numbered 1-6, that preferably look different from each other (e.g. colour, size etc.)
- > 2-3 other players
- > a texta (if using a re-useable game board) or a pen/pencil

Step 2: Let's play carbon bingo!

Rules

1. Players swap game boards so that they are not playing using their own game board.
2. Assign one die to **pink boxes** and the other die to **green boxes**. Remember which die represents which colour. The number that the **pink box** die lands on refers to the numbers shown in the **pink boxes**. The number that the **green box** die lands on refers to the numbers shown in the **green boxes**.
3. Each player takes it in turns to toss both dice.
4. With your fingers, trace into the centre of the board from the **green box** and **pink box** until you reach the correct question. An example of how to do this is shown below.



5. If a player rolls a '6' with the **pink box** die, they can select any of the **pink boxes** (1-5) to select their answer from. However, they will need to select the correct **green box** based on the number appearing on the **green box** die.
 6. Once the player has selected the correct box, they must read the question in that box and attempt to answer it.
 7. The player who originally created that game board will consider the answer given, and check their solutions sheet to determine whether the answer is correct or not.
- NOTE: It is not important to answer the question using all the same words as are contained in the answer on the answer sheet. As long as the ideas/concepts/key terms are the same, then the answer can be deemed correct.
8. If a player gets the answer correct, they can place a cross over the question in that square and take another turn. If a player gets the answer incorrect, they can NOT place a cross over the question in that square or make a second attempt to answer that question. The next player takes a turn.
 9. A player can decide not to roll the die and instead attempt to answer a question for a second, third ..., etc. time. However, the player must wait for their next turn before they offer another answer. A player can attempt to answer a single question as many times as they wish. Alternatively, if a player chooses not to answer a question that they previously got incorrect, they can elect to answer a different question by rolling the dice.
 10. A player wins by being the first player to shout CARBON BINGO! when they have correctly answered AT LEAST ONE question relating to each of the green and pink boxes. For example, if the player answers all of the questions in the orange boxes correctly, they can shout CARBON BINGO!

Good luck!

Carbon bingo game board!

Big ideas about carbon	1. The chemical bonds between carbon atoms in molecules such as carbon dioxide, crude oil and sugars can be broken to release energy.	2. Energy is transferred between different forms to generate electricity. The inefficiencies of energy transformations can result in the production of heat.	3. Some of the consequences of climate change are short term and some are long term. Some of the consequences of climate change are reversible and some are permanent.	4. I can reduce my carbon footprint by reducing my energy consumption from non-renewable resources.	5. Countries in the Asia-Pacific region have renewable and non-renewable resources and can make individual and collective decisions about their energy sources and use.
1. Knowledge (Remember) Can you recall what you have seen or heard?	What is ... ?	Why is the burning of fossil fuels energy inefficient?	Why is the burning of fossil fuels affecting the environment?	How am I able to reduce my energy consumption from fossil fuels?	What do power company spokespeople have to say about Australia's transition to renewable resources?
2. Comprehension (Understand) Can you explain or show you understand?	What happens when the bonds between carbon atoms break?	What energy transformations occur when fossil fuels are burnt at a power station?	How does excess carbon dioxide in the atmosphere contribute to the enhanced greenhouse effect?	Why do non-renewable resources reduce the overall CO2 production by humans?	What did ... ?
3. Application (Apply) Can you use the new knowledge or show how it connects to other things you know or can do?	How can planting more trees reduce the CO2 concentration in the atmosphere?	Why can ... ?	Where can the Earth's CO2 concentration get to before the Earth starts to go into a new ice age?	Who can help me reduce my dependence on fossil fuels for my energy?	When is the right time for Australia to convert to a 100% renewable energy plan?
4. Analysis (Analyse) Can you break down the information in a meaningful way?	Why should we reduce the amount of carbon that reaches the atmosphere?	If all the coal was left in the ground, what would the world look like now?	When could ... ?	What would happen if everyone in Australia decided to use renewable energy to power their homes?	Who should take responsibility for the amount of CO2 entering the atmosphere in Australia?
6. Imagination (Create) Can you create new products, ideas or a new way of looking at things?	How might ... ?	How might non-renewable energy be used differently in the future?	Which types of countries might be the first to feel the effects of climate change?	Why might my personal decisions about the energy I use contribute to reducing the effects of climate change?	In what ways might we educate others about the consequences of excess energy consumption?

Answer sheet

What is ...	
Why is the burning of fossil fuels energy inefficient?	
Why is the burning of fossil fuels affecting the environment?	
How am I able to reduce my energy consumption from fossil fuels?	
What do power company spokespeople have to say about Australia's transition to renewable resources?	
What happens when the bonds between carbon atoms break?	
What energy transformations occur when fossil fuels are burnt at a power station?	
How does excess carbon dioxide in the atmosphere contribute to the enhanced greenhouse effect?	
Why do non-renewable resources reduce the overall CO ₂ production by humans?	
What did ...?	
How can planting more trees reduce the CO ₂ concentration in the atmosphere?	

Why can ...?	
Where can the Earth's CO2 concentration get to before the Earth starts to go into a new ice age?	
Who can help me reduce my dependence on fossil fuels for my energy?	
When is the right time for Australia to convert to a 100% renewable energy plan?	
Why should we reduce the amount of carbon that reaches the atmosphere?	
If all the coal was left in the ground, what would the world look like now?	
When could ...?	
What would happen if everyone in Australia decided to use renewable energy to power their homes?	
Who should take responsibility for the amount of CO2 entering the atmosphere in Australia?	
Which part of the carbon cycle will become a good place to store excess carbon in the future?	