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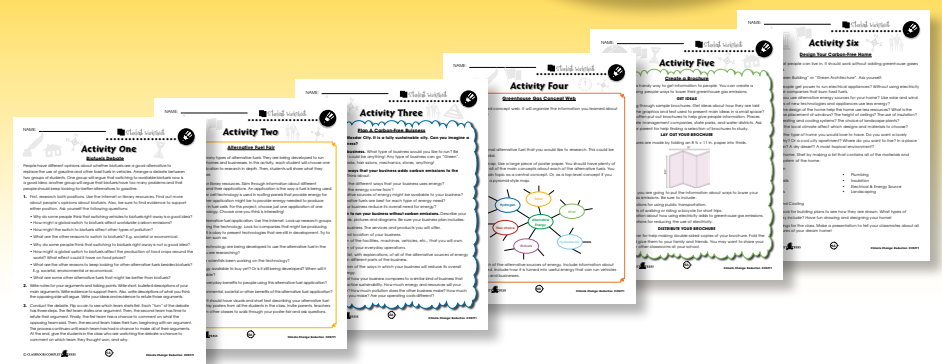
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Masdar City

1. Write each term beside its meaning.

carbon dioxide	construction	eliminate
solar energy	public transportation	

- a) Energy from the sun.
- b) The act of building.
- c) One of the major greenhouse gases.
- d) A way for many people to travel from place to place in the same vehicle.
- e) To get rid of something.

2. Imagine building a city in a desert environment. Think about the challenges you would face to make sure people's needs are met in the city. On the lines below, list the difficulties you think you would face to build a city in a desert.



Masdar City

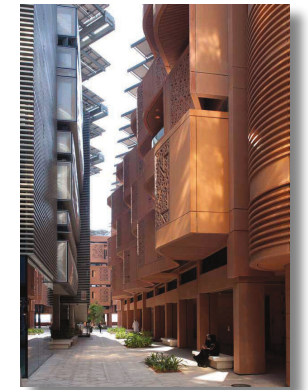
All around the world, industries, city planners, and leaders are looking for ways to lower greenhouse gas emissions. They are working to help limit climate change. In Abu Dhabi, the capital of the United Arab Emirates, the Masdar City project has accomplished this task. Masdar City is a completely **sustainable** city with little to no greenhouse gas emissions. The strategically-placed city is only minutes away from Abu Dhabi International Airport. It is home to more than 40,000 people, and is still growing. Slowly, one neighborhood at a time will be added to the city. Eventually, over 90,000 people will live and work within the city.



STOP What is Masdar City?

How does the city thrive in the harsh desert environment?

The city consists of narrow walkways between tall buildings. This traps the wind and provides shade. The average temperature is 10 degrees cooler inside the city compared to the rest of Abu Dhabi. The sun is captured using solar power plants. This **solar energy** is converted into electricity and used to power the city.



Shade created by solar-panel-topped buildings.
Climate Change: Reduction CCP5771-7



Masdar City



1. Fill in each blank with the correct word from the reading.

- a) _____ is the capital of the United Arab Emirates.
- b) Masdar City is a completely _____ city with little to no greenhouse gas emissions.
- c) Narrow walkways between tall buildings provide _____.
- d) The average temperature is _____ degrees cooler inside the city compared to the rest of Abu Dhabi.
- e) The buildings are powered by clean energy, such as _____.
- f) The buildings used 90% recycled _____. They are designed to lower energy and water use by _____.
- g) The Personal Rapid Transit system is an electric _____ vehicle that offers privacy for the commuter.

2. Put a check mark (✓) next to the answer that is most correct.

- a) What do Personal Rapid Transit systems NOT use?
- A Computer
- B Drivers
- C Sensors
- D Magnets
- b) How many people live and work in Masdar City?
- A 40,000
- B 20,000
- C 60,000
- D 10,000



Masdar City

3. Answer each question with a complete sentence.

- a) Describe two ways that Masdar City is sustainable.
-
-
- b) Explain how people will get around without cars.
-
-

Research

4. Find out about other sustainable communities around the world.

Use poster paper. Draw a diagram showing all of the processes of the nitrogen cycle. Use the Internet or library resources. Find out about how other cities, towns and communities around the world are trying to lower or eliminate greenhouse gas emissions.

Work with your class. Try to find a selection of green cities and towns from around the world. Create a poster fair. Show pictures and descriptions of each city. Invite students from other classes to walk through the fair and ask questions.



Plan a Green City

You learned about Masdar City. It is one of the only fully-sustainable urban communities. Now, plan a city in your area that will do the same.

First, think about what you would like your city to contain. Ask yourself the following questions:

- What kinds of structures will people live in?
- Where will people go to school and work?
- How will people buy the things they need every day? Like food and clothing.
- How will people get around in the city?
- Where will people go to have fun?

Then, think about the needs of a city in the type of environment where you live. Ask yourself the following questions:

- What is the weather like? Will people need heat? Will they need cooling? Will they need protection from storms?
- What alternative energy resources are available? Does your region get enough sunlight to use solar power? How about wind energy? Is there a source for hydroelectric power?
- How can your city lower its need for power so that alternative sources of energy will be enough? People will need less fuel and electricity. What are some urban planning choices you could make?

Now, build a model of your city. Start by creating a map. Mark the locations of buildings, walkways, public transportation, parks, and any other features you are including in your city. Then, create a three dimensional model based on your map. You may wish to visit your local planning department. See how urban planners build models. Use any kinds of materials, like cardboard, clay, wire, balsa wood, sand, aluminum foil, and miniature figurines. Paint the model where appropriate.

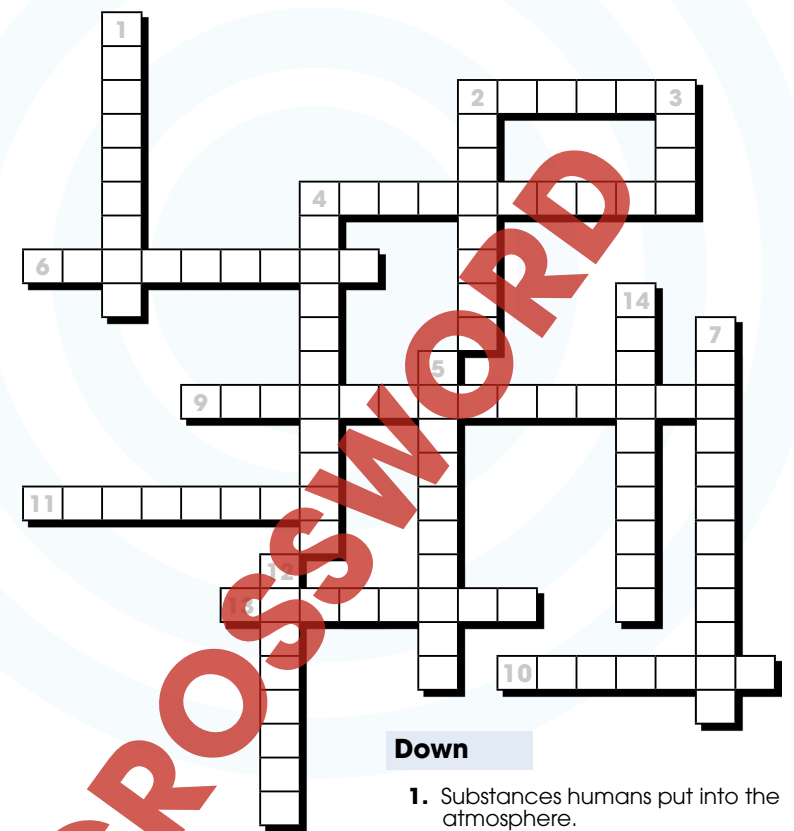
Finally, display your model in the classroom. Talk about the features of your city that will lower or eliminate greenhouse gas emissions and waste. Talk about the daily life of people living and working in your city. Invite your classmates to ask questions.



Crossword Puzzle!

WORD LIST

- biofuel
- dams
- efficiency
- emissions
- fuel cell
- hybrid
- hydrogen
- manufactured
- planning
- pollutants
- renewable
- solar cells
- solar energy
- transportation
- turbines



Across

2. A car that uses electricity as power.
4. Objects that change energy from sunlight into electricity (two words).
6. Most alternative fuels are also _____.
9. The movement of people or goods from one place to another.
10. An alternative fuel made of vegetable oil or plant parts.
11. Urban _____.
13. Wind _____ change energy from wind into electricity.

Down

1. Substances humans put into the atmosphere.
2. A common gas in the atmosphere used for energy in fuel cells.
3. Structures that block the flow of rivers.
4. Energy from the Sun (two words).
5. A substance or condition that contaminates air, water or soil.
7. Products that are made by people are _____.
12. Technology that uses hydrogen as a source of energy to power vehicles.
14. Fuel _____ describes how far a car can go on a certain amount of fuel.



Comprehension Quiz

30

Part A

8

Circle the word **TRUE** if the statement is TRUE **OR** Circle the word **FALSE** if it is FALSE.

1. Most greenhouse gas emissions come from burning fossil fuels.
TRUE **FALSE**
2. If people stop emitting greenhouse gases today, Earth's average temperature will start to go down right away.
TRUE **FALSE**
3. Alternative fuels release more greenhouse gases than fossil fuels.
TRUE **FALSE**
4. Renewable sources of energy are replaced by nature faster than they are used up.
TRUE **FALSE**
5. Hydroelectric generators change energy from sunlight into electricity.
TRUE **FALSE**
6. A product made with recycled materials most likely used less energy to make than the same product made with raw materials.
TRUE **FALSE**
7. Products that are manufactured are made by people using raw materials.
TRUE **FALSE**
8. Buying fruits and vegetables grown near where you live is one way to help lower greenhouse gas emissions.
TRUE **FALSE**

Part B

5

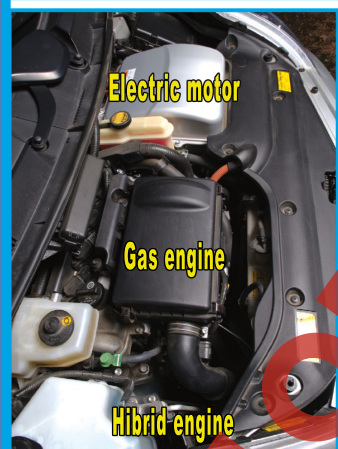
List five transportation choices that result in less greenhouse gas emissions than driving individual vehicles.

SUBTOTAL: /13

Alternative Energy Automobiles



Toyota Prius hybrid car



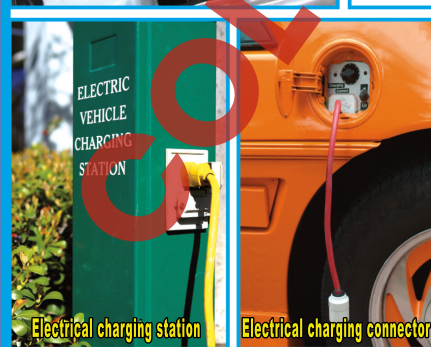
Electric motor

Gas engine

Hybrid engine



Electric Taxi



Electrical charging station

Electrical charging connector



Hydrogen fuel connector

BMW Hydrogen 7
BMW-hydrogen-car



Masdar City



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1.

- a) Abu Dhabi
- b) sustainable
- c) shade
- d) ten
- e) solar power
- f) aluminum, 40%
- g) driverless

3.

- a) Any two of: Buildings powered by clean energy. Built with green building materials. 30% lower embodied carbon in its build environment. Designed to lower energy and water use by 40%.
- b) Walking and public transportation, like Personal Rapid Transit.



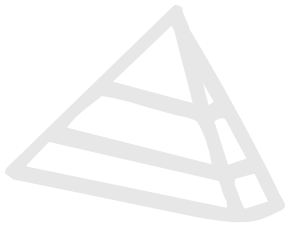
2.

- a) B
- b) A

10

11

EASY MARKING ANSWER KEY



Masdar City

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United Arab Emirates



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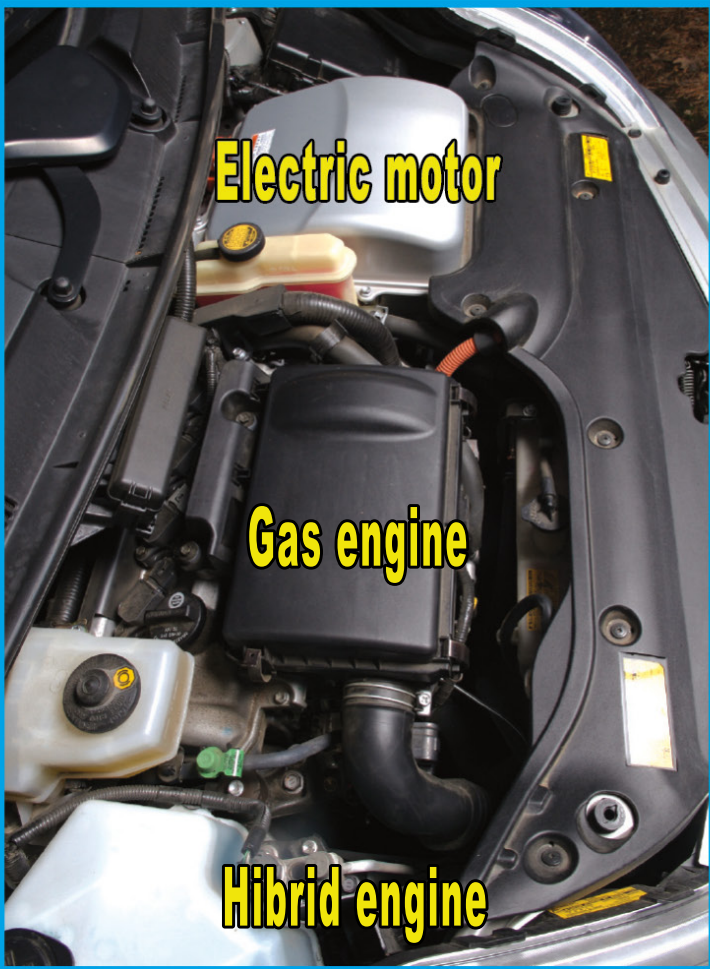
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Alternative Energy Automobiles



Toyota Prius hybrid car



Electric motor

Gas engine

Hibrid engine



Electric Taxi



Hydrogen fuel connector



Electrical charging station



Electrical charging connector



BMW hydrogen car