

Chemistry

Delprov A1

engelsk version

Årskurs

9

Elevens namn och klass/grupp

NATIONAL TEST IN CHEMISTRY 2014

The national test gives you a chance to show what you know about chemistry. On the right of each question you will find a symbol that tells you which of three abilities you can demonstrate in your answer.

The rows in the symbol describe these different abilities.

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|---|--|--|--|--|--|--|--|--|--|---|
| E C A <table border="1" style="display: inline-table; border-collapse: collapse;"> <tr><td style="width: 20px; height: 20px;"></td><td style="width: 20px; height: 20px;"></td><td style="width: 20px; height: 20px;"></td></tr> <tr><td style="width: 20px; height: 20px;"></td><td style="width: 20px; height: 20px;"></td><td style="width: 20px; height: 20px;"></td></tr> <tr><td style="width: 20px; height: 20px;"></td><td style="width: 20px; height: 20px;"></td><td style="width: 20px; height: 20px;"></td></tr> </table> | | | | | | | | | | <div style="display: flex; flex-direction: column; align-items: flex-start;"> <div style="margin-bottom: 10px;"> <p>The ability to use knowledge of chemistry to examine information, communicate and take a view on questions concerning energy, the environment, health and society</p> </div> <div style="margin-bottom: 10px;"> <p>The ability to carry out systematic studies in chemistry</p> </div> <div> <p>The ability to use concepts of chemistry, its models and theories to describe and explain chemical relationships in society, nature and in people</p> </div> </div> |
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For each row you will be able to show your knowledge at three different levels: E, C and A.

For example, the table on the right indicates that the question allows you to show that you can use concepts of chemistry, its models and theories to describe and explain chemical relationships in society, nature and in people at level E and C.

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Your answers to the questions should be clearly written so that other persons can read your text and understand your meaning. Therefore it is important that you show all your work.

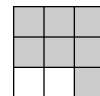
Time allowed: 75 minutes

Name: _____
 School: _____ Class: _____
 Date of Birth: Year _____ Month _____ Day _____
 Girl ☐ Boy ☐

Your answers must be written on separate sheets of paper, NOT on the question paper. The question paper must be returned to your teacher together with your answers.

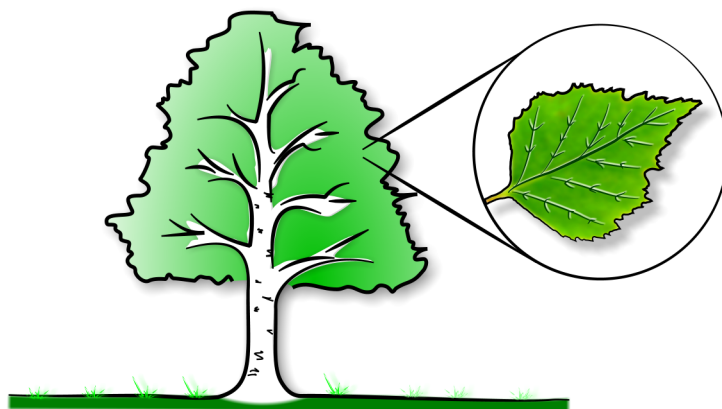
1. Everything around us is matter, built of atoms and molecules.

Use your content knowledge about matter and the structure of the atom to combine concepts **1-5** with the correct description **A-E**.

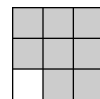


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|----------------------|--|
| 1. Proton | A. Consists of one kind of atoms. |
| 2. Element | B. The uncharged particle in an atom. |
| 3. Neutron | C. Consists of several different kinds of atoms. |
| 4. Chemical compound | D. The negatively charged particle in an atom. |
| 5. Electron | E. The positively charged particle in an atom. |

2. Photosynthesis is a chemical reaction that sometimes occurs in the leafs of green plants.

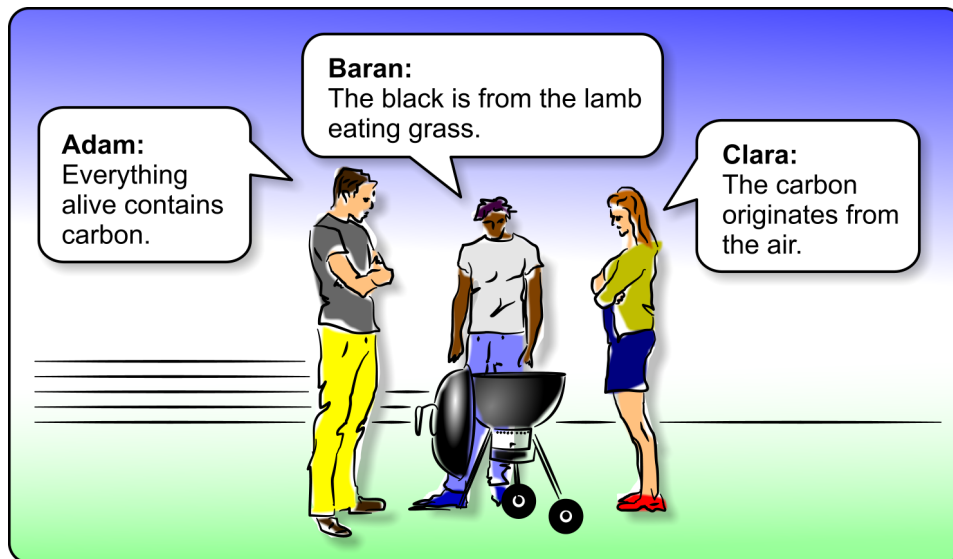


Which of the alternatives **A-D** is describing what is produced in the reaction?

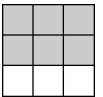


- A. carbon dioxide and water
- B. carbon dioxide and dextrose
- C. oxygen and water
- D. oxygen and dextrose

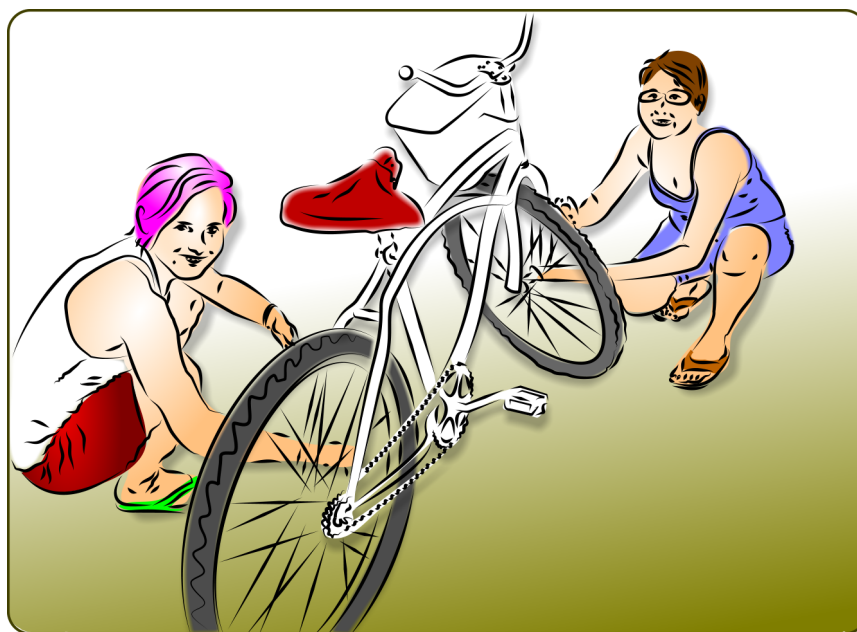
3. Adam, Baran and Clara are barbecuing a piece of lamb for dinner. Unfortunately, the meat is burnt and is black on the surface. Adam's father says that the black on the meat is carbon. The teens are discussing from where the carbon comes.



All teens are right. Use their claims to explain the circulation of carbon atoms.



4. Madeleine discovers that her bicycle has begun rusting.



Which of the statements **A-D** is best describing the chemical reaction when rust is



- A.** The iron atoms in the metal are reacting with water molecules in the air.
 - B.** The iron atoms in the metal are reacting with oxygen molecules and water molecules in the air.
 - C.** The iron atoms in the metal are reacting with nitrogen molecules and water molecules in the air.
 - D.** The iron atoms in the metal are reacting with oxygen molecules in the air.
5. Elias has painted a bureau and is going to clean the brush. First, he tries to clean it with water but that doesn't help. However, it works when cleaning with white spirit. He asks Elin why so and Elin answers: "like-dissolves-like".

Use your chemistry content knowledge to explain what Elin means by "like-dissolves-like".



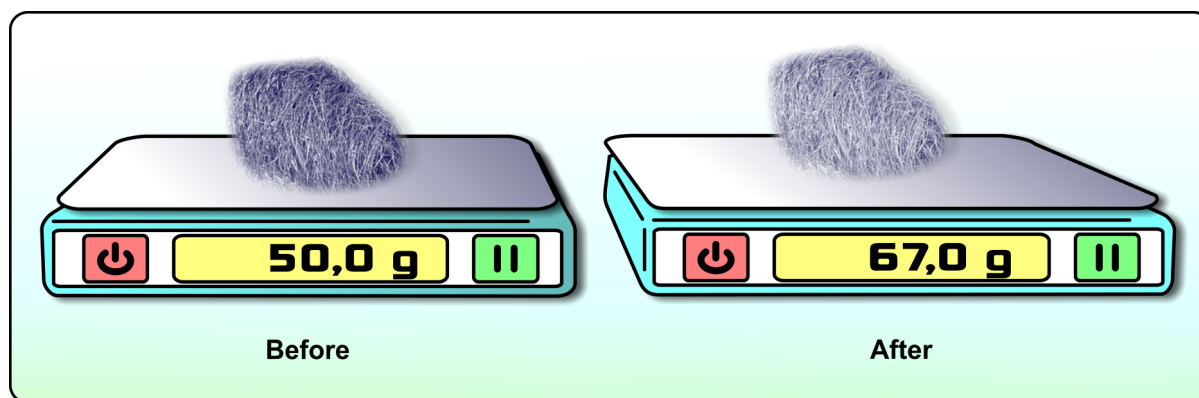
6. Wastewater, from for instance toilettes, contains chemical compounds contributing to eutrophication.

Which of the chemical compounds **A-D** might contribute to eutrophication?

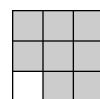


- A. Carbon compounds
- B. Nitrogen compounds
- C. Sulphur compounds
- D. Mercury compounds

7. Amel has got a task to investigate what happens when she is burning a piece of steel wool. Steel wool consists of the metal iron. She discovers that the steel wool weighs more after burning.

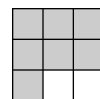


- a) Describe why the steel wool is weighing more after burning.



Thereafter, Amel investigates what happens when she is burning a piece of paper. She puts a piece of paper on the scale. When the paper has burnt, the scale shows a lower weight.

- b) Explain why the scale shows a lower weight.



8. Today we are sorting waste and recycling packing materials of paper, glass, plastics and metals.

- a) Give **one** example why it is important to recycle packing materials made of plastics.

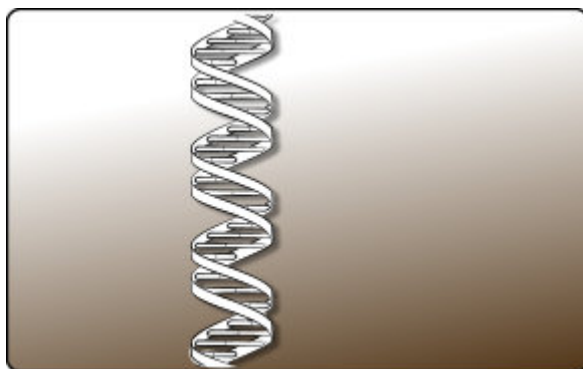
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Kim is shopping and is choosing between two different plastic bags to carry her food. One bag is made of plastics and the other is made of bio-plastics. Bio-plastics is a version of plastics made from cellulose from trees.

- b) Kim is choosing the bio-plastic bag. Reason about the consequences this choice might have on the environment.

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9. In 1953, the researchers James Watson and Francis Crick succeeded in identifying the structure of the DNA molecule. This also made it possible to understand the function of the DNA molecule.



- a) Give **one** example on a function that the DNA molecule has in the human body.

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Research on the DNA molecule still proceeds and the enhancing knowledge is used within many different areas.

- b) Explain, with **one** example, what consequence the enhancing knowledge about the function of the DNA molecule has for the people's living conditions.

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Institutionen för tillämpad utbildningsvetenskap