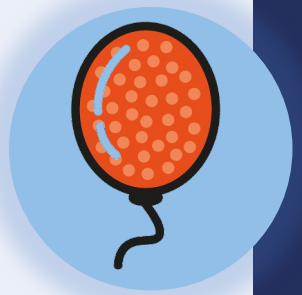
Feedback Lesson

Do Now:

1. Name the alkane that contains four carbon atoms.
   Butane
2. Name the process by which crude oil is separated into different compounds.
   Fractional distillation
3. Describe the pattern in the boiling points of the alkanes.
   As the alkanes get larger (more atoms) their boiling points increase.
4. Name the property that describes how easily something is poured.
   Viscosity
5. State the products of combustion of alkanes.
   Water and carbon dioxide



Do Now

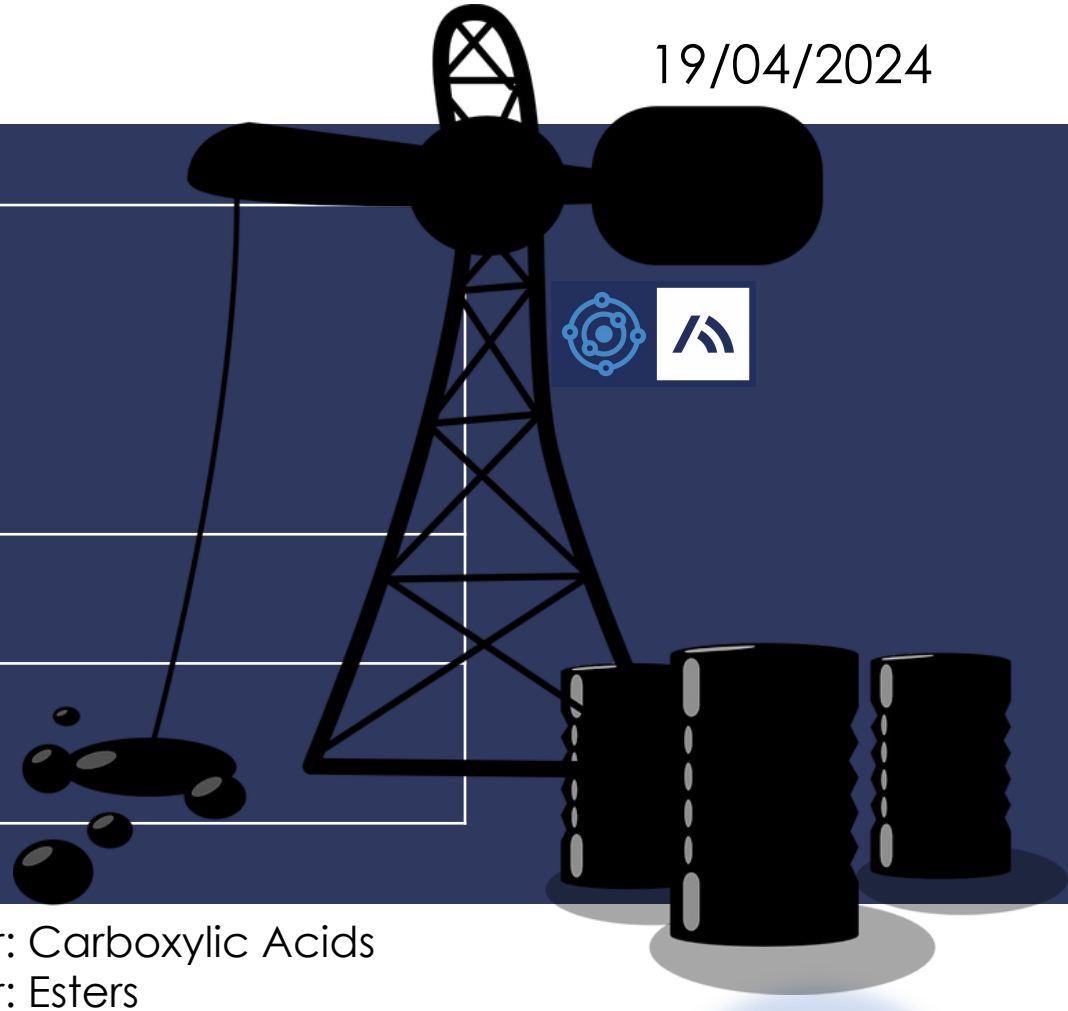
ArkCurriculum+

19/04/2024

Feedback Lesson

C5.1.16

Science
Mastery



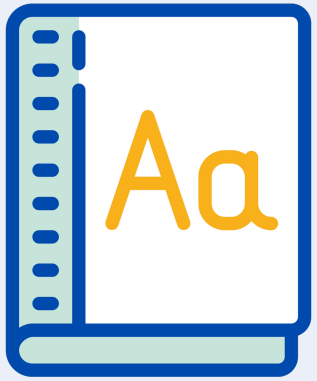
C5.1.1 Prior Knowledge Review
C5.1.2 Crude Oil and Hydrocarbons
C5.1.3 Fractional Distillation
C5.1.4 Combustion of Hydrocarbons
C5.1.5 Taking it Further: Alkenes
C5.1.6 Cracking
C5.1.7 Taking it Further: Alcohols
C5.1.8 Taking it Further: Producing Ethanol by Fermentation
C5.1.9 Taking it Further: Producing Ethanol from Ethene
C5.1.10 Taking it Further: Carboxylic Acids
C5.1.11 Taking it Further: Esters
C5.1.12 Polymers
C5.1.13 Taking it Further: Addition Polymerisation
C5.1.14 Taking it Further: Condensation Polymerisation
C5.1.15 Taking it Further: Naturally Occurring Polymers
➢ **C5.1.16 Feedback Lesson**

Lesson Objectives

Following this lesson, students will be able to:

- [Teacher to edit objectives based on mastery quiz outcomes]
- [Teacher to edit objectives based on mastery quiz outcomes]
- [Teacher to edit objectives based on mastery quiz outcomes]

Key Words:



The Big Idea: Structure Determines Properties

Science Mastery

Carbon Chemistry

What is crude oil actually made from? Why is so useful? How can we separate it and use it for different things? How is crude oil related to petrol and other fuels?

Organic chemistry is the study of the structure and properties of compounds that contain carbon. One of the biggest sources of carbon compounds is crude oil, which can be separated into many different compounds called hydrocarbons. Humans use these hydrocarbons for many different purposes.

This is the **sixth** unit we are studying as part of the big idea: **Structure Determines Properties.**

In this unit we will learn about what crude oil is and how it can be separated into different useful products. We will learn about different groups of hydrocarbons that can be obtained by fractional distillation of crude oil and the properties of these compounds and the different reactions they are involved in. We will also look at how some of these products can be made into useful polymers.

Chemistry students will also look at other groups of compounds, including alkenes, alcohols and carboxylic acids and reactions involving these compounds.

We will develop our skills in this unit by practising drawing models of covalent bonding in molecules. We will also revisit distillation as a method of separating a mixture based on the boiling points of the substances in it.

TASKS:
What subject will this unit focus on? BIOLOGY CHEMISTRY PHYSICS
(circle the correct subject)

There are lots of keywords underlined above. List these into the two columns:

Words I know	Words I haven't seen before

Science Mastery

To answer before the unit:

1. What are you most excited to learn about in this topic?
2. What do you already know about this topic?
3. Why do you think it's important to learn that structure determines properties?
4. What knowledge from previous science lessons might help us?
5. What questions do you have about this topic?

To answer at the end of the unit:

1. Tick off any words in the 'words I haven't seen before' column that you are now confident with. Circle any you still need more practice to use.
2. What have you most enjoyed about this unit?
3. What more would you like to learn about bonding as part of the big idea: 'Structure Determines Properties'?

Introduction

This is the fix-it portion of the lesson

The **fix-it** is an opportunity to respond to gaps in knowledge, especially those identified by the previous lesson's exit ticket.

- The teacher should customise this slide as needed, to facilitate
  - **reteach**, **explanation, demonstration** or **modelling** of ideas and concepts that students have not yet grasped or have misunderstood.
  - **practise** answering specific questions or of key skills.
  - **redrafting** or **improving** previous work.

Fix-it

Answers

Can you explain why your answer was wrong?

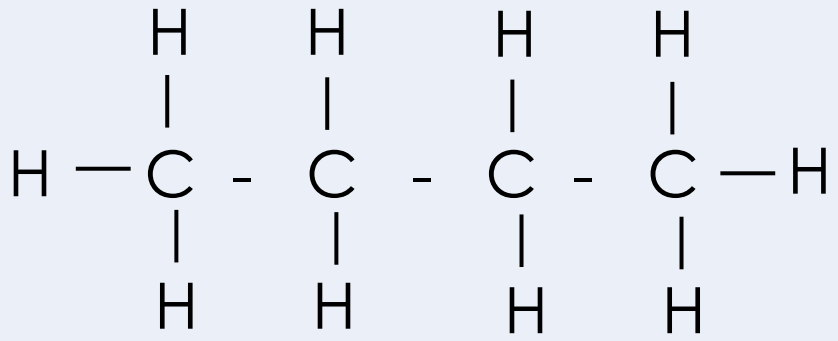
Question	Answer
1	A
2	B
3	B
4	B
5	A
6	C
7	A
8	D
9	C
10	A

Question	Answer
11	B
12	B
13	A
14	B
15	B

16 (Chemistry only)	C
17 (Chemistry only)	C
18 (Chemistry only)	B
19 (Chemistry only)	A
20 (Chemistry only)	A

Answers

1a.



1b. C_4H_{10}

2a.
Methane: Gas
Hexane: Liquid

Correcting Answers

Answers

2b.

- Both are hydrocarbons/contain hydrogen and carbon atoms
- Methane has 1 carbon atom, hexane has 6
- Methane has 4 hydrogen atoms, hexane has 14
- Both contain covalent bonds
- Methane only contains C-H bonds, hexane also contains C-C bonds
- Both are small molecules
- Hexane is a larger molecule than methane
- Methane is a gas at room temperature whereas hexane is a liquid
- Hexane has a higher melting point than methane
- Hexane has a higher boiling point than methane
- There are weak forces between molecules in both methane and hexane
- The intermolecular forces between molecules of hexane are stronger than in methane
- Hexane is more viscous than methane
- Methane is more flammable than hexane
- Both produce carbon dioxide and water through combustion

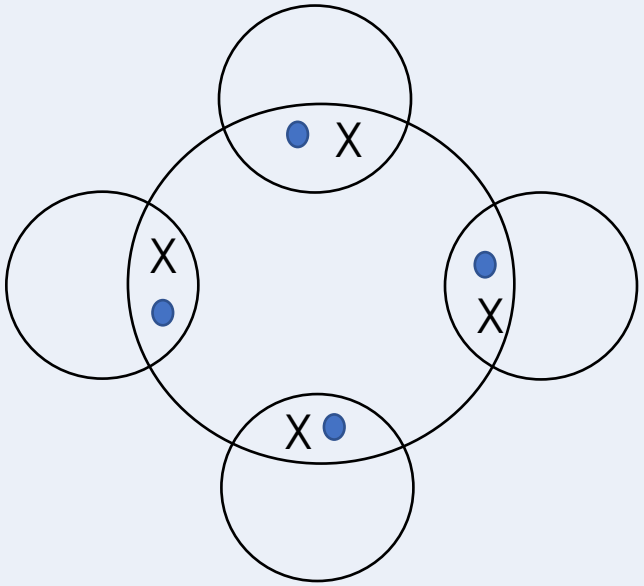
Answers

2c.

Boiling point increases as the number of (carbon) atoms increases

Because the intermolecular forces increase

2d.



Answers: Chemistry Only

3a. COOH

3b. In alcoholic drinks or as a solvent

3c. Ester + water

3d.
Level 0 (0 marks): no relevant content
Level 1 (1-2 marks): relevant points may be made but are not connected
Level 2 (3-4 marks): relevant points are made and there is an attempt at linking or a conclusion
Level 3 (5-6 marks): relevant points are logically linked with a justified conclusion

Answers: Chemistry Only

3d. Suggested points:

Advantages of fermentation
Low energy usage
Raw material used is renewable

Disadvantages of fermentation
Produces low purity ethanol
Relatively low rate of reaction

Advantages of hydration
High energy usage, therefore expensive
Raw material used is non-renewable

Disadvantages of hydration
Produces high purity ethanol
Relatively high rate of reaction

Feedback

Lesson C5.1.16	
What was good about this lesson?	What can we do to improve this lesson?

Send us your feedback by clicking this link
or by emailing sciencemastery@arkonline.org
Thank you!