Lesson 9- Complete and incomplete combustion

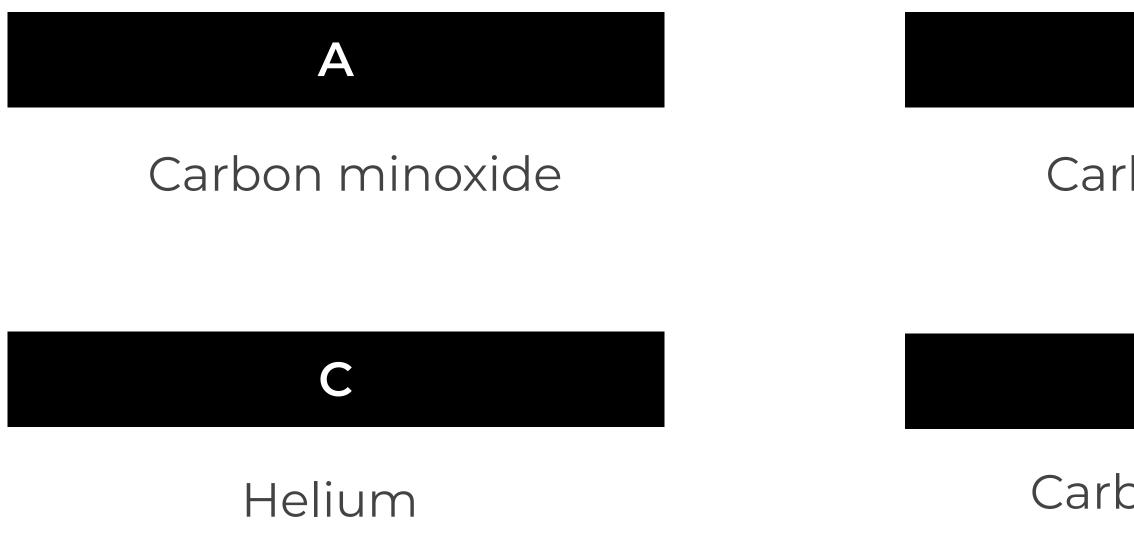
Chemistry- Key Stage 3

Energetics

Miss Charlton



Which gas is produced during incomplete combustion?





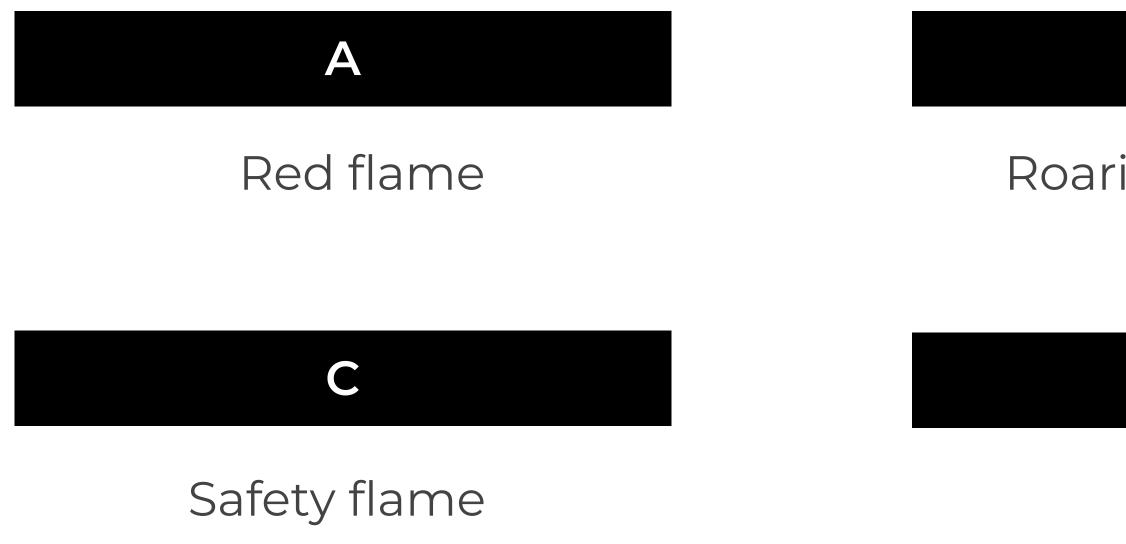
Carbon dioxide

D

Carbon monoxide



Which flame does a closed collar on a **Bunsen burner produce?**



B

Roaring blue flame

D



Which flame produces more energy?



Safety flame

B

Roaring blue flame

D



What has to be open for complete combustion to occur when using a Bunsen burner?



B

Awindow

D

The door to the room



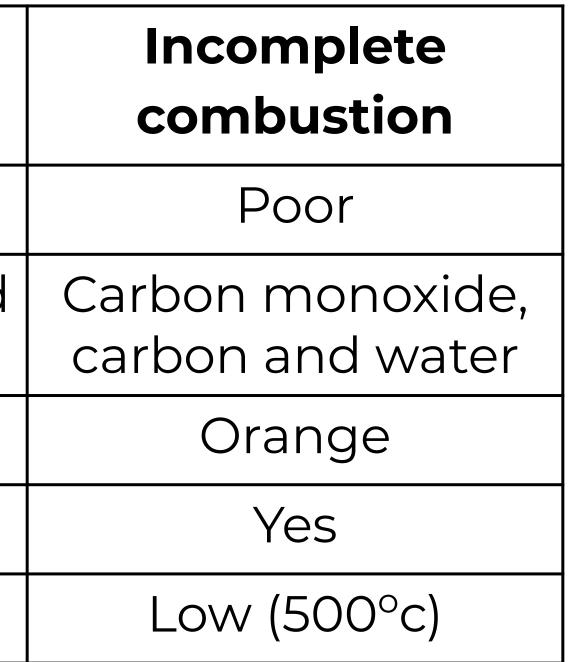
Identify the comparative or contrasting language

- There are more reactants in the disposable handwarmer, making their manufacture more complicated.
- The disposable handwarmer reaches a 20°C higher maximum temperature than the reusable one and is 3x warmer 5 hours later so it stays warmer for longer.
- The maximum temperature of 70°C might be too high and could cause skin burns, so the reusable one may be safer.
- The disposable one is 8x cheaper than the reusable one, but cannot be used again, whereas, after 8 uses, the reusable one would be better value.



Compare the two types of combustion reactions (6 marks)

	Complete combustion	
Oxygen supply	Good	
Products	Carbon dioxide and water	
Colour of flame	Blue	
Soot produced	No	
Energy released	High (1,500°c)	





Complete the task

Pollutant

When/how is it Problems it produced? causes

Carbon dioxide

During complete Increases global combustion warming

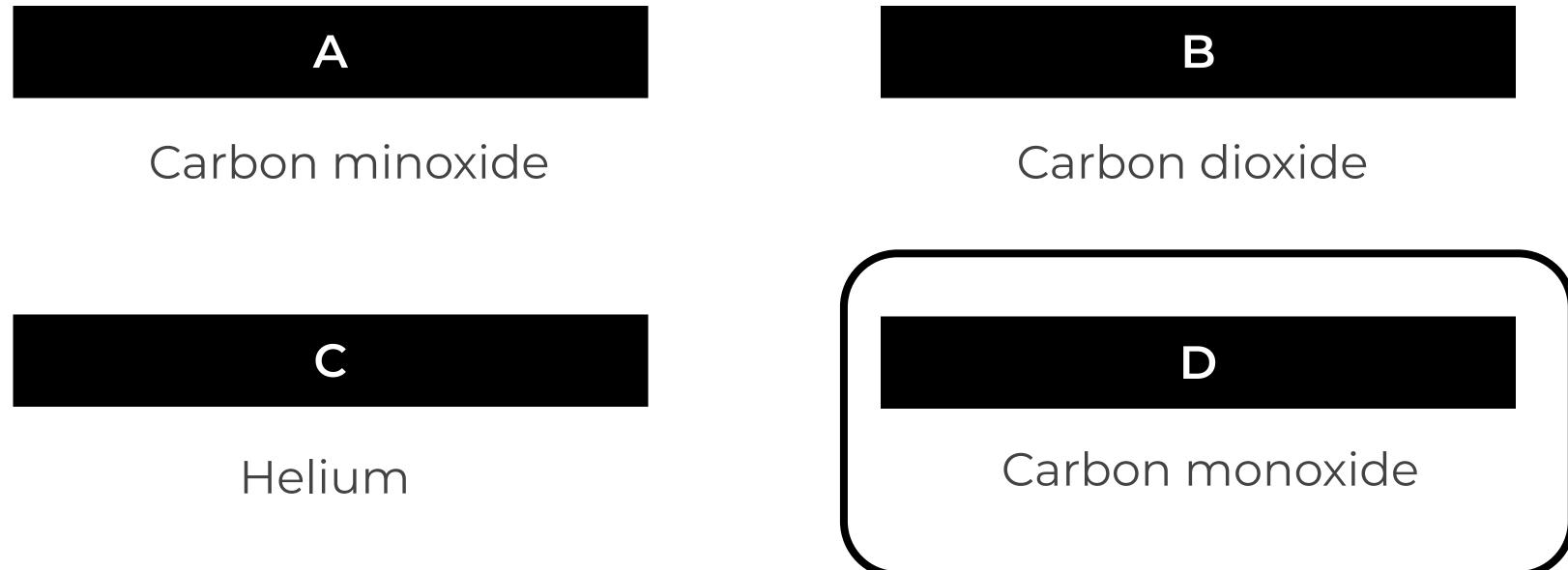
Carbon monoxide Soot/carbon Nitrogen dioxide Sulphur dioxide



Answers



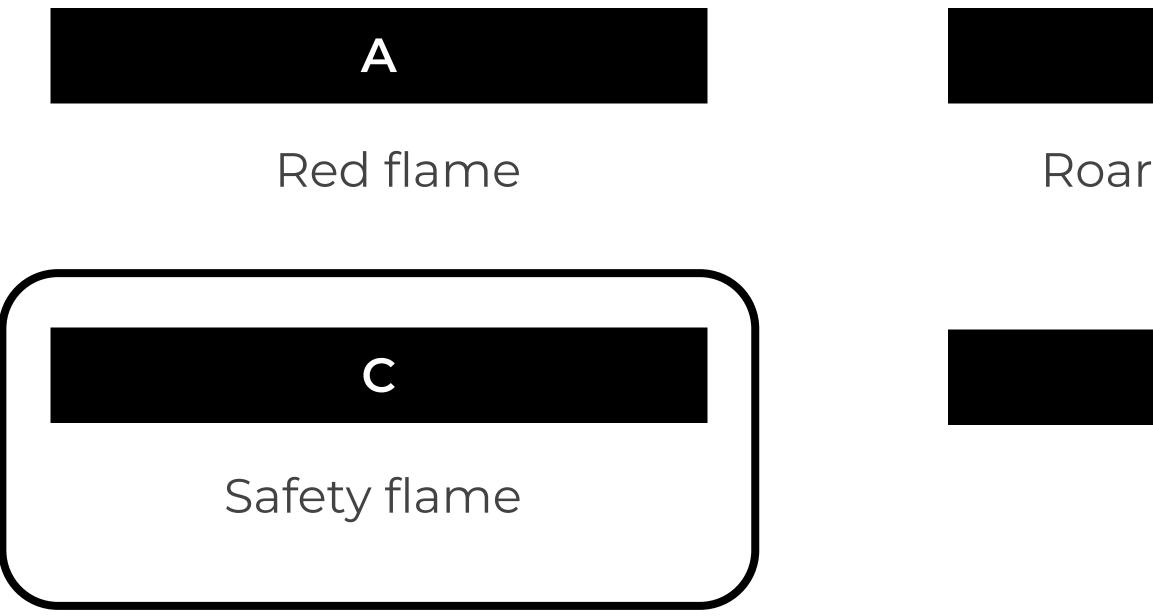
Which gas is produced during incomplete combustion?







Which flame does a closed collar on a **Bunsen burner produce?**



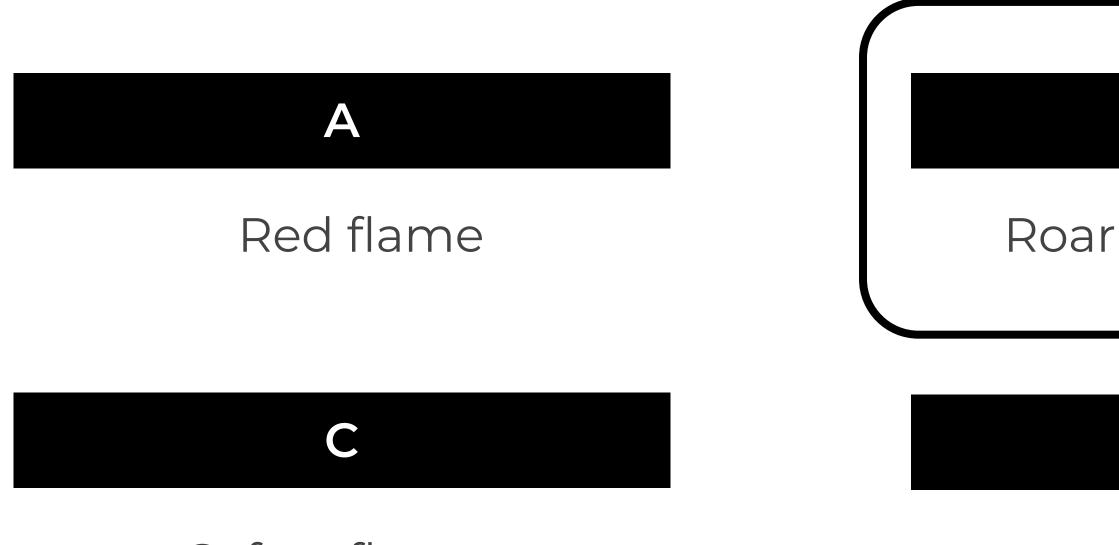
B

Roaring blue flame

D



Which flame produces more energy?



Safety flame

B Roaring blue flame

D



What has to be open for complete combustion to occur when using a Bunsen burner?

A	
The collar	A
C	

The gas valve

B

A window

D

The door to the room



Compare the two types of handwarmers (6 marks)

- There are more reactants in the disposable handwarmer, making their manufacture more complicated.
- The disposable handwarmer reaches a 20°C higher maximum temperature than the reusable one and is 3x warmer 5 hours later so it stays warmer for longer.
- The maximum temperature of 70°C might be too high and could cause skin burns, so the reusable one may be safer.

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• The disposable one is 8x cheaper than the reusable one, but cannot be used again, whereas, after 8 uses, the reusable one would be better value.



Compare the two types of combustion (6 marks)

- **Both** complete and incomplete combustion are burning reactions.
- **Similarly** they both require oxygen and so are oxidation reactions and both release heat, so are exothermic.
- However, complete combustion uses more oxygen and releases 3x more heat than incomplete combustion does, because more of the carbon and hydrogen is oxidised.

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- The flame is blue, whereas incomplete combustion has a yellow flame.
- The waste products are different incomplete combustion produces toxic carbon monoxide and carbon whilst complete combustion produces carbon dioxide and water



Environmental effects of pollutants

Pollutant	When/how is it produced?	P
Carbon dioxide	Complete combustion	Increase
Carbon monoxide	Incomplete combustion	Binds to them ur it is pois
Soot/carbon	Incomplete combustion	Global c disease
Nitrogen dioxide	Sulphur in fossil fuels reacting with oxygen in the air	Dissolve rain
Sulphur dioxide	Nitrogen in the air reacting with oxygen in hot engines	Dissolve rain

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Problems it causes

es global warming

o red bloods cells making nable to carry oxygen, so sonous.

dimming and lung

es in clouds to form acid

es in clouds to form acid

