Name ..... Class ..... Date .....

Reaction profiles

Specification references

- C5.1.2 Reaction profiles

Aims

This activity will help you to develop your understanding of reaction profiles, so that you can achieve the highest grade possible in your GCSE examinations.

Learning outcomes

After completing this activity, you should be able to:

- explain what reaction profiles show
- identify the activation energy on a reaction profile.

Task

Answer the questions below.

1 Methane burns in oxygen to make carbon dioxide and water:

methane + oxygen → carbon dioxide + water

For most reactions to happen, the reactant molecules have to collide. But collisions between them might not always cause a reaction.

Why might a collision between a methane molecule and an oxygen molecule *not* always result in a reaction?

(Hint: think about why there might not always be much damage when two cars 'crash'.)

.....

..... (*2 marks*)

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2 In a chemical reaction, the amount of energy the particles have changes as the reaction goes on.

Look at Figure 1.

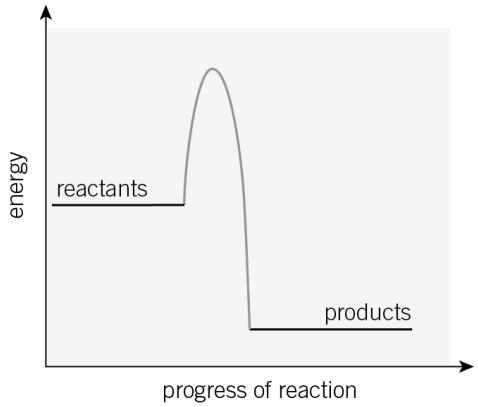

Figure 1

What happens to the amount of energy contained in the particles as products are formed from the reactants?

First: .....

Then: ..... (*2 marks*)

3 Suggest why the amount of energy in the reactants first increases.

..... (*1 mark*)

4 The amount of energy needed to start a reaction is called the activation energy.

Draw an arrow on Figure 1 to show the activation energy. (*1 mark*)

5 **a** For the reaction overall, state whether energy is transferred from the surroundings or is transferred to the surroundings.

..... (*1 mark*)

b Explain how you can tell.

..... (*1 mark*)

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