



Hinchingsbrooke School Science Department

KS3 Homework Task

Forces HW2 – Planes slow down to cut costs

Date set:

Date Due in:

On the following page is information related to the task. You may need to do additional research to achieve the maximum level possible.

- Answer all questions, if you use PowerPoint please print off and stick in your book
- Fill in your details below

Name:	Form:
Teacher:	Science Set:

Feedback from teacher:

Student comment:

Planes slow down to cut costs

Brussels Airlines in Belgium has announced that some of its flying slower to reduce costs, and that reducing the speed of by just 10 km/h will cut their annual fuel bill by £800 000, one or two minutes to the flying time. An airline spokesperson the 30 planes flying on short routes within Europe are affected. planes that fly longer routes to Russia, the Middle East and pre-set speeds so the speed cannot be reduced.



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The airline points out that using less aviation fuel is good for environment, as well as being good for the airline. And using means that the planes emit less global warming greenhouse gases and less pollution of other kinds.

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The airline is also looking at nearly 100 other ways to reduce fuel use, for example, using the fuel more efficiently, reducing the weight of their aeroplanes and angling the tip of the aircraft wings so that they have less drag on take-off. Some of the ways of reducing weight include carrying less fuel, carrying less water, and removing the built-in stairways on the planes. The airline also wants the European Union to change the way flights around Europe are organised. This is because planes often end up flying a zig-zag route from one country to another in order to avoid flying over other countries' airspace.

QUESTIONS

- 1 Describe the main forces that act on an aeroplane when it is flying. You may wish to do this using a clearly labelled diagram.
- 2 Use your knowledge of forces to explain as fully as you can why flying at a slower speed uses less fuel.
- 3 Explain, again as fully as you can, why reducing the weight of the aircraft means less fuel is needed.
- 4 You are probably aware that the passenger cabins of aircraft are pressurised. This is because aircraft, especially those flying long-haul routes, usually fly very high. Use forces to explain the main benefit of flying at a higher altitude.

Discussion and challenge

Environmentalists criticise air travel, saying that air travel is one of the areas where emissions of greenhouse gases have increased hugely in recent years. Split into a few groups, representing different people who benefit from air travel, and ask each group to think of ways in which their use of air travel could be changed so that it has less impact on the environment. Hold a debate.