Info Text for Resource Page

A new teacher led lesson resource, designed to be delivered as either as part of your curriculum, or as an extension to our own Wind turbines workshop, this resource looks at the rotation and transmission of forces through gears. By following our online resources of videos and worksheets, pupils discover how to calculate gear ratios of both simple and more complicated gear layouts, direction of rotation, patterns, and calculating ratios their own gearbox designs. Pupils are introduced to speed and velocity and gain an understanding in the relationship between the two. Finally, a stretch question is introduced for pupils to use estimation skills to calculate their answer.

Suitable for KS3, the resource covers both lower lever and upper level KS3, teachers can choose to deliver questions relevant to pupil ability.

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| Area of Learning and Experience (AoLE) | Statement | Progression Steps |
| **Science and Technology** | Being curious and searching for answers is essential to understanding and predicting phenomena. | I can suggest conclusions as a result of carrying out my inquiries. |
| Forces and energy provide a foundation for understanding our universe. | I can explore how the motion of objects can be affected by applying specific forces. |
| **Mathematics and Numeracy** | The number system is used to represent and compare relationships between numbers and quantities. | I can demonstrate my understanding that non- integer quantities can be represented using fractions (including fractions greater than 1), decimals and percentages. I can use my knowledge of equivalence to compare the size of simple fractions, decimals and percentages and I can convert between representations.  I can demonstrate my understanding that a fraction can be used as an operator or to represent division. I can understand the inverse relation between the denominator of a fraction and its value.  I have extended my understanding of multiplicative reasoning to include the concept and application of ratio, proportion and scale. |
| Algebra uses symbol systems to express the structure of mathematical relationships. | I can demonstrate an understanding of the idea of input, application of a rule (including inverse operations) and output, using a function machine or other appropriate methods, and I have applied this idea to solve problems.  I can model problems, using expressions and equations involving symbols or words to represent unknown values, adopting the conventions of algebra. I can use inverse operations to find unknown values in simple equations.  I can manipulate algebraic expressions fluently by simplifying, expanding, substituting and factorising by extracting a common factor. |

Maths and Numeracy Area of Learning and Experience

Using decimals and fractions

Exploring number facts and relationships

Solving problems

Understanding ratios

Exploring patterns/shapes of numbers

Understanding and using rotation

Science and Technology Area of Learning and Experience

Identifying trends/patterns

Drawing conclusions/evaluating

Describing forces