

PHYSICS

NOAH'S ARK

Brief summary of activity:

This puzzle is in two parts. Firstly the user has to deduce the mass of several different animals using a balance and applying their knowledge of 'moments'. Then the user has to place the animals within Noah's Ark, ensuring that it remains balanced. Different levels of difficulty make the task more complex as the user progresses.

Specific Curriculum Area:

Year 9 — Unit 9L: Pressure and moments, Section 11: c. How do things balance?

Assessment method:

Pupils could record the results of Part 1 on paper and the teacher could mark these answers.

Differentiation:

Various levels within the task make the task progressively more complex. Part 1 breaks the pupil in gently as it involves deducing the mass of each of a series of animals. Part 2 requires the pupil to place a series of animals within Noah's Ark, ensuring that the vessel remains balanced.

Learning objectives:

Children should learn: to plan and carry out an investigation; to devise a table to show results effectively and draw conclusions; to identify and explain anomalous results; to use the principle of moments to explain balance.

Use of Activity in a lesson:

This task could be set as a homework activity, assuming Internet access is possible. Alternatively, the teacher could demonstrate the task to the class (via an Interactive Whiteboard) and the pupils could then repeat the first level as shown by the teacher, thereafter trying levels on their own.

Hints and tips for teachers:

1. Tell pupils not to get frustrated if they do not succeed until having had many attempts—encourage trial and error.
2. Although the animals do increase in mass as you would expect, for Part 1 do not expect the masses to be realistic.
3. Be aware that the sea is not always calm!

URL:

PART 1

Available weights

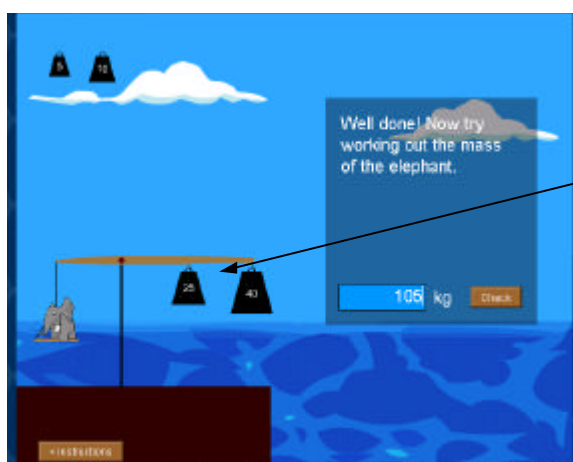
Weights are placed here

Animal for which the mass has to be calculated



Click this button to check your answer

Answer should be typed in here

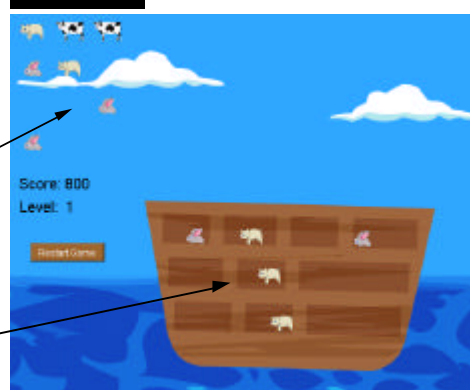


For animals larger than the rabbit, a second hook appears on the balance, and the balance is extended. It is for these that knowledge of MOMENTS is required.

PART 2

Drag animals from here...

...to here



Troubleshooting:

If problems are encountered when calculating the mass of the three largest animals, it may not have been noticed that the balance arm has been EXTENDED!

Other links:

http://www.standards.dfes.gov.uk/schemes2/secondary_science/sci091/091q5c