PHYSICS

BOMB

Brief summary of activity:

In this puzzle the user is placed in a pressurised situation where they have to solve a problem, within a set time frame, in order to defuse a bomb. To solve the problem they must look at a circuit and predict the resistance of the circuit.

Specific Curriculum Area:

Year 7— Unit 7J: Electrical circuits, Section 3 — What happens in a circuit?

Assessment method:

Pupils could be given paper-based blank grids. They could quickly record the information they are given, onto the blank grid and then record the resulting resistance. These could then be collected by the teacher, giving a permanent record of the pupils performance. This may be inconvenient though, as the task is completed within a set time frame.

Differentiation:

The task has three levels of complexity — the user chooses which level to work on. As the level of task difficulty increase, the time allowed decreases. If a pupil successfully determines the resistance, a new circuit often more complex than the last, appears.

Learning objectives:

Children should learn: that the nature and number of components in a circuit affects current flow; that current in a series circuit is not used up by components; to use the term resistance to mean opposition to flow of electricity

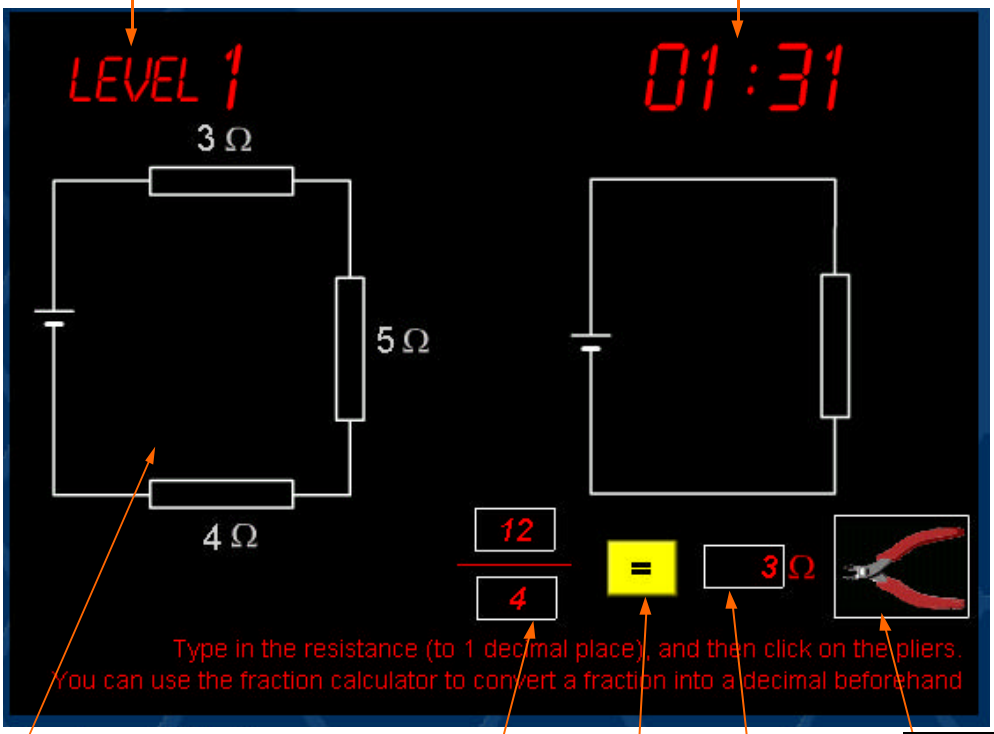
Use of Activity in a lesson:

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. Encourage pupils to use the calculator to help them work out more difficult resistances.

URL:



Level of task WITHIN 'Difficulty' level of Easy, Medium, Hard

Time limit—the harder the level of difficulty, the less time is available to the user

The circuit for which the resistance has to be calculated

1. Pupil can enter figures here if they want. *This is optional.*

2. Clicking here…

3. … gives an answer here. Or an answer can be typed in.

Clicking on the pliers (or pressing 'ENTER') confirms the answer you have typed into the box to the

Troubleshooting:

You must click on the pliers to confirm your answer— the 'Enter' key also fulfils this function.

Other links:

http://www.standards.dfes.gov.uk/schemes2/secondary_science/sci07j/07jq2a