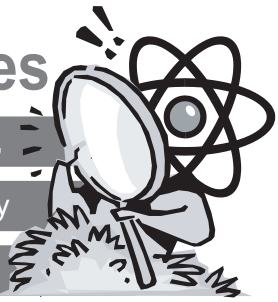
# Case 2:

## Handling data to find out answers

**The Solar Detectives**

Investigating the science,
maths and technology
behind engineering

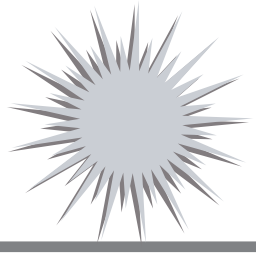


Here is some information relating to how much light energy a solar cell converts into electrical energy.

Think of the solar cell as a power source a bit like a battery. The only thing is that the amount of electrical energy this battery can give out depends upon how much light falls on the surface of the photovoltaic cell.

| **Solar Intensity W/m²** | 100 | 500 | 1000 |
|---|---|---|---|
| **Current (amps)** | 0.1 | 0.5 | 1.0 |

Solar intensity is the amount of sunlight energy falling on an area of 1m².



The solar cell used in this example has a constant voltage of **12 volts**. It is the current measured in amps that varies with the amount of solar energy falling on the cell.

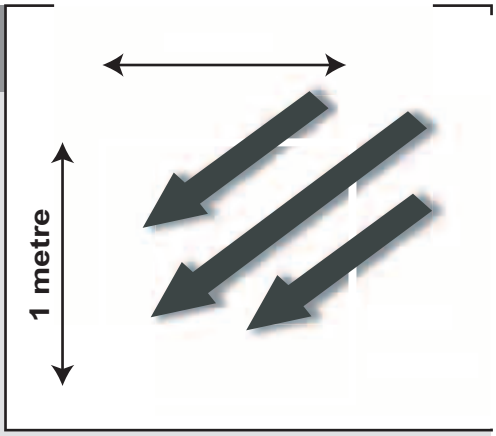
### Task 1

Using the data provided to explain how the energy output of a solar cell varies with the amount of light falling on it. To do this you first need to present the results then explain what they mean.

### Handy hints

**You will need to decide the best way to display your results.**

**You could use the following equation to help you in using your results. By doing this you could calculate the power of electricity produced. Electrical power is the amount of energy converted each second.**




**P=VxI (POWER [watts] =VOLTAGE [volts] X CURRENT [amperes])**

### Task 2

A variable is a quantity that can change an outcome. In the above example changing the amount of light energy that falls on the face of the solar cell alters the energy output of the cell.

Write down 3 other variables you believe may affect the output of a solar cell. Write a sentence or two to explain each of your choices.