First name

Last name

School

Class

Date of birth

Date of test 2016

Total score (maximum 20)
The spacecraft Juno has three rectangular solar panels.

Each of the three solar panels is 2.7 m wide and 8.9 m long.

At Jupiter, a square metre of solar panel will give 6.2 watts.

Show that when the spacecraft reaches Jupiter the three solar panels will together give about 450 watts of power.
Imagine a spacecraft with **four identical square** solar panels that could travel to the planet Saturn.

![Image of spacecraft with four square solar panels]

At Saturn, **a square metre** of solar panel would give only 1.8 watts.

For the spacecraft to give a total of 450 watts, what should the length of one side of a square solar panel be?

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\]
At 3pm two robots stand at opposite ends of a straight line, 1km apart.

Robot A

Robot B

The robots move towards each other at different speeds and meet at 7pm.

Robot A moves at a constant speed of 0.15 kilometres per hour.

What constant speed does robot B move at?
3. Is £50 reduced by 10%, then increased by 10%, equal to £50?
   Show how you know.

4. The perimeter of a rectangle is 72cm.

   The rectangle is cut in half to make two squares.

   Work out the length of one side of the square.
5 Write the two numbers that
   - multiply together to make -10 and
   - add together to make 3

and

6 The photograph shows identical red books and identical black books.

All pages have the same thickness.

Which pile has the greater mean number of pages per book?

Explain how you know.
The blue line on the graph shows Aled’s journey from home to school one day.

The red lines ___ show when the crossing lights were red.

Aled did not need to stop at either set of lights.

Huw walked at the **same speed** as Aled, and left home **1 minute** after him.

Show Huw’s route accurately on the graph, and remember, he must **not** walk when the lights are red.

How many minutes **after Aled** did Huw arrive at school?
The images in question 1 are courtesy of NASA/JPL-Caltech.

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