

REASONING

9ER16

First name _____

Last name _____

School _____

Class _____

Date of birth ○○ ○○ ○○○○

Date of test ○○ ○○ (2)(0)(1)(6)

Total score (maximum 20)



139146



Llywodraeth Cymru
Welsh Government

- 1 The spacecraft Juno has **three** rectangular solar panels.

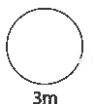


Each of the three solar panels is 2.7m wide and 8.9m long.

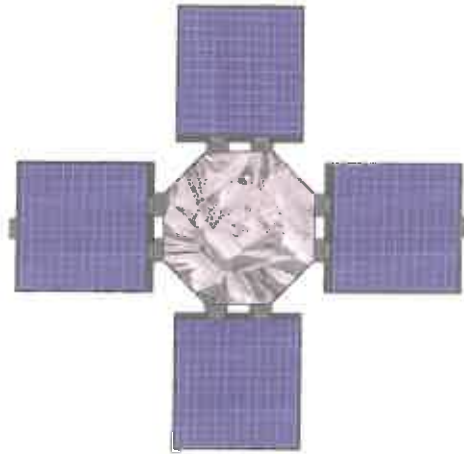
At Jupiter, a **square metre** of solar panel will give 6.2 watts.



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.



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?

A large red-bordered box for writing the answer. In the top left corner, there is a small icon of a notepad with a pencil. In the bottom right corner of the box, there is a smaller red-bordered rectangle containing the letter 'm', indicating the unit for the answer.

2

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



Robot A



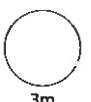
Robot B

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?

kilometres per hour



3m

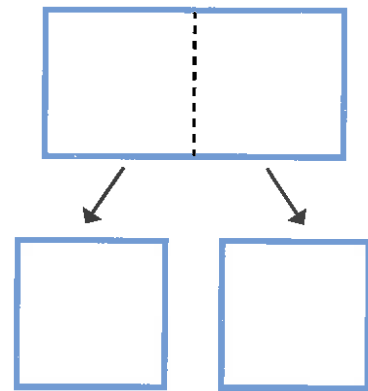
3 Is £50 reduced by 10%, then increased by 10%, equal to £50?

Show how you know.

2m

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.

2m

- 5 Write the two numbers that
- **multiply** together to make -10 and
 - **add** together to make 3

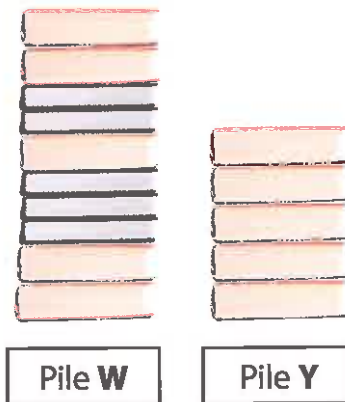
and



- 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?

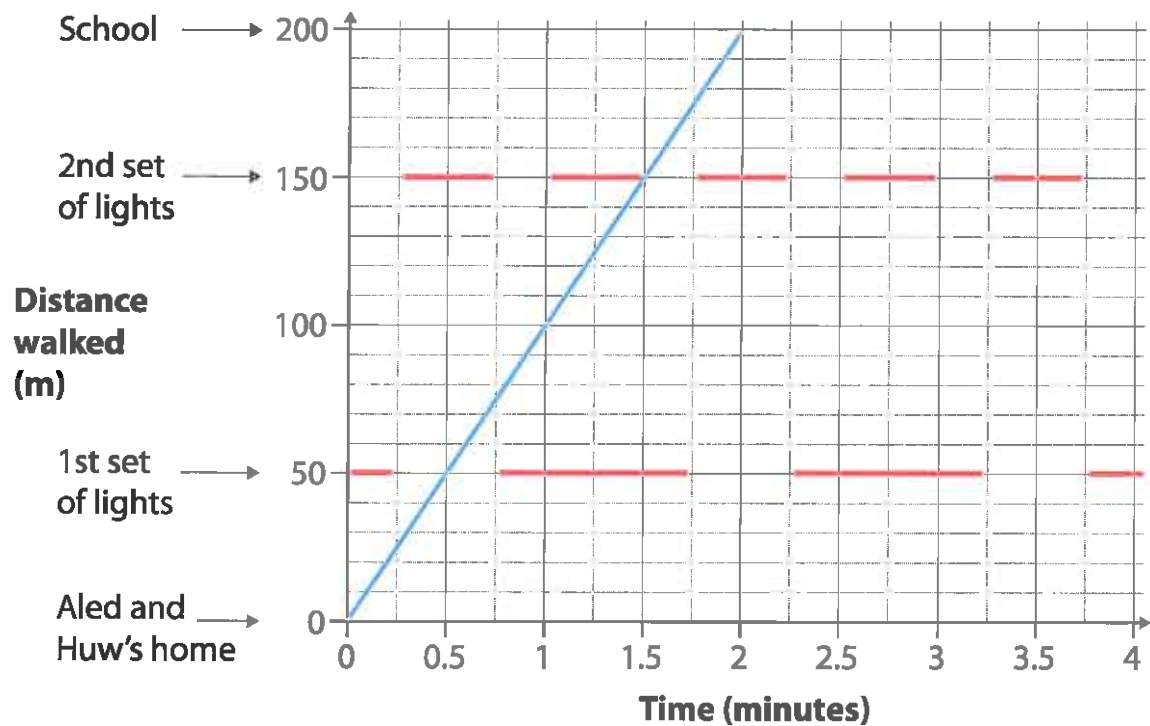
Explain how you know.



7 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.

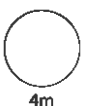


Huw walked at the **same speed** as Aled, and left home **1 minute** after him.

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?

minutes after Aled



The images in question 1 are courtesy of NASA/JPL-Caltech.

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