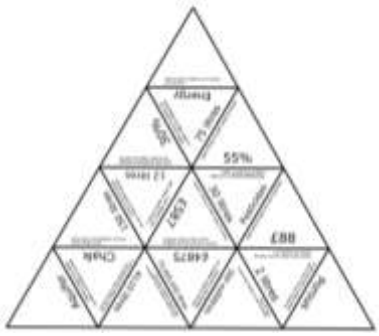
Water Tarsia: Notes for Teachers

This Water Tarsia is designed for upper KS2 pupils, to support maths work on measurement (volume) while developing an insight into the water cycle of the Brighton & Hove / South Downs area.



A Tarsia is a challenging cross between a jigsaw and dominoes. Pupils work in small groups to match the clues and answers displayed on the sides of the triangles, using both mathematical and team work skills. When the puzzle is completed correctly, the triangles fit together to form a large equilateral triangle. (Page 4 of this document shows the correct configuration, for teachers' reference.)

Printing the Tarsia puzzle

The puzzle is displayed on pages 2 and 3. Print one Tarsia per group of pupils, using A4 paper (white or coloured). The triangular puzzle pieces need to be separated by cutting along the black lines. You could do this in advance of the lesson, or ask pupils to do it themselves.

Introducing the Tarsia puzzle

To put the issue of water in context, introduce pupils to the idea of One Planet Living. If everybody in the world lived as we do in Brighton and Hove we would need 3½ planets to support us! We cannot continue to consume huge amounts of water, energy and resources and to pollute our air, land and seas; our current way of life is not sustainable.

The good news is that Brighton & Hove is the world's first One Planet City. This means we are working hard together to achieve One Planet Living, using 10 principles of sustainability (for more details see http://www.bioregional.co.uk/oneplanetliving/). Our local area has also been recognised as a world-class Biosphere, an international site of excellence for meeting peoples' needs *and* improving our environment (see http://biospherehere.org.uk/).

This Tarsia puzzle focuses on one of the One Planet Living principles: Sustainable water. In the UK we often take water for granted, instead of treating it as a valuable resource. We recommended using one or both of the 'Our Water Matters' videos on the Biosphere website to introduce pupils to our local water cycle and engage them with the reasons for taking care of our water: http://biospherehere.org.uk/resources/video/. These videos also include the key words used in the Tarsia, which may not be familiar to pupils.

Solving the puzzle

Pupils work in small groups to solve the Tarsia, working on a flat surface such as a table or the floor. They work collaboratively to develop strategies to prioritise matching the clues. They could, for example, start with all the pieces of the puzzle featuring questions / answers focusing on volume measurements. Alternatively they could start with the pieces with answers which are words rather than numbers.

Chemicals which can pollute ground water.
£83
Used to pump water to our homes and schools.
4110 litres
Total volume of water used by Brighton & Hove primary schools in one year.
Percentage of water used in UK homes to flush toilets.
Energy
Volume of water a healthy adult should drink per day.
75 litres
500 millilitres
Porous
Aquifer
30 litres
Percentage increase in our water usage in the last 30 years.
Pesticides

150 litres

Volume of water used by an efficient dishwasher per cycle.

Rock type in the Brighton & Hove/ South Downs area.

30%

73,000,000 litres

Average volume of water used per person per day in the UK.

12 litres

Typical yearly water bill for a family of 4.

£4875

Typical yearly water cost for washing clothes, for a family of 4.

A material with tiny holes which allows water to trickle through it.

2 litres

Volume of water used by taking a shower.

Average yearly water bill for Brighton & Hove primary schools.

£587

Volume of water wasted by a dripping tap in one hour.

55%

Volume of water used by taking a bath.

Average volume of water used per pupil per year in Brighton & Hove primary schools.

Chalk

Natural underground reservoir where our water is stored.

Porous

A material with tiny holes which allows water to trickle through it.

2 litres

Volume of water a healthy adult should drink per day.

500 millilitres

Volume of water wasted by a dripping tap in one hour.

73,000,000 litres

Total volume of water used by Brighton & Hove primary schools in one year.

4110 litres

Average volume of water used per pupil per year in Brighton & Hove primary schools.

Aquifer

Natural underground reservoir where our water is stored.

Typical yearly water cost for washing clothes, for a family of 4.

£4875

Chalk

Rock type in the Brighton & Hove/ South Downs area.

£88

Average yearly water bill for Brighton & Hove primary schools.

Pesticides

Chemicals which can pollute ground water.

30 litres

Volume of water used by taking a shower.

£587

Typical yearly water bill for a family of 4.

150 litres

Average volume of water used per person per day in the UK.

Percentage increase in our water usage in the last 30 years.

12 litres

55%

Volume of water used by taking a bath.

75 litres

Percentage of water used in UK homes to flush toilets.

30%

Volume of water used by an efficient dishwasher per cycle.

Energy

Used to pump water to our homes and schools.