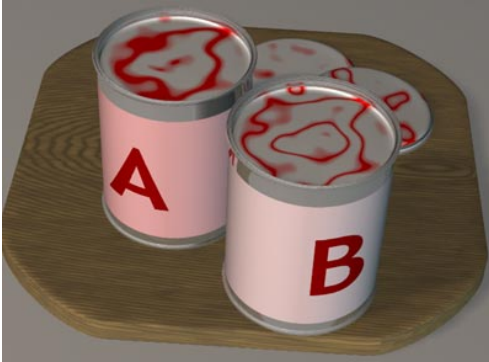


MIXING PAINTS



Paint A is made up from red and white paint in the ratio **1:3** and paint B is made up from red and white paint in the ratio **1:7**. The cans are the same size.

You can mix the paints to produce different shades of pink. Explain how to find the ratio of red paint to white paint if you mix one can of A with one can of B.

What is the ratio of red to white if 1 can of A is mixed with 2 cans of B? What about mixing one can of A with 6 cans of B?

What is the least number of cans of each type needed to produce pink paint containing red and white in the ratio **1:4**?

Help



Imagine a chocolate bar that has 8 pieces.

What does it mean to share it in the ratio **1 : 3**? How many pieces in each share?

What about sharing in the ratio **1 : 7**?

If you shared two bars, one bar in the ratio **1 : 3** and the other in the ratio **1 : 7** how many pieces would each person get?

Extension

Is it always possible to combine two paints made up in the ratios **1 : x** and **1 : y** and turn them into paint made up in the ratio **1 : z** (where $x < z < y$)? To investigate this further think about another painter and decorator who buys pink paint from two different manufacturers:

- Paint C is made up from red and white paint in the ratio **1:4**
- Paint D is made up from red and white paint in the ratio **1:9**

What is the least number he would need of each type in order to produce pink paint containing red and white in the following ratios:

- 1 : 5
- 1 : 6
- 1 : 7
- 1 : 8

For interactive versions of this question and a chance to mix your own paints see:

<http://nrich.maths.org/4793> and <http://nrich.maths.org/4794>