

Discussion Problems

Step 1: Find a Rule – One Step

National Curriculum Objectives:

Mathematics Year 6: (6A1) [Express missing number problems algebraically](#)

Mathematics Year 6: (6A2) [Use simple formulae](#)

About this resource:

This resource has been designed for pupils who understand the concepts within [this step](#). It provides pupils with more opportunities to enhance their reasoning and problem solving skills through more challenging problems. Pupils can work in pairs or small groups to discuss with each other about how best to tackle the problem, as there is often more than one answer or more than one way to work through the problem.

There may be various answers for each problem. Where this is the case, we have provided one example answer to guide discussion.

We recommend self or peer marking using the answer page provided to promote discussion and self-correction.

More [Year 6 Algebra](#) resources.

Did you like this resource? Don't forget to [review](#) it on our website.

Find a Rule – One Step

1. Wendy the Witch has created a mixture in her cauldron; the mixture acts as a function when numbers are mixed into it.

She has a selection of numbers that have been changed. She has recorded both the inputs and outputs below.

She says,



The mixture in my cauldron multiplies every input I put into it. It includes using a whole number that is both an odd number, and bigger than 10. The number is smaller than 30.

Inputs		Outputs	
12.5	15	299	184
8	13	345	287.5

Investigate what the function of the mixture could be. Which input and output can be paired together?

DP

2. Eli wants to pair the correct function with the numbers below. Each pair must create a number greater than 50, but less than 80.

Card A 37.5	Card B 172.5	Card C ?	Card D + 27.5	Card E ?	Card F ?
Card G - 79	Card H x 11	Card I -17	Card J ?	Card K + 84	Card L ÷ 3

Fill in the missing cards with one function and three numbers to complete the pairs.

Explore which cards can be paired together. Each function and number can only be used once.

DP

Find a Rule – One Step

1. Wendy the Witch has created a mixture in her cauldron; the mixture acts as a function when numbers are mixed into it.

She has a selection of numbers that have been changed. She has recorded both the inputs and outputs below.

She says,

The mixture in my cauldron multiplies every input I put into it. It includes using a whole number that is both an odd number, and bigger than 10. The number is smaller than 30.



Inputs		Outputs	
12.5	15	299	184
8	13	345	287.5

Investigate what the function of the mixture could be. Which input and output can be paired together?

The function is $\times 23$.

The numbers can be paired as followed: 12.5, 287.5; 15, 345; 8, 184; 13, 299.

DP

2. Eli wants to pair the correct function with the numbers below. Each pair must create a number greater than 50, but less than 80.

Card A 37.5	Card B 172.5	Card C 150	Card D + 27.5	Card E 15	Card F $\times 4$
Card G - 79	Card H $\times 11$	Card I -17	Card J 5	Card K + 84	Card L $\div 3$

Fill in the missing cards with one function and three numbers to complete the pairs.

Various answers, for example: as shown above.

Explore which cards can be paired together. Each function and number can only be used once.

Various answers, for example:

Card A, Card D; Card B, Card L; Card C, Card G; Card E, Card F; Card J, Card H; Card I, Card K.

DP