Hello Year 6,

I hope you had a lovely half term. I am waiting to find out whether or not we will be seeing each other in school in a few weeks time. Fingers crossed!

This week we are going to be looking at algebra.

Feb 22-09:18

First of all we are going to look at 'one-step' function machines.

This means that we will perform just 'one-step' on the input, to work out the output.

Input

Output

X 3
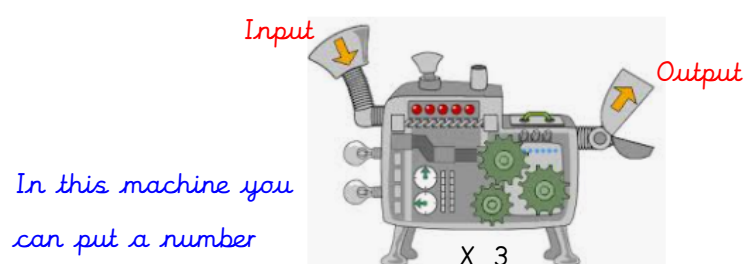
Function

In this machine you can put a number into the input, a function will be performed, which in this machine is X 3, and another number comes out of the output.
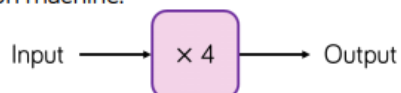
So, if 3 is the input, 9 is the output - because 3 X 3 = 9

If 5 is the input, 15 is the output - because

5 X 3 = 15

What would be the output if the input was 10?

Feb 22-11:25

We can show function machines in a much simpler way.

Here is a function machine.

Input ⟶ × 4 ⟶ Output

If 5 is the input, the output would be 20, because 5 X 4 = 20

What is the output if the input is 2?
What is the output if the input is 7.2?
What is the input if the output was 20?
What is the input if the output was 22?

Tip:

When we have the output, but not the input, we need to work in reverse or use the inverse. So, instead of multiplying by 4, you will need to divide by 4.
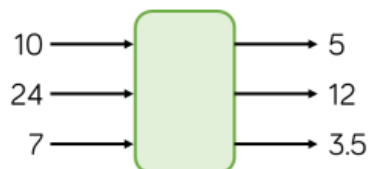
Feb 22-11:29

Complete the table for the function machine.

Input ⟶ + 5 ⟶ Output

Input	5	5.8	10	− 3	− 8			
Output						9	169	0

Tip: If you need to, draw a number line, to help with adding 5 to the negative numbers. Remember to use the inverse (-5) to work out the missing inputs.
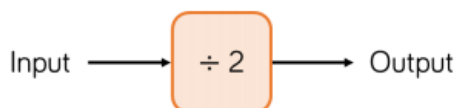
Find the missing function.

10 ⟶ 5
24 ⟶ 12
7 ⟶ 3.5

Think about what has happened to get from the input to the output.

Feb 22-11:38

2

Dora puts a number into the function machine.

Input ⟶ ÷ 2 ⟶ Output

Dora's number is:
- A factor of 32
- A multiple of 8
- A square number

What are factors?

Factors are numbers that divide exactly into another number.

For example, the factors of 8 are:

1, 2, 4, 8

Factors can be shown in pairs. Each pair multiplies to make 8.

The factor pairs of 8 can be shown:

1 x 8 = 8

2 x 4 = 8

Multiples

Multiples are really just extended times tables.

The multiples of 2 are all the numbers in the 2 times table, such as 2, 4, 6, 8, 10 and so on.

So, for this problem, you will need to think of numbers in the 8 times table.

Square numbers

A square number is a number multiplied by itself. This can also be called 'a number squared'. The symbol for squared is ^{2}.

$2^2 = 2 \times 2 = 4$

$3^2 = 3 \times 3 = 9$

$4^2 = 4 \times 4 = 16$

Feb 22-11:42

Function machines are not always one-step. This one is a two-step function machine.

3 Input ⟶ × 2 ⟶ + 5 ⟶ Output 11

So, if the input is 3   *we X 2 to get 6*   *then, + 5 to get 11*

What would the output be if the input is 7?

What would the output be if the input is 15?

What was the input if the output was 19?

Feb 22-11:49

Complete the table for the given function machine.

Input ⟶ $\times 3$ ⟶ $- 4$ ⟶ Output

Input	1	2	3	4	5
Output					

- What patterns do you notice in the outputs?
- What is the input if 20 is the output? How did you work it out?

Feb 22-12:01

How can you write this two-step machine as a one-step machine?

Input ⟶ $+ 3$ ⟶ $+ 5$ ⟶ Output

Check your answer by inputting values.

Think:

$7 + 3 + 5 = 7 +$ _____

Feb 22-12:02

Teddy has two function machines.

Input ⟶ +5 ⟶ ×2 ⟶ Output

Input ⟶ ×2 ⟶ +5 ⟶ Output

He says,

The function machines will give the same answer.

Is Teddy correct?

Is there an input that will give the same output for both machines?

Feb 22-12:04

Thank you Year 6

Remember you can email a photograph of your work to UKS2parents@epcollier.reading.sch.uk

Or bring work in to show me when we return to school.

If you have any questions you can email me at the above address, just put Mrs Yeandle in the subject bar.

Feb 22-12:05