

Function Machines

Warm up:

To start off with, we will look at opposite pairs, this will help us with a task later on

Task 1: Match up the opposite pairs

On



Sad



Cold



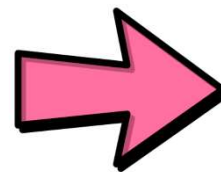
Off



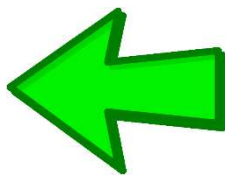
Happy



Right



Left



Hot



Literacy for Learning

In English, words with opposite meanings are called antonyms

Extension: How many opposite word pairs of your own can you think of?

Working with Function Machines:

A function machine helps us to perform an operation (+, -, ×, ÷)

<p>Example: One Step</p> <p>3 \Rightarrow +5 \Rightarrow 8</p> <p style="margin-left: 20px;">INPUT OUTPUT</p> <p>12 \Rightarrow ÷ 2 \Rightarrow 6</p> <p style="margin-left: 20px;">INPUT OUTPUT</p>	<p>Example: Two step</p> <p>5 \Rightarrow -1 \Rightarrow 4 \Rightarrow x 3 \Rightarrow 12</p> <p style="margin-left: 20px;">INPUT OUTPUT</p> <p>40 \Rightarrow ÷ 5 \Rightarrow 8 \Rightarrow +2 \Rightarrow 10</p> <p style="margin-left: 20px;">INPUT OUTPUT</p>								
<p>Task 2: Find the outputs of these function machines</p> <table style="width: 100%; border: none;"> <tr> <td style="width: 50%; padding: 5px;">2 \Rightarrow + 3 \Rightarrow </td> <td style="width: 50%; padding: 5px;">17 \Rightarrow - 9 \Rightarrow </td> </tr> <tr> <td style="padding: 5px;">10 \Rightarrow - 7 \Rightarrow </td> <td style="padding: 5px;">12 \Rightarrow x 12 \Rightarrow </td> </tr> <tr> <td style="padding: 5px;">8 \Rightarrow x 5 \Rightarrow </td> <td style="padding: 5px;">23 \Rightarrow + 8 \Rightarrow </td> </tr> <tr> <td style="padding: 5px;">28 \Rightarrow ÷ 4 \Rightarrow </td> <td style="padding: 5px;">78 \Rightarrow ÷ 6 \Rightarrow </td> </tr> </table>		2 \Rightarrow + 3 \Rightarrow 	17 \Rightarrow - 9 \Rightarrow 	10 \Rightarrow - 7 \Rightarrow 	12 \Rightarrow x 12 \Rightarrow 	8 \Rightarrow x 5 \Rightarrow 	23 \Rightarrow + 8 \Rightarrow 	28 \Rightarrow ÷ 4 \Rightarrow 	78 \Rightarrow ÷ 6 \Rightarrow
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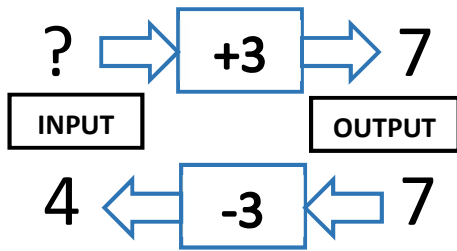
Working with Inverses

We can use inverse functions to go from out output back to our input!

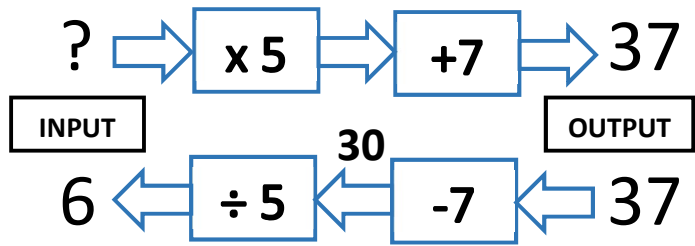
+ is the inverse to –

× is the inverse to ÷

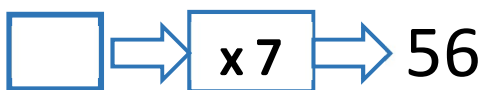
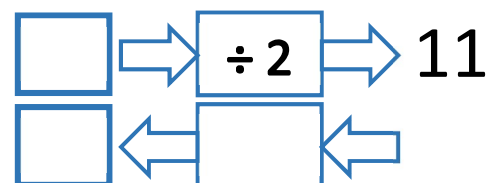
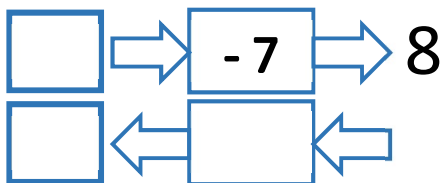
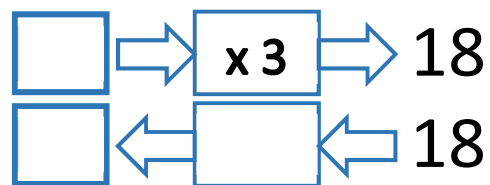
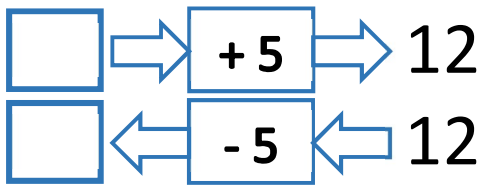
Example: One Step



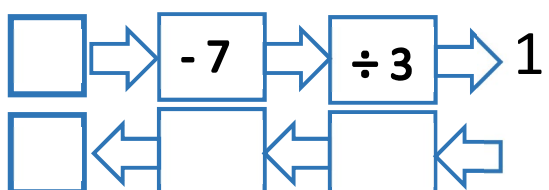
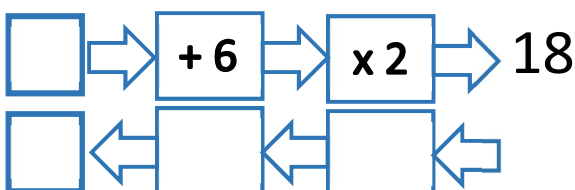
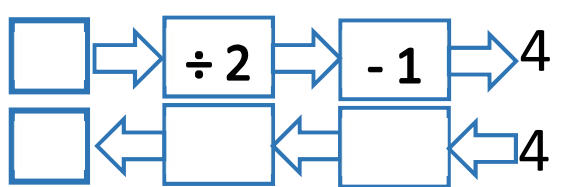
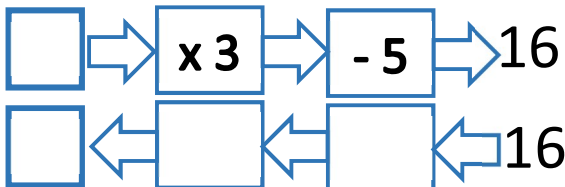
Example: Two step



Task 3: Find the inputs of these function machines



Extension: Can you write expressions for the outputs of these functions?



Problem Solving

Use what we have learnt on function machines to help you to solve problems!

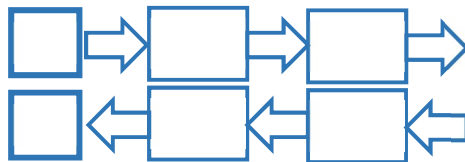
Question 1

The cost of a taxi journey is calculated by multiplying the number of kilometres travelled by £4 and then adding on £2.10.

- a) I take a taxi for 7km, how much will the journey cost me?



- b) The cost of a different journey is £22.10, how far did I travel?



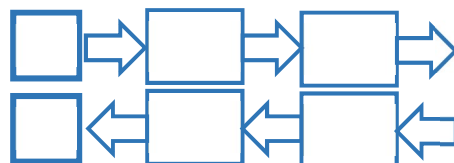
Question 2

I am thinking of a number. I add 4 to my number and then divide it by three.

- a) If the number I am thinking of is 20, what number do I end up with?



- b) If the number I end up with is 13, what number did I start with?



Extension:

Bella is 3 years younger than Malachi.

Femi is twice as old as Bella.

If Femi is 10,

- a) How old is Bella?
b) How old is Malachi?

