Each of these function machines has two steps. Give the missing inputs and outputs for each machine.

1)

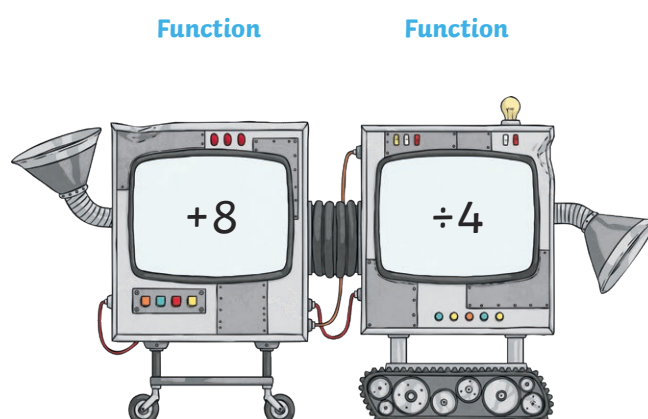| Input	Function	Function	Output
12			c)
2000			d)
7.2	×3	−5	e)
a)			7
b)			199
$2\frac{1}{4}$			f)

2)
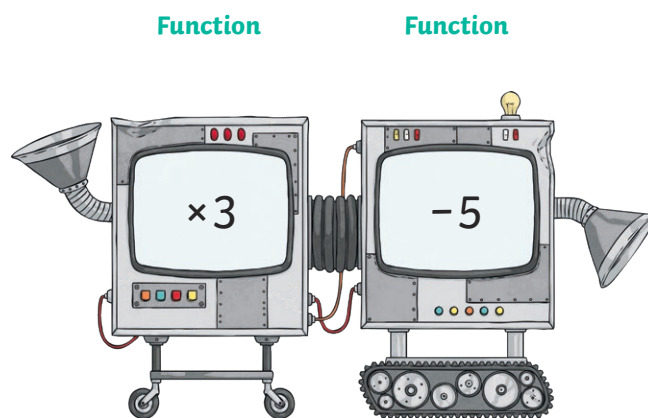
Input	Function	Function	Output
20			c)
72			d)
132	+8	÷4	e)
a)			6
b)			16
0.8			f)

1) Is each child's statement about the missing functions correct? Prove it!

21 → [?] [?] → 12

Ola

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Thomas
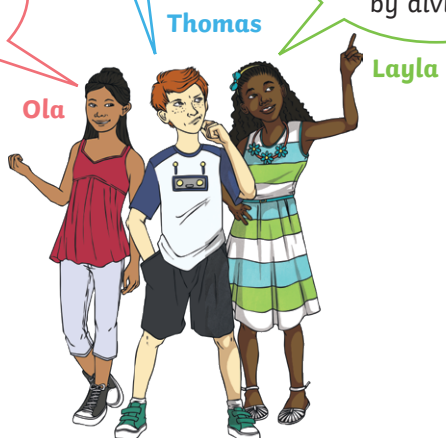
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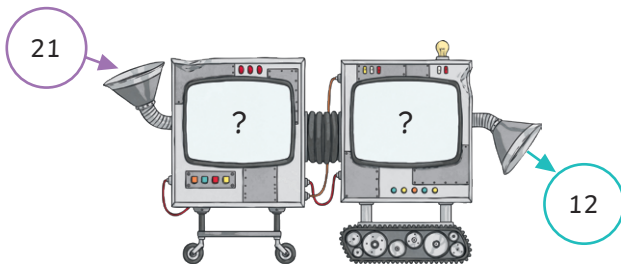
Layla

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The missing functions could be a multiplication function followed by an addition function.

Ola

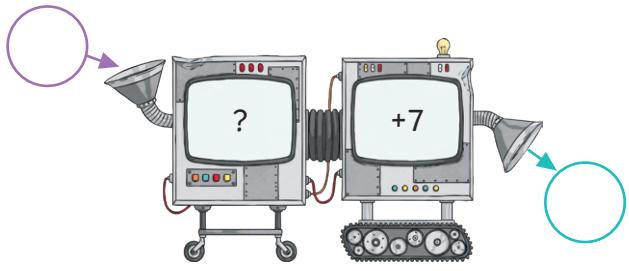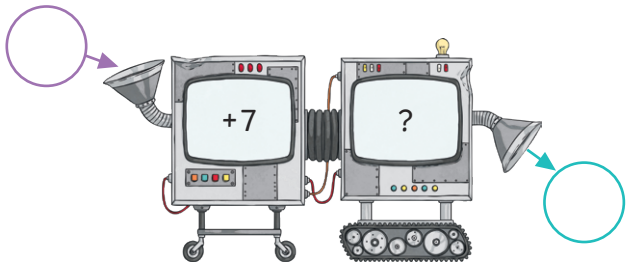Subtraction followed by multiplication could be the functions that are missing.

Thomas

The missing functions could be addition followed by division.

Layla

2) Look at these two-step function machines.

○ → [+7] [?] → ○

○ → [?] [+7] → ○

Do you agree or disagree with each child's statement? Explain why.

Ruby
If I add the function −6 into both function machines then both machines will give the same answer.

Leo
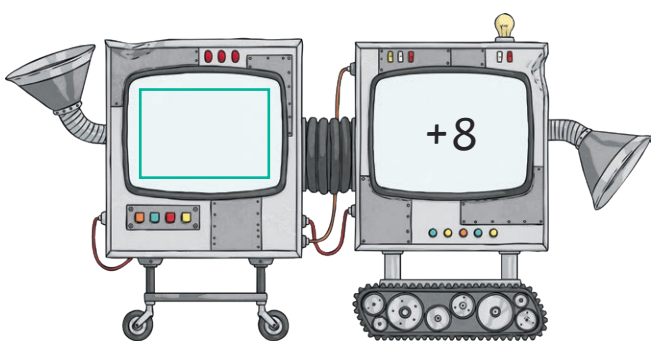If I add the function ×4 as the missing function in both machines, they will both give the same answer.

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_____   _____
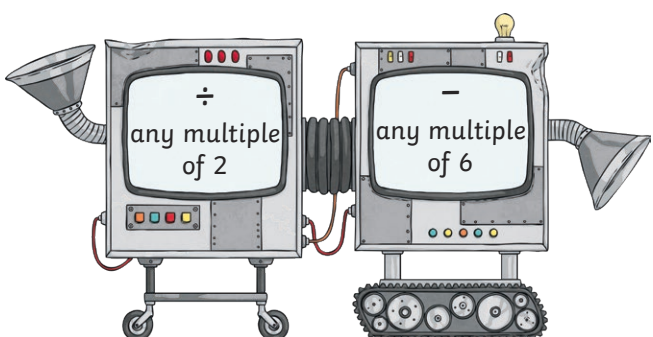
1) Give the missing function and missing inputs for this two-step function machine.

Input	Function	Function	Output
12		+8	11
20			13
a)			14
b)			88
c)			9.2
d)			17.75

2) a) Give an input number, two functions and an output that follow the rules set by the function machine.

Input	Function	Function	Output
Any whole number up to 200	÷ any multiple of 2	− any multiple of 6	4
			16
			24
			Make each number in four different ways.

For example:

56 ÷ 2 − 24 = 4	= 16	= 24
= 4	= 16	= 24
= 4	= 16	= 24
= 4	= 16	= 24

b) Now use the function machine to make two output numbers of your choice that are >100.
Make each number in four different ways. Are there any numbers that can't be made?

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