Find a rule – two step
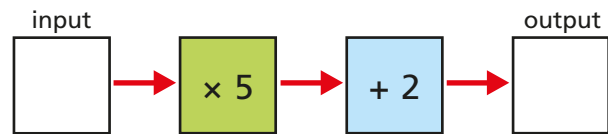
1 Use the function machine to complete the table.
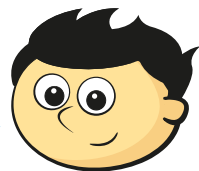
input → [× 5] → [+ 2] → output

Input	1	2	3	5	10	50
Output						

2 Here is the same function machine with the steps in the reverse order.

input → [+ 2] → [× 5] → output
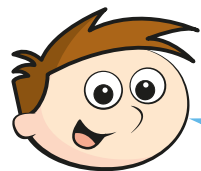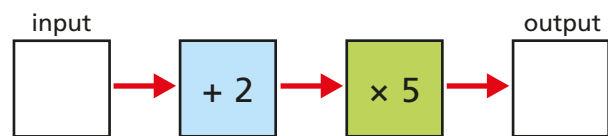
Teddy: The outputs will be the same.

Jack: The outputs will be different.
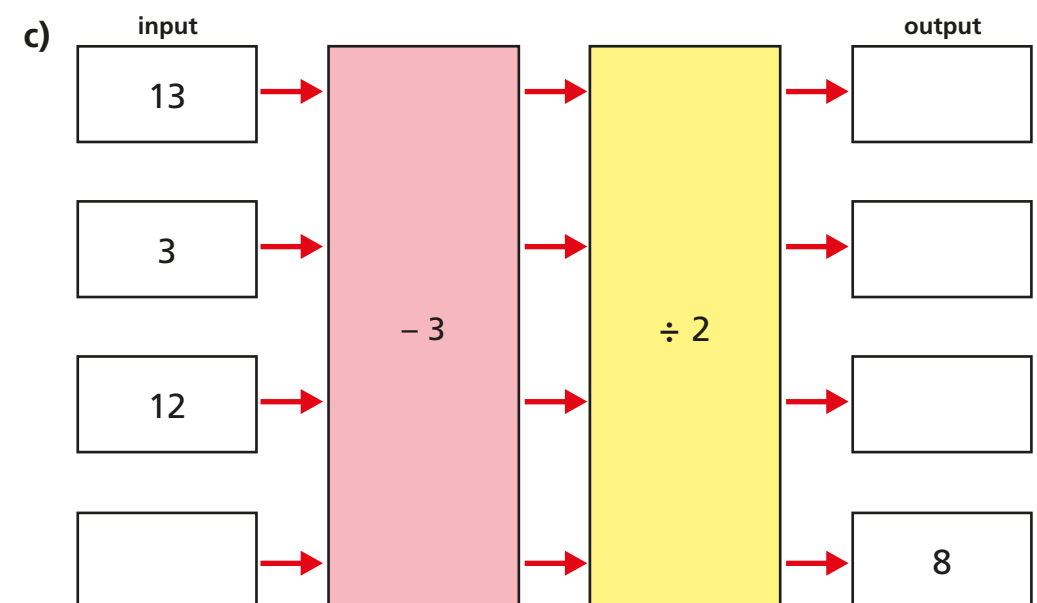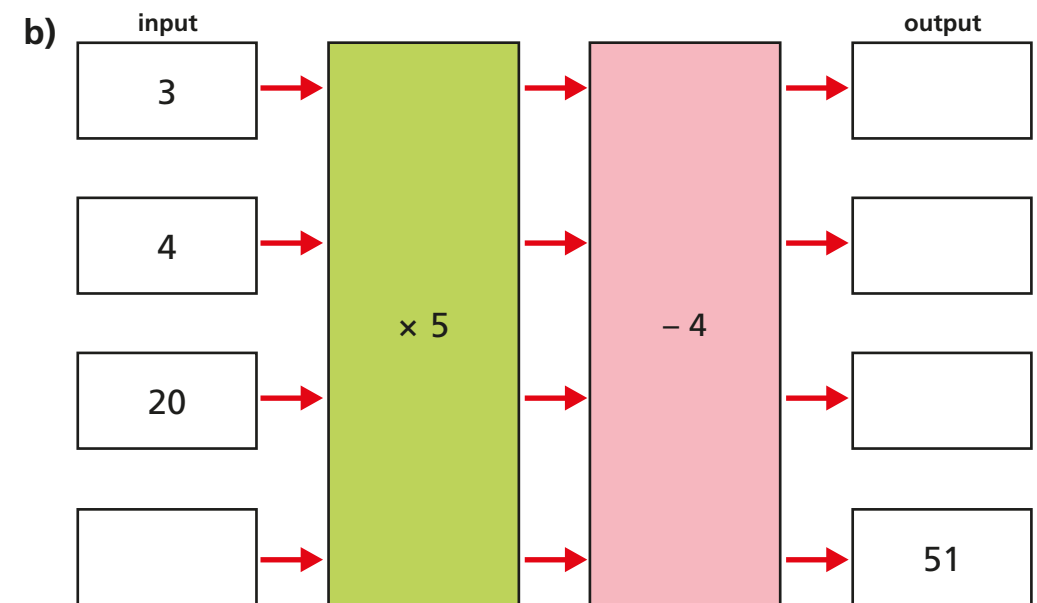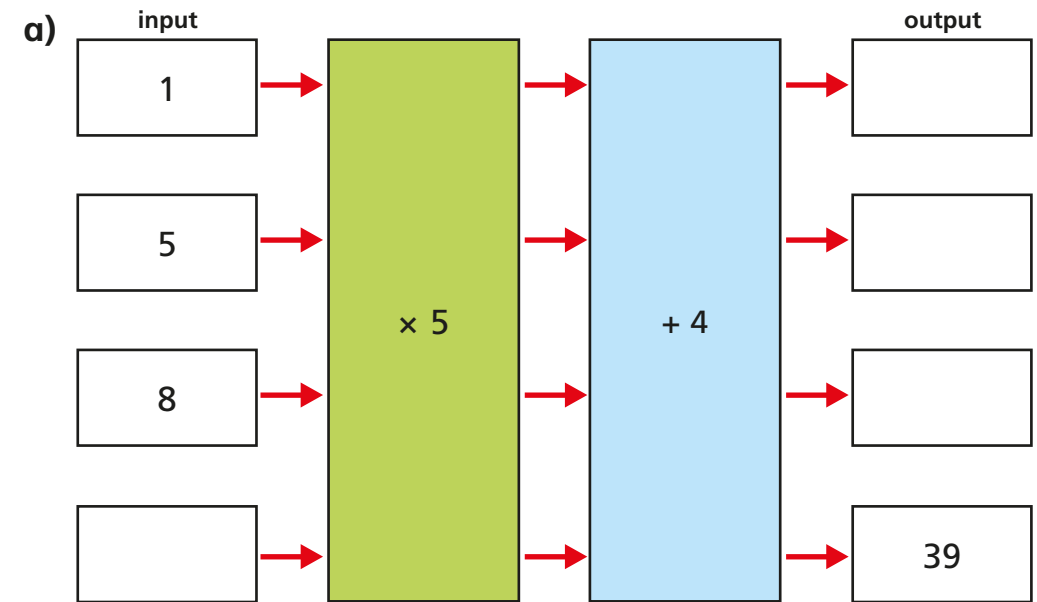
Explain to a partner who you think is correct.

Use the function machine to complete the table.

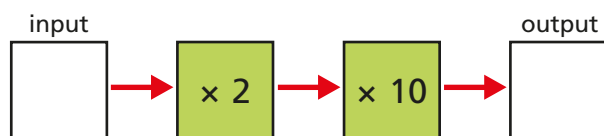| Input	1	2	3	5	10	50
Output						

Who is correct? _____

3 Work out the missing outputs and inputs.

a)

input

1 → [× 5] → [+ 4] → output

5 → →

8 → →

→ → 39

b)

input

3 → [× 5] → [− 4] → output

4 → →

20 → →

→ → 51

c)

input

13 → [− 3] → [÷ 2] → output

3 → →

12 → →

→ → 8

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4 Tick the pairs of function machines that will give the same outputs for a given input.

a) input → + 3 → + 4 → output

input → + 4 → + 3 → output

☐

b) input → × 3 → − 1 → output

input → − 1 → × 3 → output

☐

c) input → × 10 → × 2 → output

input → × 2 → × 10 → output

☐
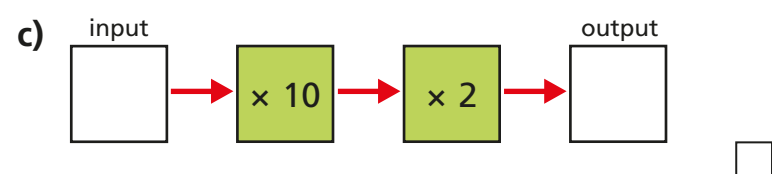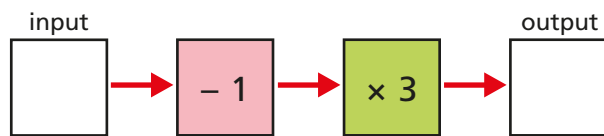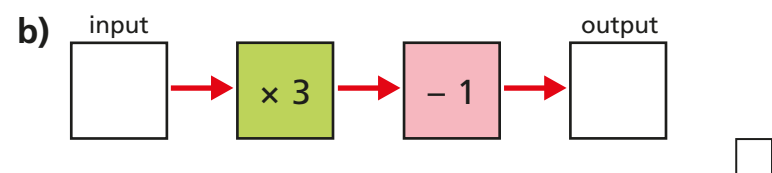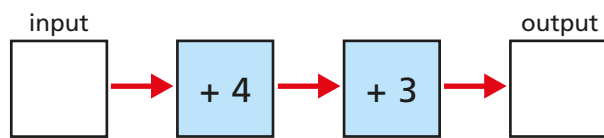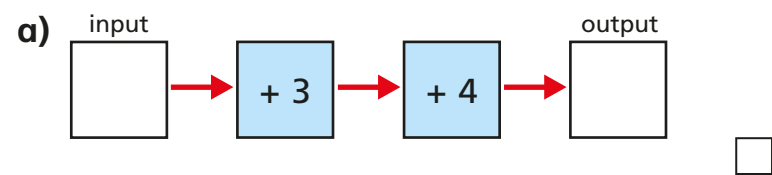
Explain your reasoning to a partner.

5 Here are some 2-step function machines.
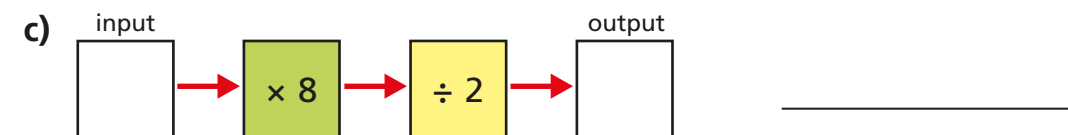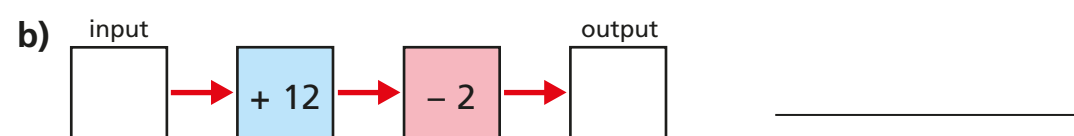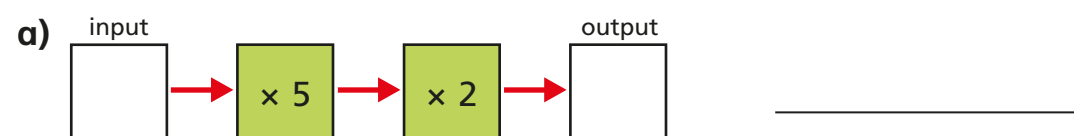
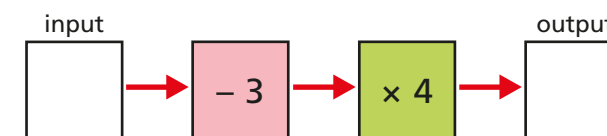For each machine, write a single step that would give the same output.

Check your answers by inputting values.

a) input → × 5 → × 2 → output _____

b) input → + 12 → − 2 → output _____

c) input → × 8 → ÷ 2 → output _____

Can all 2-step function machines be written as a 1-step function machine?

Talk about it with a partner.

6 Here is a function machine.

input → − 3 → × 4 → output

a) Complete the table.

Input	10	3		
Output			40	280

b) Rosie puts a number into the machine and she gets out the same number.

Work out Rosie's number.

☐

7 Mr Hall and Mrs Rose order some photos online.

Order **photos** online
Photos 20p each
Delivery £1.25

a) Mr Hall orders 16 photos.

How much does he pay?

☐

b) Mrs Rose pays £6.05

How many photos did she order?

☐