

Monday 22nd June.

Arithmetic

Today you will be doing an arithmetic paper. You have 30 minutes to complete the test.

Do what you can. You tube strategies if you need help or ask your teacher.

Task: the paper will be on the website.

Tuesday 23rd June

- LO: To know the purpose of a function machine.
- A function machine is when a number goes in, something happens to the number and a different number comes out.

Key Vocabulary

Input – The original number that goes in to the function machine

Output – The number that comes out (answer) of the function machine once a calculation has been done

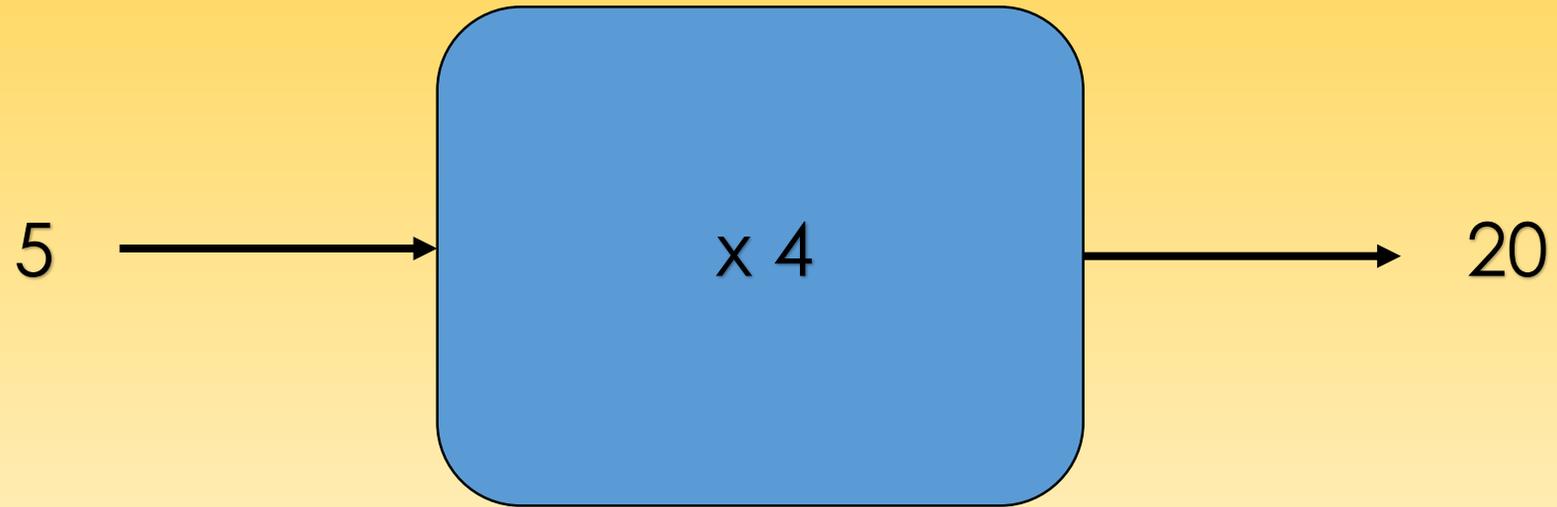
Function machine – Where a set rule is applied to an original number that then creates a new number e.g. $\times 4$

Inverse – Completing the opposite operation e.g. the inverse of addition is subtraction

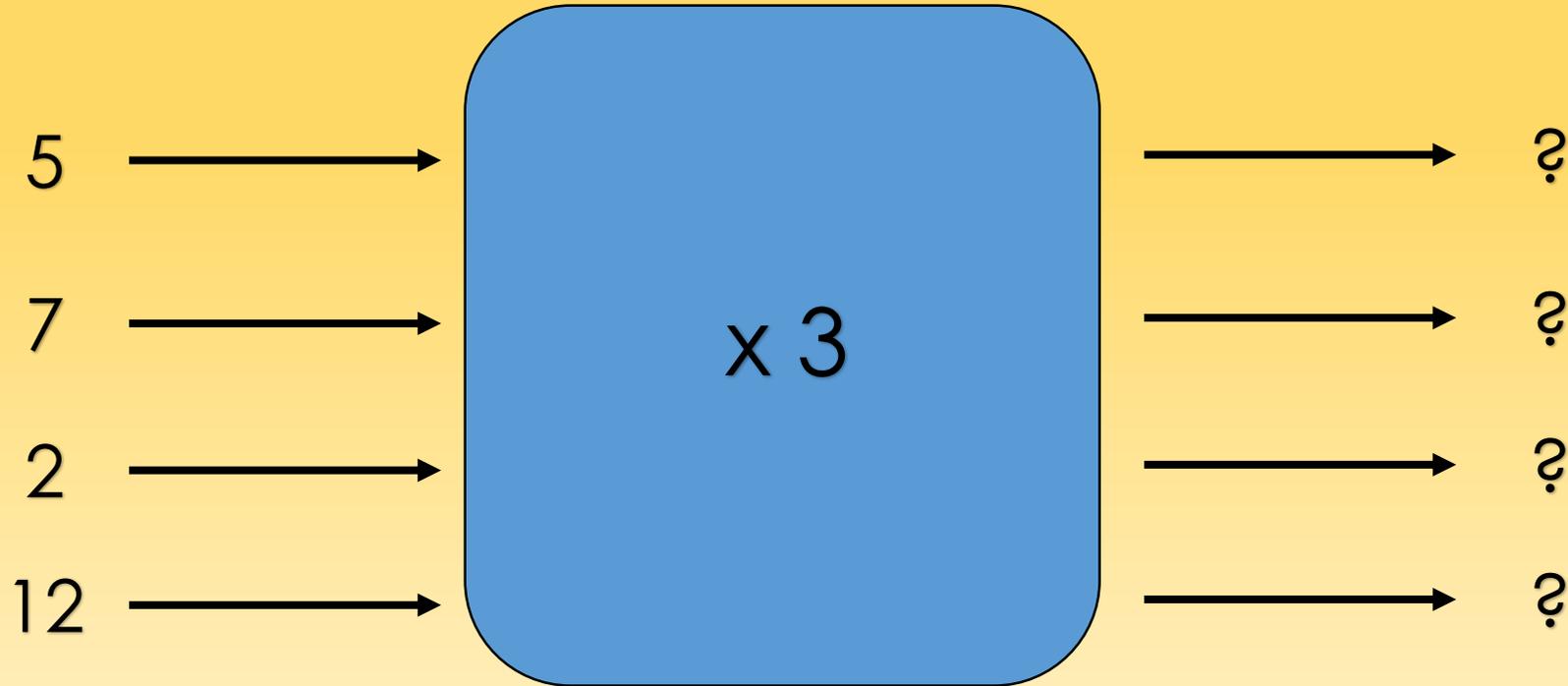
Function Machine



Function Machine



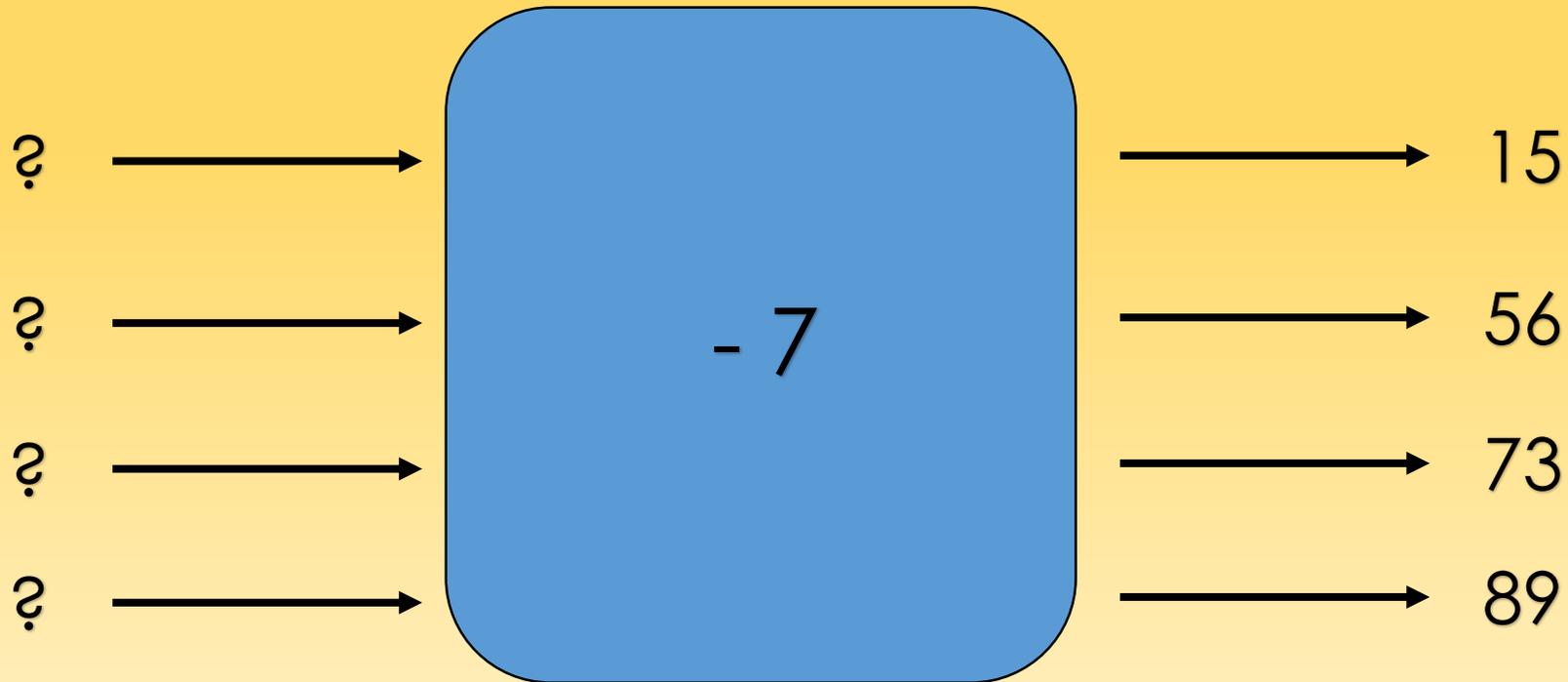
Work out what each output would be.



Use your knowledge of the 3x table to support you

What do you think 'one-step function' means?

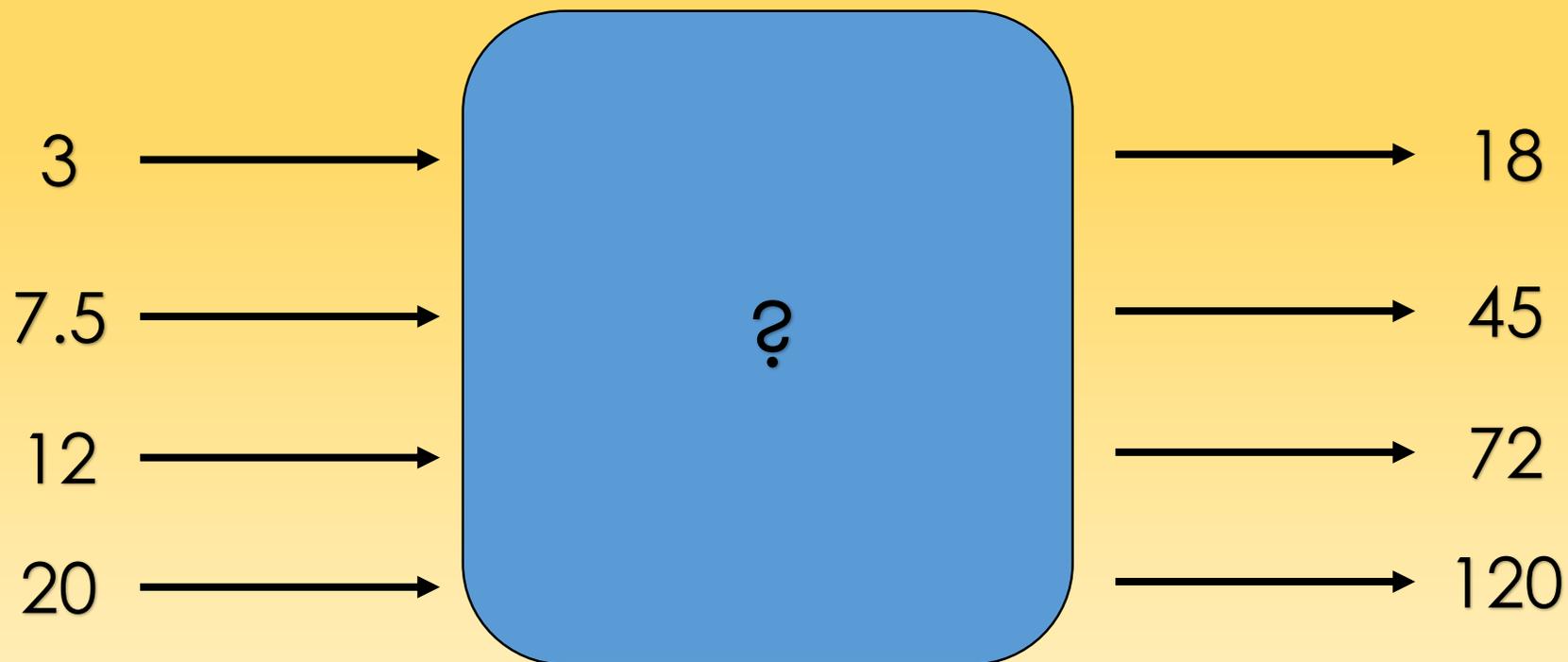
Work out what each input would be.



Use the inverse of subtraction

Write the function rule algebraically.

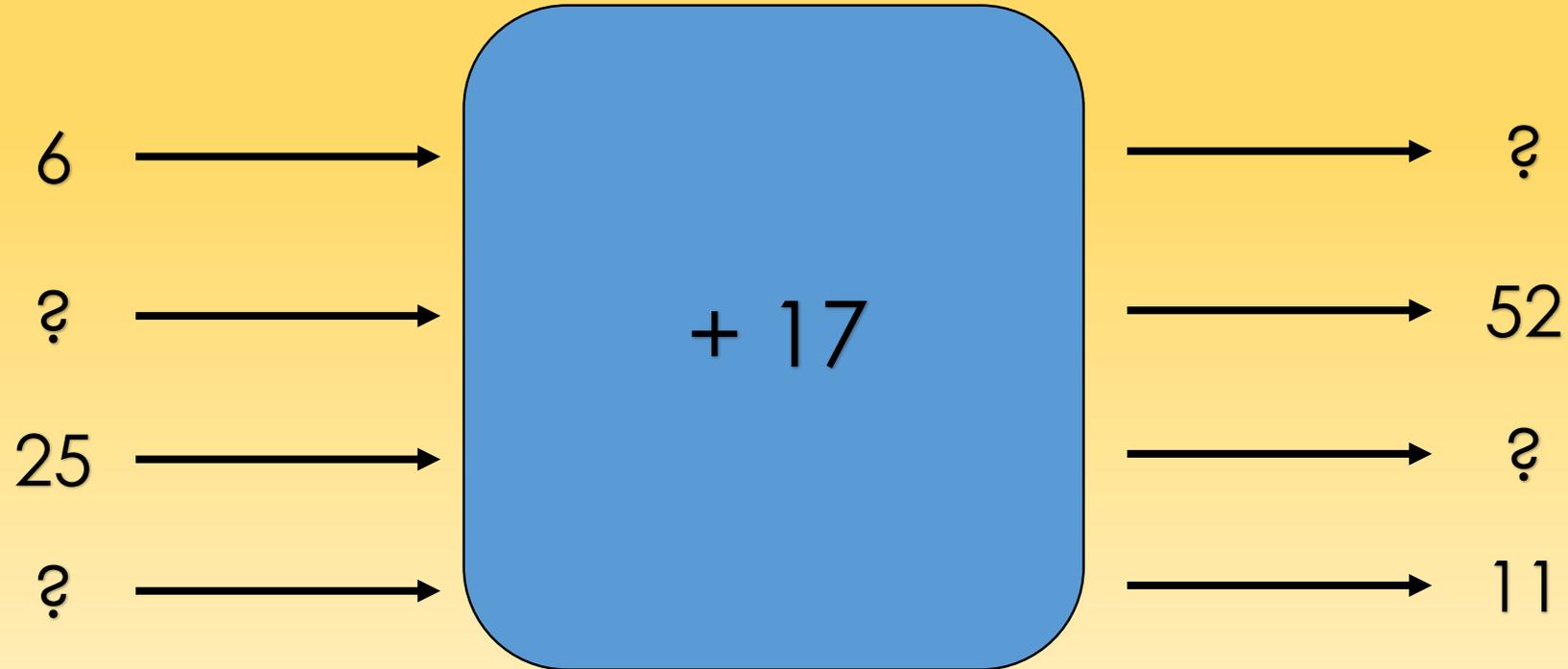
Work out what the function is.



Look at 3 and 20. How have they changed?

Prove you have the correct answer.

Work out the missing numbers.

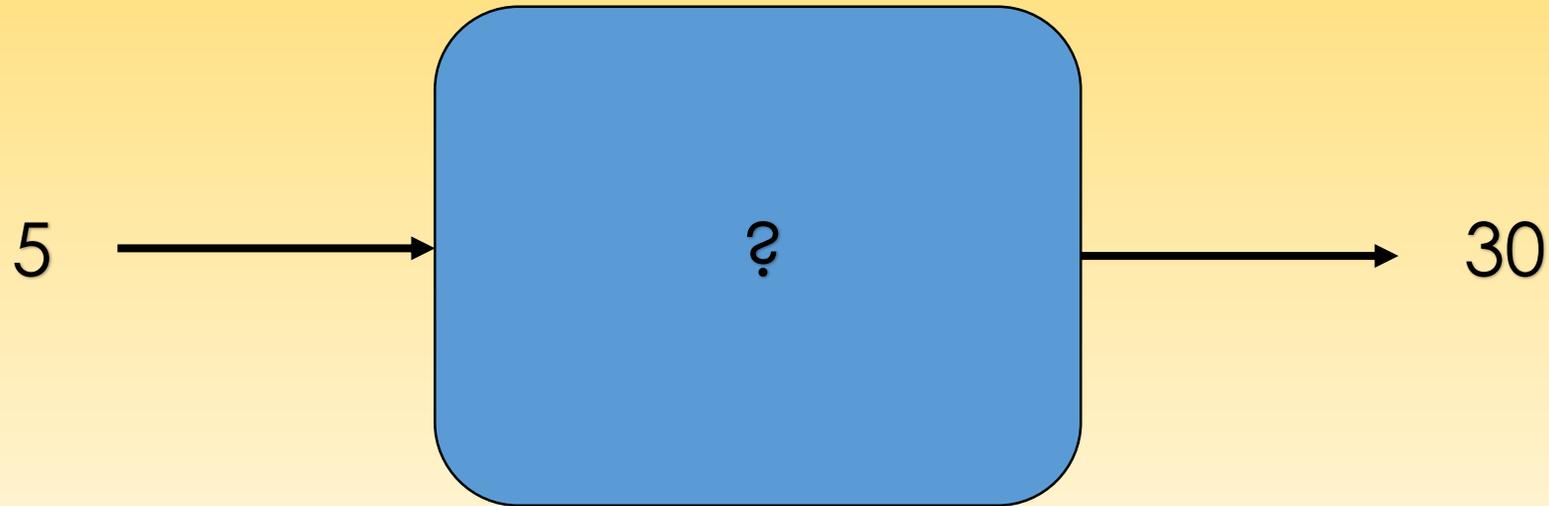


Start with input to output
before then using the inverse.

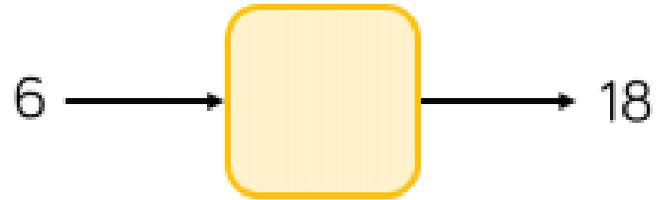
Write each number
sentence algebraically.

Can you work out the missing function based on one set of numbers?

If not, how many examples would you need to be sure of what the function was?



Eva has a one-step function machine.
She puts in the number 6 and the
number 18 comes out.

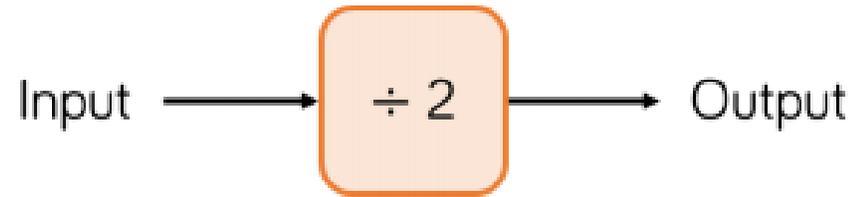


What could the function be?
How many different answers can you
find?

Think which operations make
6 bigger

How do you know you
have all the possible
options?

Dora puts a number into the function machine.



Dora's number is:

- A factor of 32
- A multiple of 8
- A square number

What is Dora's input?

What is her output?

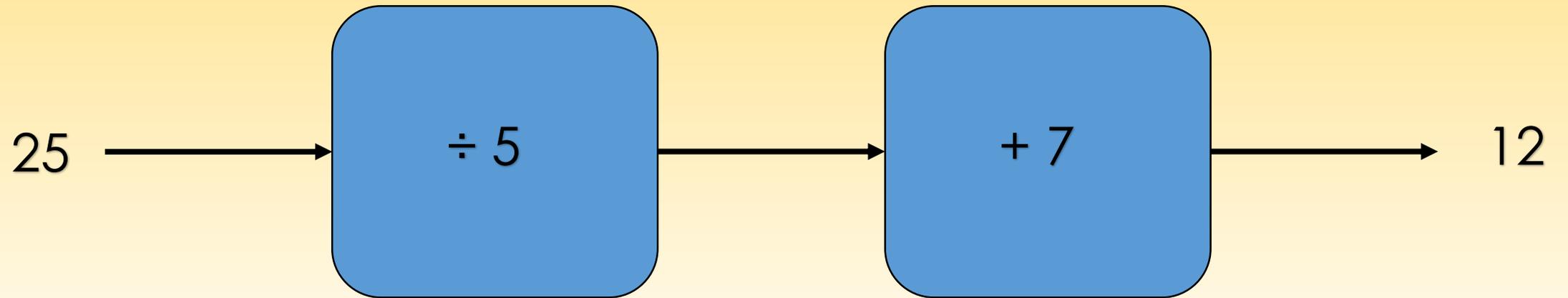
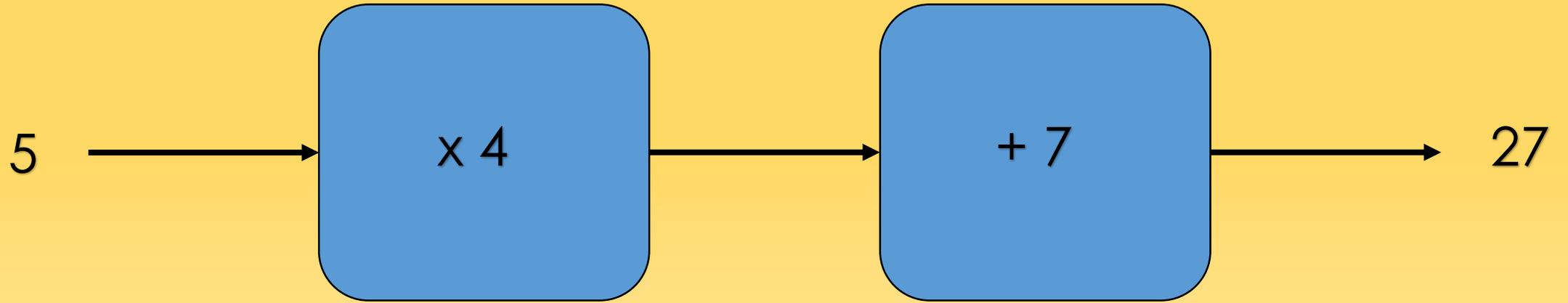
Can you create your own clues for the numbers you put into a function machine for a partner to solve?

List all the factors of 32

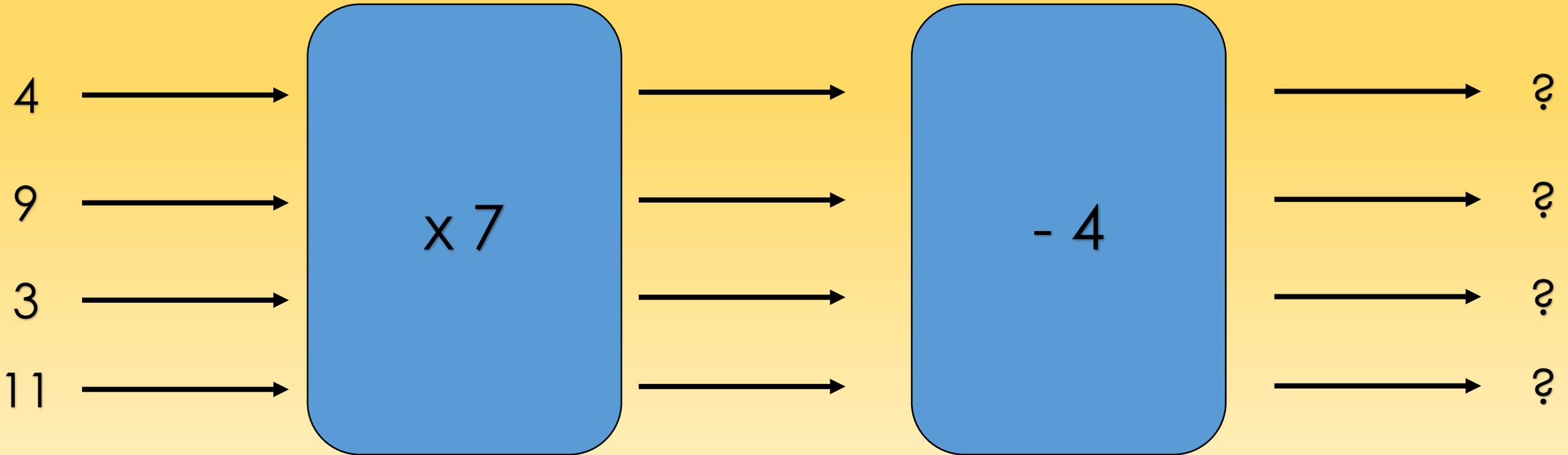
Is it possible to meet the same criteria if the function was $\times 2$?
How do you know?

We have seen what a one-step function is.

What do you think a two-step function is?



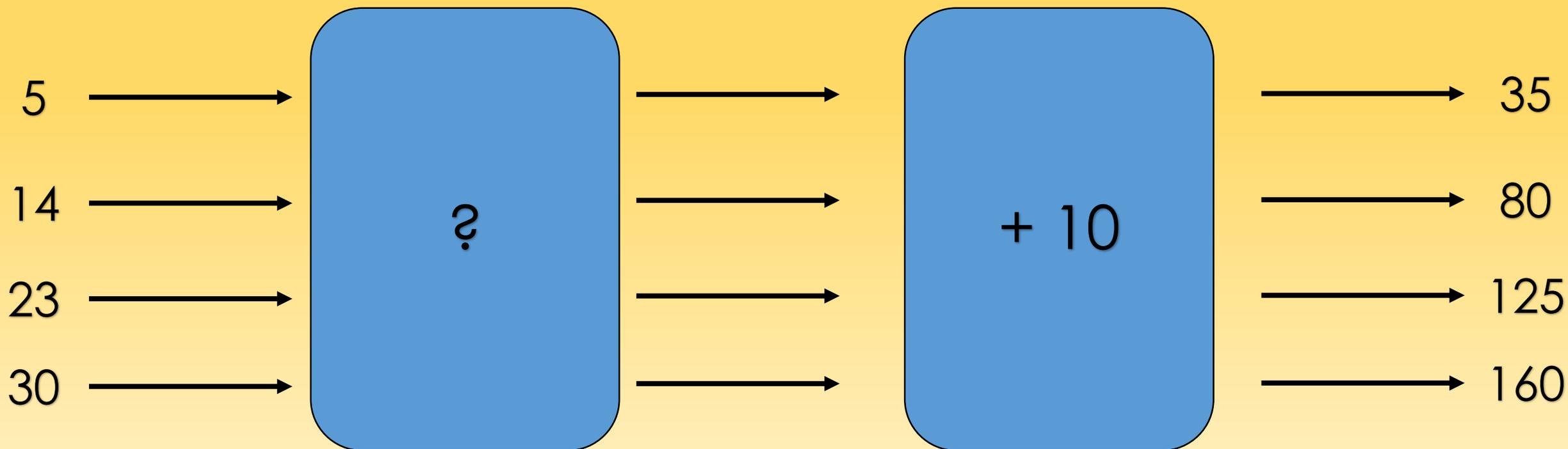
Work out what each output would be.



Use your knowledge of the 7x table to support you

Write the function rule algebraically.

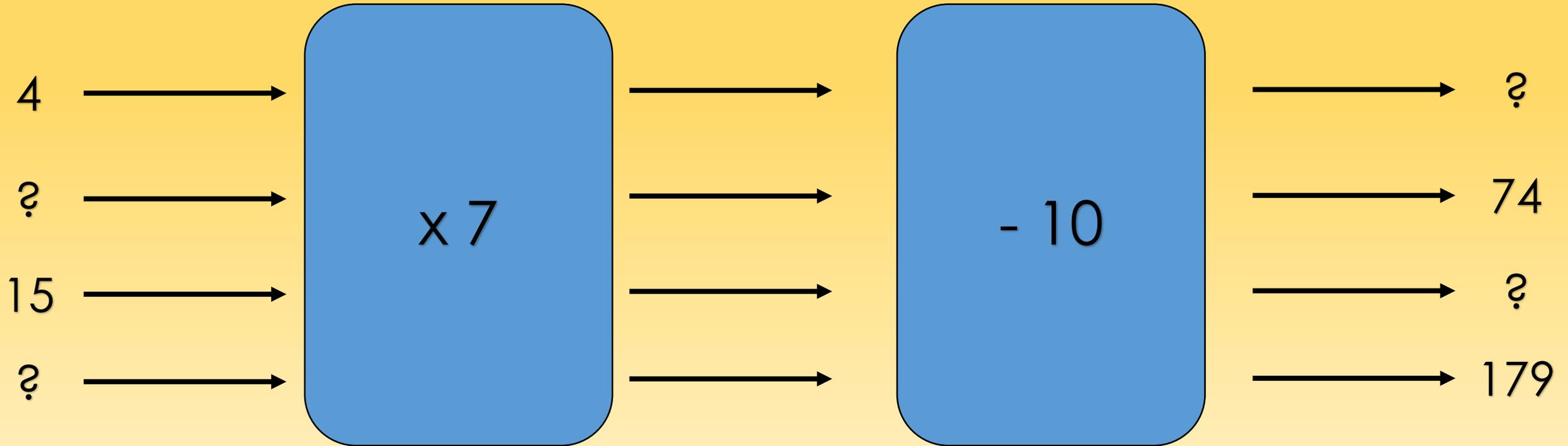
Work out the missing function



Start from the end and use
the inverse

How do you know you
have the correct function?

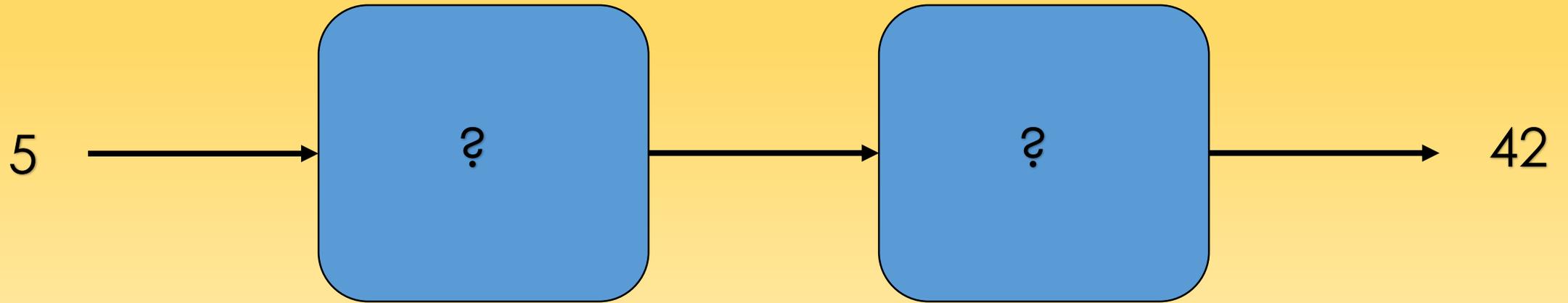
Work out the missing numbers



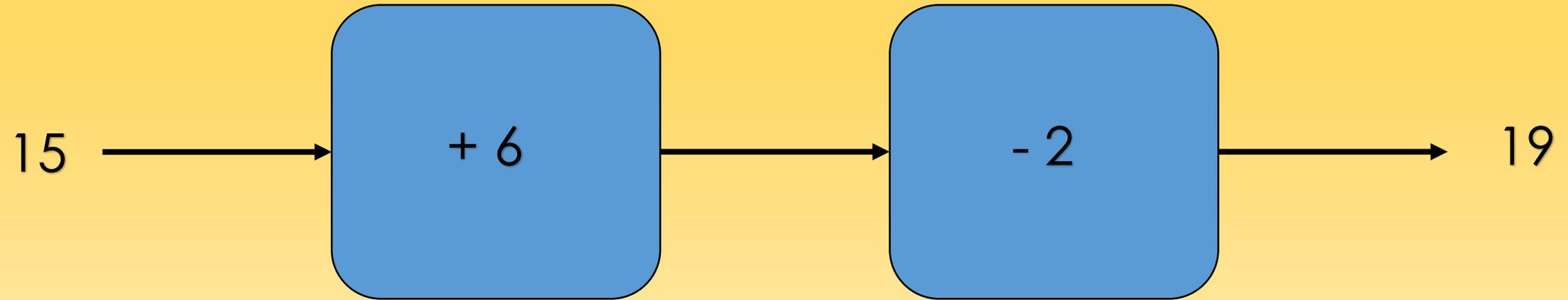
Start with input to output
before then using the inverse.

Write each number
sentence algebraically.

Why is it not possible to work out if it is a set function from this?



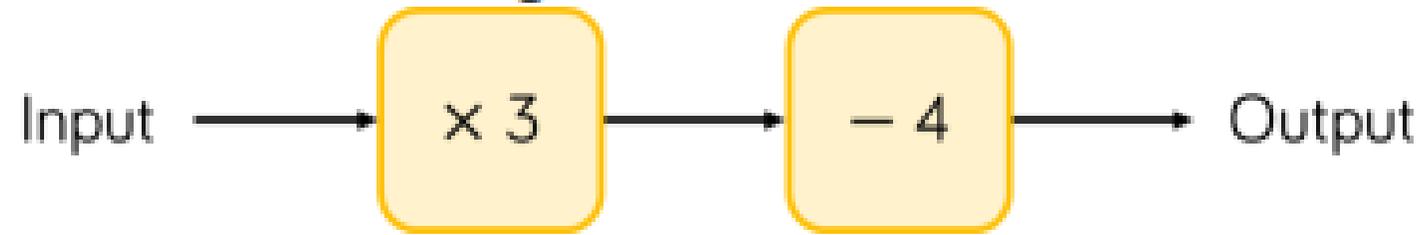
How can we make this a one-step function?



Think carefully about 6 and 2

Why is it better to make it a one-step function?

Complete the table for the given function machine.



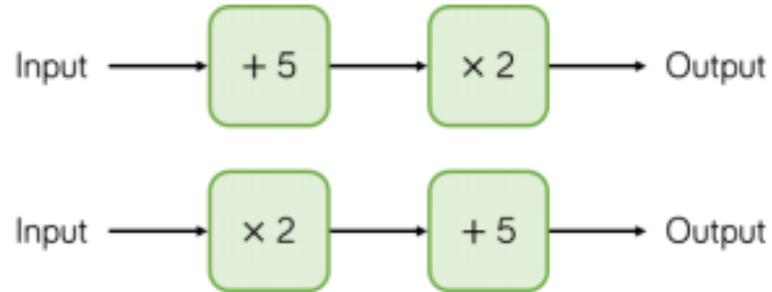
Input	1	2	3	4	5
Output					

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

Take one at a time

Why do you get the patterns you do?

Teddy has two function machines.



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?

Try the machines out with the same number

How does it link to the order of operations?

Task:

- You will be asked to complete some questions on function machines and their input or output.
- Red- pages 2,3,4. The pages get harder as you continue. Have a look which one you want to start with as the first might be too easy.
- Amber- Look at the document labelled amber. It is pages 2,3,4. Have a look which one you want to start with as the first might be too easy.
- Green- Look at the document labelled green. It is pages 2,3,4. Have a look which one you want to start with as the first might be too easy.

Wednesday 24th June

- LO: To understand the term algebra.
- To find missing numbers using algebra

A letter can be used in an algebraic equation to represent a missing number. This can be a set number depending on the equation.

- e.g. $13 + a = 20$

- When a number and letter are represented together, it means the number is multiplied by what the letter represents.

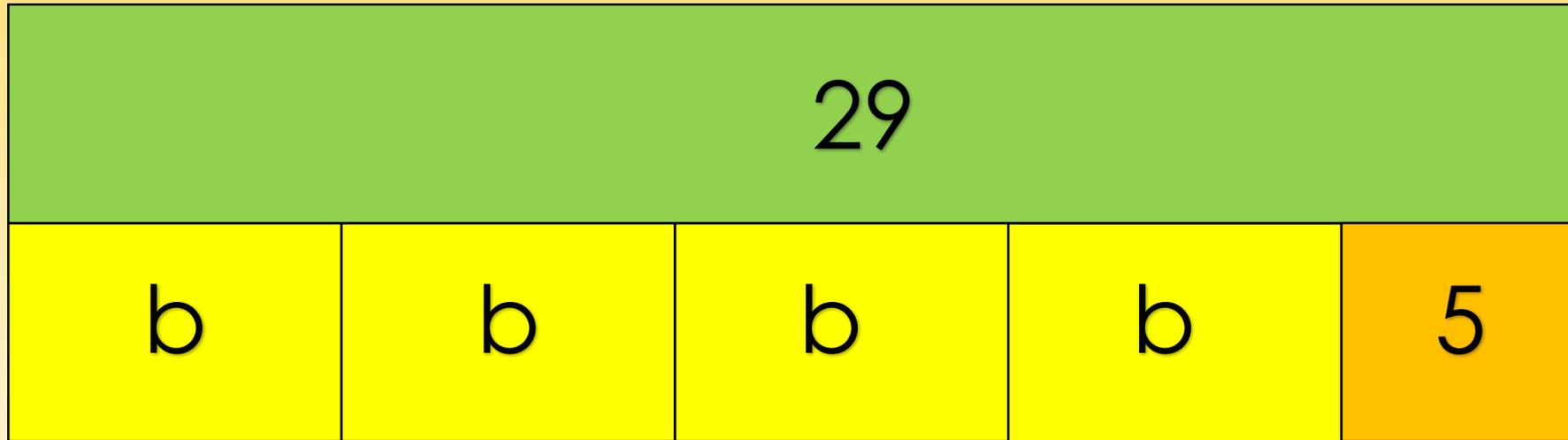
- e.g. $3a = 3 \times a$

Model One

It might be easier to break down this calculation.
 $4 \times ? + 5 = 29$

$$4b + 5 = 29$$

Find the value of b



Remember to use your inverse knowledge and work backwards doing the opposite.
 $29 - 5 = 24$.
There are 4 equal groups- $24 \div 4 = 6$.

Model Two

$$4b + 5 = 29$$

$$29 - 5 = 24$$

$$4b = 24$$

$$24 \div 4 = 6$$

$$b = 6$$

Recap:

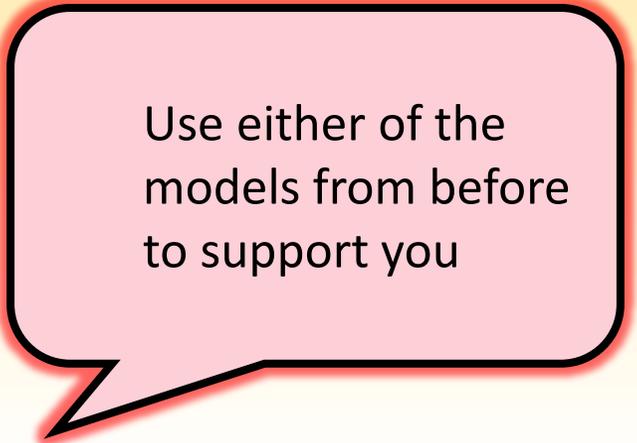
Find the value of the letter in each equation.

$$1) 4n - 7 = 13$$

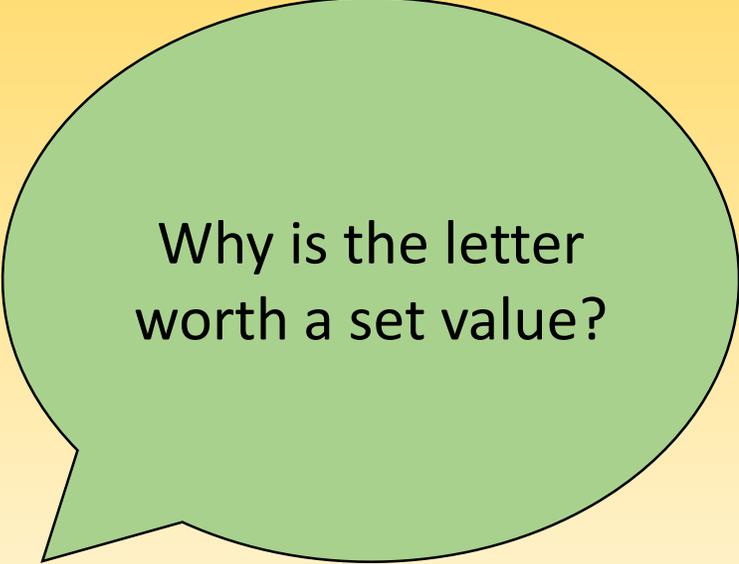
1. 3
2. 8
3. 3

$$2) 8c + 5 = 69$$

$$3) 30 \div 2c = 5$$



Use either of the models from before to support you



Why is the letter worth a set value?

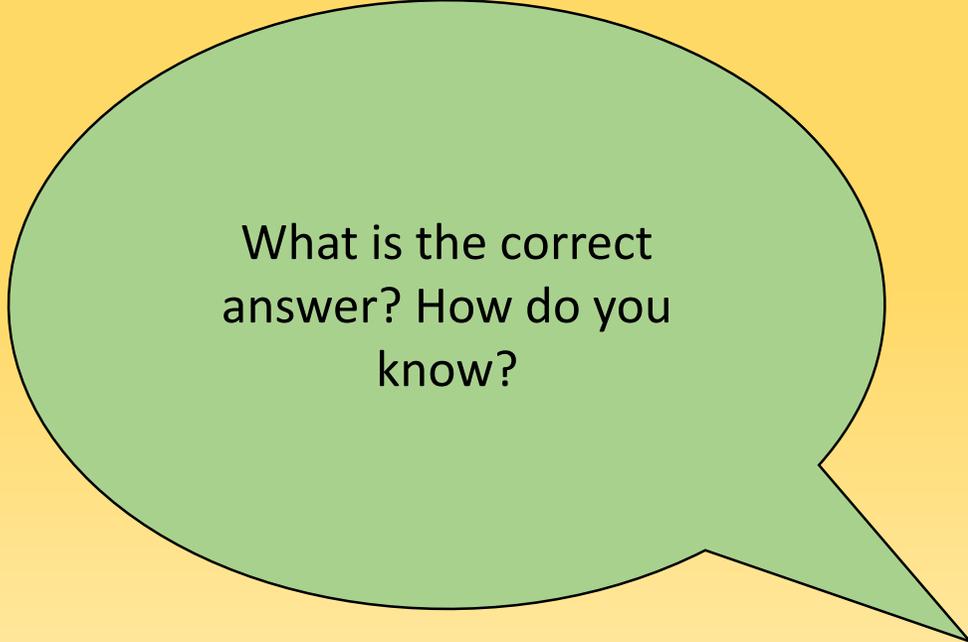
Variation:

Sarah is completing the following calculation:

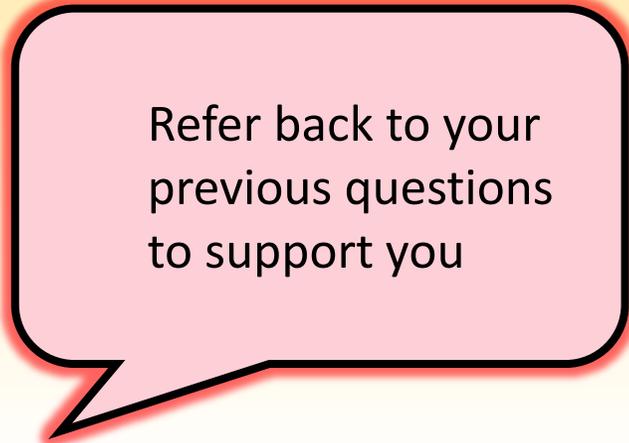
$$4a + 16 = 60$$

She says $a = 19$

Explain her mistake.



What is the correct answer? How do you know?



Refer back to your previous questions to support you

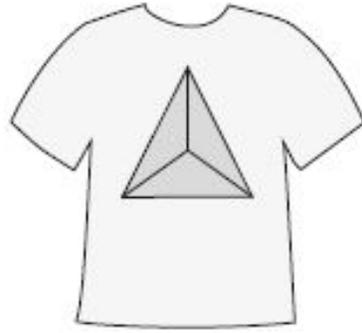
Task:

- You will be completing some algebra and finding the value of the missing numbers.
- There is one document in the resources. It starts off easier and gets progressively harder. Have a look through to see where you would like to begin your learning.

Thursday 25th June. LO: To solve simple algebra word problems.

- John buys x packets of pens. Laura buys 7 more packets of pens than John. There were 12 packets of pens bought altogether. How many did John buy?
- It might help you to draw out this problem. We don't know how many pens John has but we know Laura has 7 more. They had 12 altogether.
- $? + 7 = 12$. Or use the inverse and do $12 - 7 = ?$
- What could the missing number be?

A shop prints designs on T-shirts.



They use this formula to work out the price for printing a design.

$$\text{price} = 60\text{p} \times \text{number of colours} + \text{£}1.25$$

What is the price for printing a design that has **3** colours in it?

Think about how we could write this out.

$$\text{Price} = 60 \times 3 + \text{£}1.25$$

Here is a rule for the time it takes to cook a chicken.

**Cooking time = 20 minutes plus an extra
40 minutes for each kilogram**

How many minutes will it take to cook a 3 kg chicken?

How many KG are there? 3. Where would you put the 3 in the calculation?

Extension: What is the mass of a chicken that takes 100 minutes to cook?

You could work backwards. You have 100 minutes but out of that 20 minutes will be needed. $100 - 20 = 80$.

Then it is 40 minutes for each Kg.

How many lots of 40 minutes can you get into 80 minutes?

2. The chicken is 2 kg.

Task:

- Under the resources, there are three levels of word problems for you to choose.
- Red, amber, green.

Friday 26th June

- Please see resources for the investigation where you need to find the values of shapes in the puzzle.