Algebraic mappings part 2

Whether you are a parent, teacher or home school educator, we've compiled examples of activities, games and puzzles which can be used to support the learning of algebra.

These examples are taken from the mapping packs found in our SMILE resource collection. The mathematical demand increases as you work through the packs. There are lots more ideas in the complete packs, which can be downloaded at https://www.stem.org.uk/rxzec

Answers to cards can be found at https://www.stem.org.uk/rxxo5

Think of a number

Smile **0386**

Is the answer always 1?

Try it with other numbers to find out.
Try it on a friend.

Here is a new game.

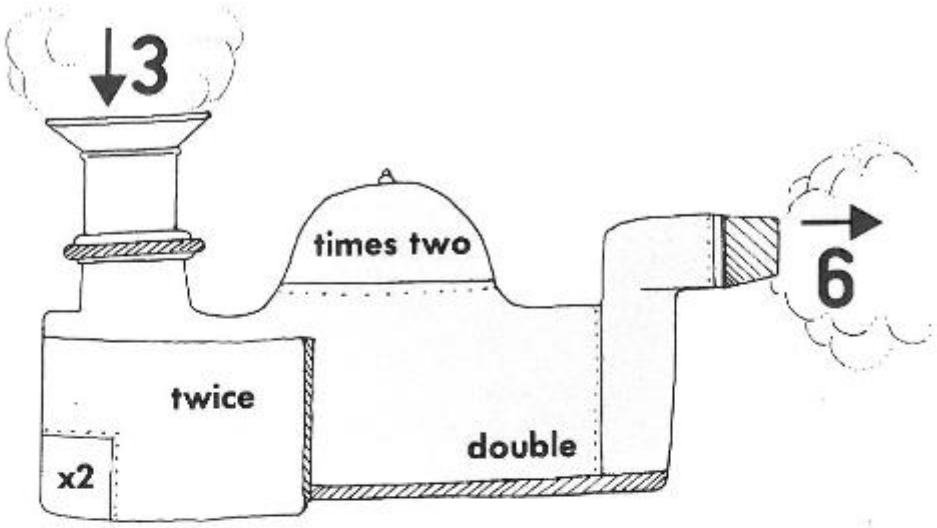
What number does it finish on?

Can you invent a game like this?

Think of a number
Add 2
Multiply by 3
Subtract 6
Divide by 3
Subtract the number you first thought of

Mapping Machines

Smile **0173**



This is a 'Double' machine.

(1) When 4 goes in, what comes out?
(2) If 20 comes out, what went in?

Double

3	6
4	8
5	10
10	20
9	18
$1\frac{1}{2}$	3
7	14

This diagram shows what the machine does to some numbers.

Draw another diagram to show what it does to some different numbers.

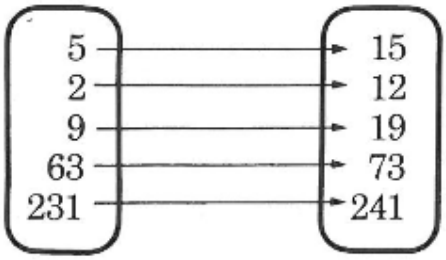
Draw different diagrams to show what happens to 3, 4, 5 and some other numbers when you use:-

(a) A 'treble' (x 3) machine
(b) An 'add seven' machine
(c) A 'subtract two' machine
(d) A 'multiply by five and then add three' machine

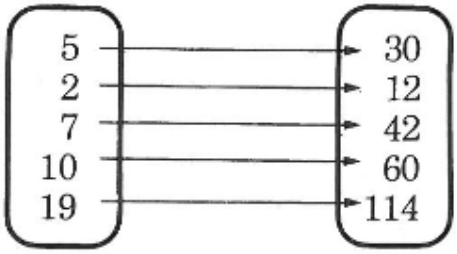
Can you find the rules for each of the function machines below?

Remember, in each question your machine must work for every pair of numbers.

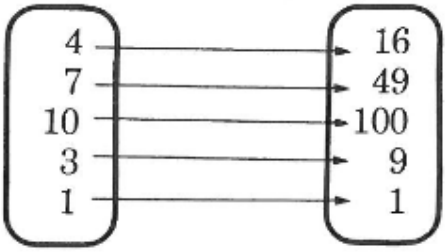
(1)



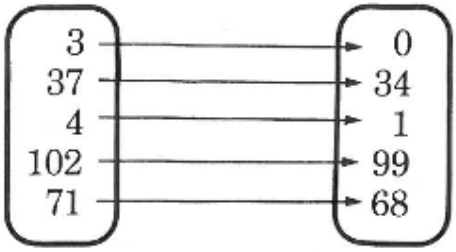
(2)



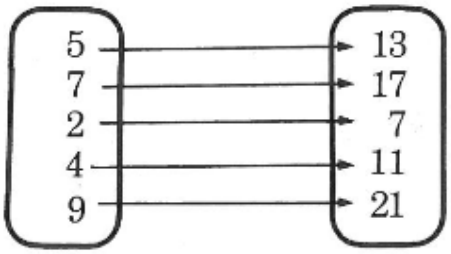
(3)



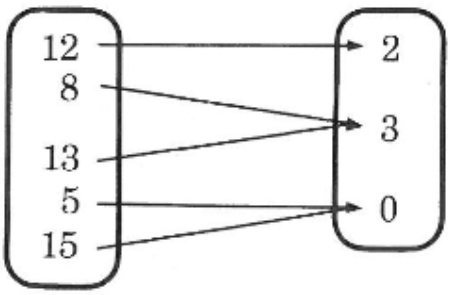
(4)



(5)



(6)

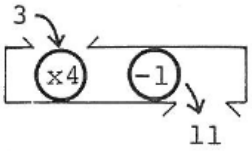


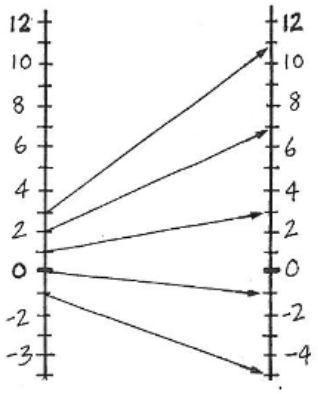
Make up some of your own and get a friend to try them.

Inverse Mappings

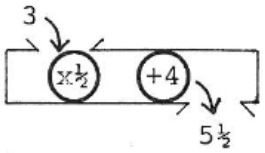
SMILE 0837

This mapping diagram shows what happens to numbers which are put through a machine like $y \rightarrow 4y - 1$

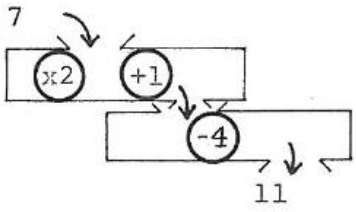


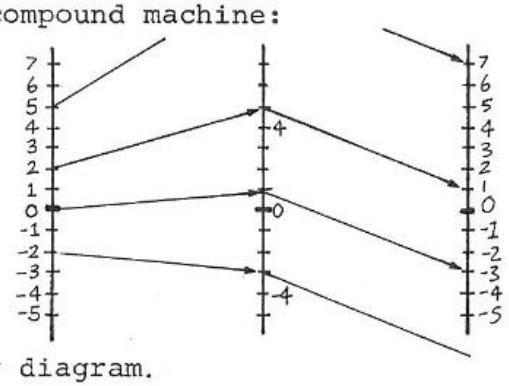


(1) Draw a mapping diagram to illustrate $k \rightarrow \frac{1}{2}k + 4$



(2) Here is a mapping diagram to show what happens to numbers put through this compound machine:





Copy and complete the mapping diagram.

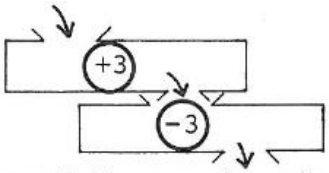
(3) What is the central number line used for?

(4) $x \rightarrow 2x + 1$ describes the L.H.mapping (e.g. $7 \rightarrow 15$)

$x \rightarrow x - 4$ describes the R.H. mapping (e.g. $15 \rightarrow 11$)

What describes the combined mapping (e.g. $7 \rightarrow 11$)?

(5) Draw a mapping diagram with 3 number lines for this compound machine:



(6) Your L.H. mapping should show $x \rightarrow x + 3$
Your R.H. mapping should show $x \rightarrow x - 3$
What does the combined mapping show?