

Monday

This week, we are going to look at some algebra! We have already done a bit of this in class (it's actually pretty easy) and you'll be doing lots in Secondary School so seems a good thing to have a go at this week.

Starter:

1 The cost of a pineapple is half the cost of a melon.



How much does the pineapple and melon cost altogether?

2 Tommy thinks of a number.

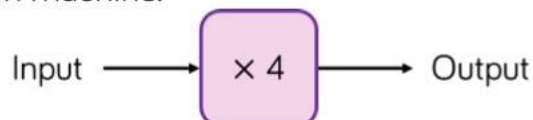
5 is a factor of my number



Does Tommy's number have to be odd? Explain your answer.

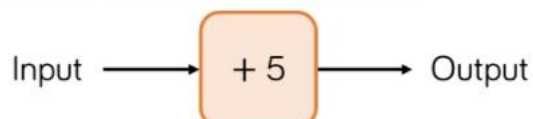
Main activity:

Here is a function machine.



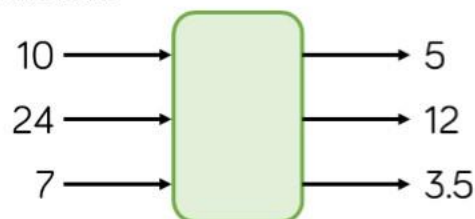
- What is the output if the input is 2?
- What is the output if the input is 7.2?
- What is the input if the output was 20?
- What is the input if the output was 22?

Complete the table for the function machine.

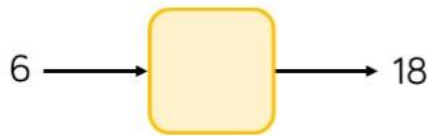


Input	5	5.8	10	-3	-8			
Output						9	169	0

Find the missing function.

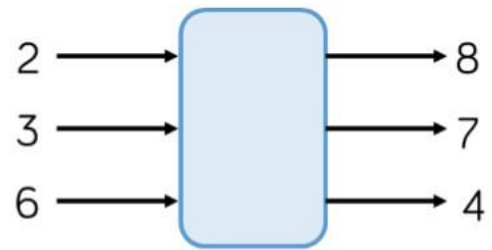


Eva has a one-step function machine. She puts in the number 6 and the number 18 comes out.



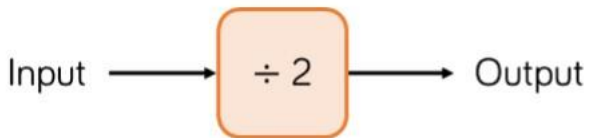
What could the function be?
How many different answers can you find?

Amir puts some numbers into a function machine.



What is the output from the function when the input is 16?

Dora puts a number into the function machine.



Dora's number is:

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

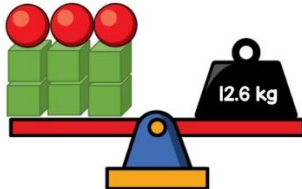
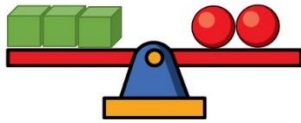
What is Dora's input?
What is her output?

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

Tuesday

Starter:

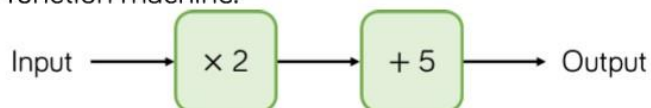
3 Gina balances some scales.



What is the mass of a cube?

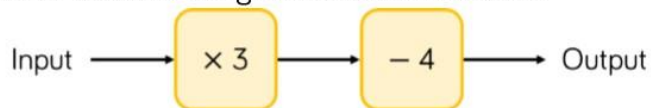
Main activity:

Here is a function machine.



- What is the output if the input is 5?
- What is the input if the output is 19?
- What is the output if the input is 3.5?

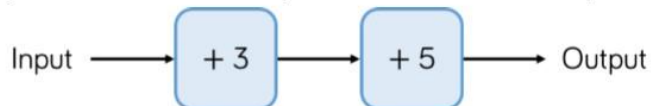
Complete the table for the given function machine.



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?

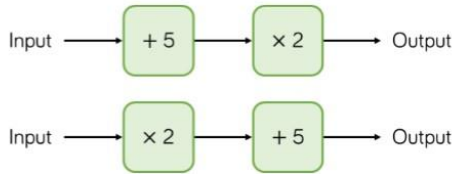
How can you write this two-step machine as a one-step machine?



Check your answer by inputting values.

6

Teddy has two function machines.



He says,

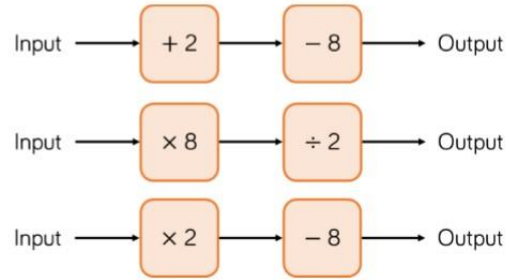


The function machines will give the same answer.

Is Teddy correct?

Is there an input that will give the same output for both machines?

Mo has the following function machines.



Explain which of these can be written as single function machines.

Wednesday

Starter:

1 Here are some digit cards.



Find the 4-digit number that is closest to 5,000

You may use each card only once.

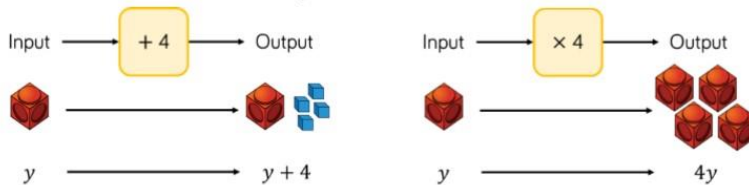
2 Complete the number sentences.

$$65 + \square = 79$$

$$83 + 28 = 82 + \square$$

Main activity:

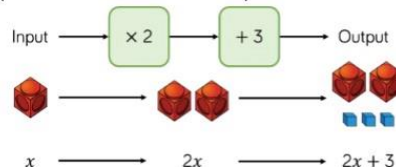
Mo uses cubes to write expressions for function machines.



Use Mo's method to represent the function machines.
What is the output for each machine when the input is a ?




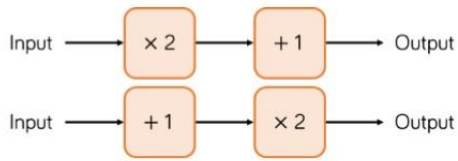
Eva is writing expressions for two-step function machines.



Use Eva's method to write expressions for the function machines.



Amir inputs m into these function machines. 



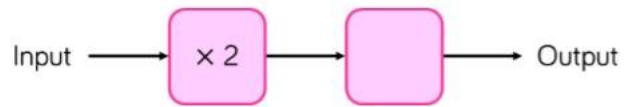
He says the outputs of the machines will be the same.

Do you agree?

Explain your answer.

This function machine gives the same output for every input.

For example if the input is 5 then the output is 5 and so on.



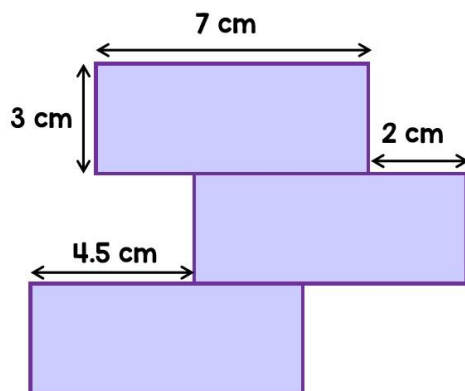
What is the missing part of the function?

What other pairs of functions can you think that will do the same?

Thursday

Starter:

- 3** Three identical rectangles are arranged to make a shape.



What is the perimeter of the shape?

Main activity:

■ If $\star = 7$ and $\heartsuit = 5$, what is the value of:

$$\star + \heartsuit + \heartsuit$$

If $a = 7$ and $b = 5$ what is the value of:

$$a + b + b$$

What is the same and what is different about this question?

■ Substitute the following to work out the values of the expressions.

$$w = 3 \quad x = 5 \quad y = 2.5$$

- $w + 10$
- $w + x$
- $y - w$

■ Substitute the following to work out the values of the expressions.

$$w = 10 \quad x = \frac{1}{4} \quad y = 2.5$$

- $3y$
- wx
- $12 + 8.8w$
- $wy + 4x$

Here are two formulae.

$$p = 2a + 5$$

$$c = 10 - p$$

Find the value of c when $a = 10$

$$x = 2c + 6$$

Whitney says,



$x = 12$ because c must be equal to 3 because it's the 3rd letter in the alphabet

Is Whitney correct?

Amir says,

When $c = 5$, $x = 31$



Amir is wrong.

Explain why.

What would the correct value of x be?

Friday

Starter:

- 1 Use $<$, $>$ or $=$ to make these number sentences correct.

$$9 \times 7 \bigcirc 8 \times 7$$

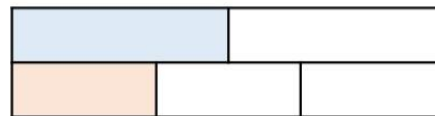
$$48 \div 2 \bigcirc 48 \div 4$$

$$300 \times 2 \bigcirc 20 \times 30$$

- 3 Mr Patel writes a number on the board.

- Leon finds $\frac{1}{2}$ of the number.
- Sophie finds $\frac{1}{3}$ of the number.
- Leon's number is 7 more than Sophie's.

What is the number Mr Patel started with? This bar model may help you.



White

Main activity:

- Which of the following is a formula?

$$P = 2l + 2w$$

$$3d + 5$$

$$20 = 3x - 2$$

Explain why the other two are not formulae.

- Eva uses the formula $P = 2l + 2w$ to find the perimeter of rectangles.

Use this formula to find the perimeter of rectangles with the following lengths and widths.

- $l = 15, w = 4$
- $l = \frac{1}{4}, w = \frac{3}{8}$
- $l = w = 5.1$

- This is the formula to work out the cost of a taxi.

$$C = 1.50 + 0.3m$$

C = the cost of the journey in £

m = number of miles travelled.

Work out the cost of a 12-mile taxi journey

Jack and Dora are using the following formula to work out what they should charge for four hours of cleaning.

$$\text{Cost in pounds} = 20 + 10 \times \text{number of hours}$$

Jack thinks they should charge £60
Dora thinks they should charge £120

Who do you agree with?
Why?

The rule for making scones is use 4 times as much flour (f) as butter (b).

Which is the correct formula to represent this?

A

$$f = \frac{b}{4}$$

B

$$f = 4b$$

C

$$f = b + 4$$

D

$$4f = b$$

Explain why the others are incorrect.