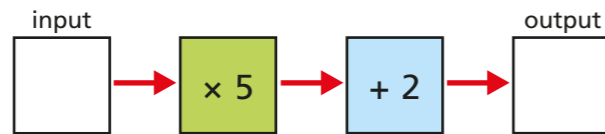


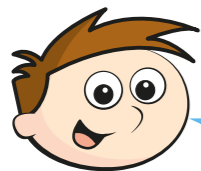
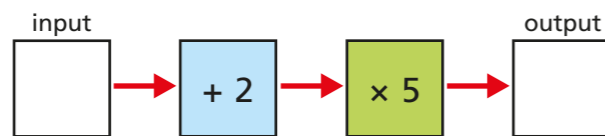
Find a rule – two step

1 Use the function machine to complete the table.



Input	1	2	3	5	10	50
Output						

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



The outputs will be the same.

Teddy



The outputs will be different.

Jack

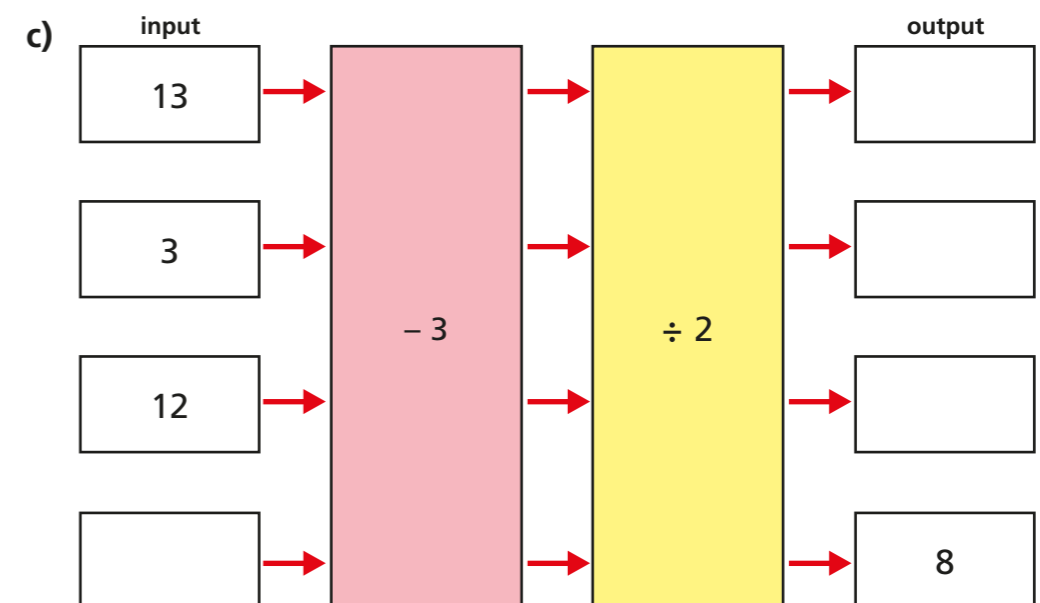
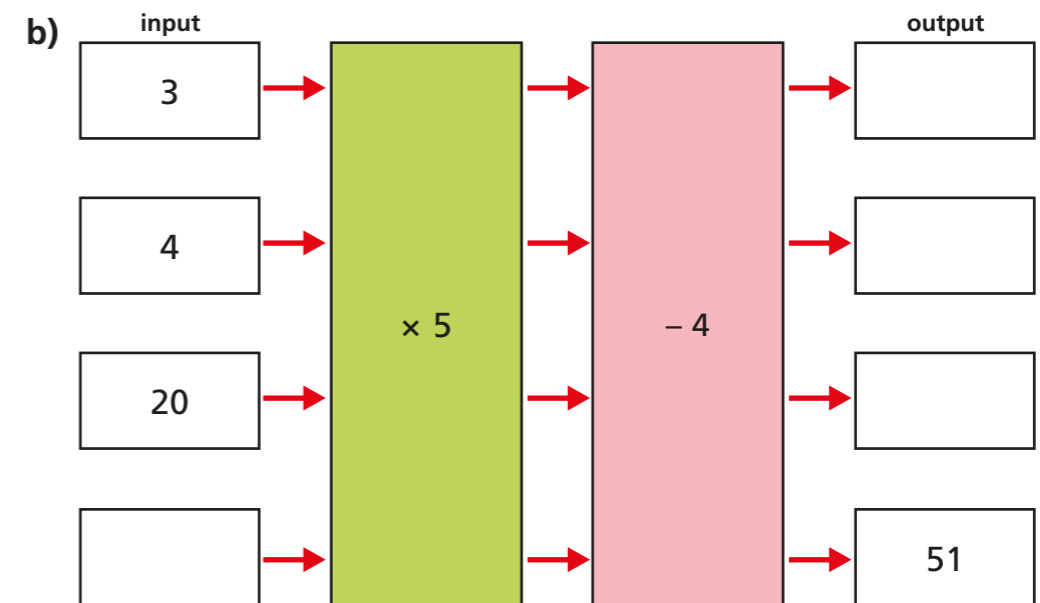
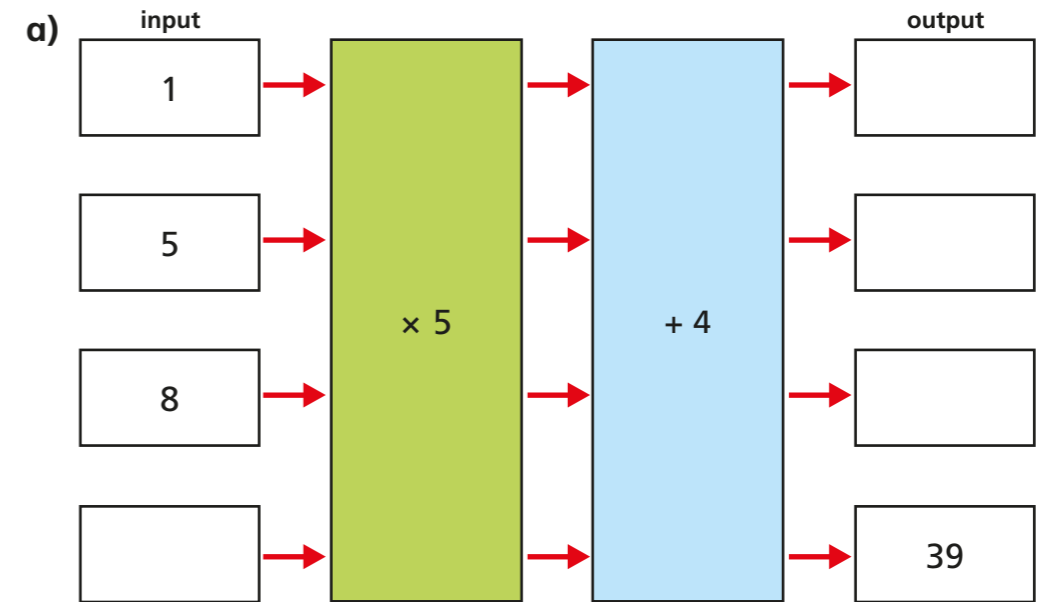
Explain to a partner who you think is correct.

Use the function machine to complete the table.

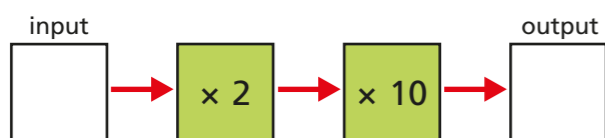
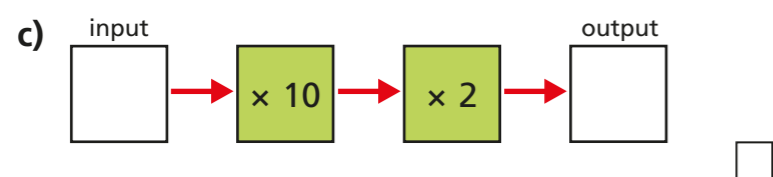
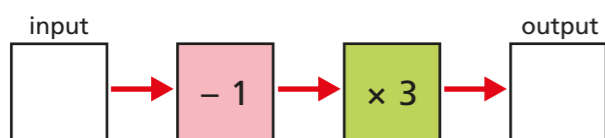
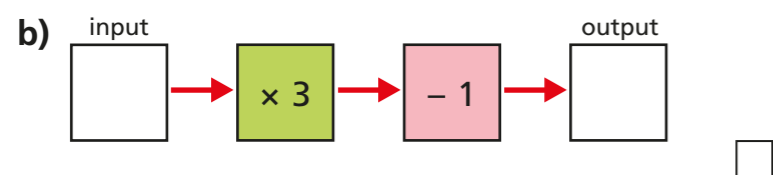
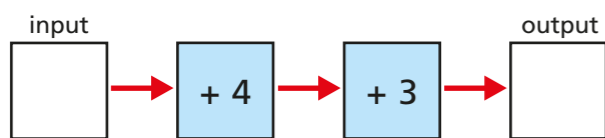
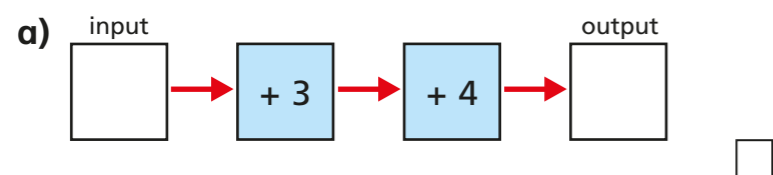
Input	1	2	3	5	10	50
Output						

Who is correct? _____

3 Work out the missing outputs and inputs.



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

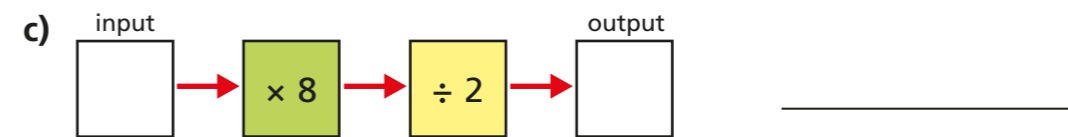
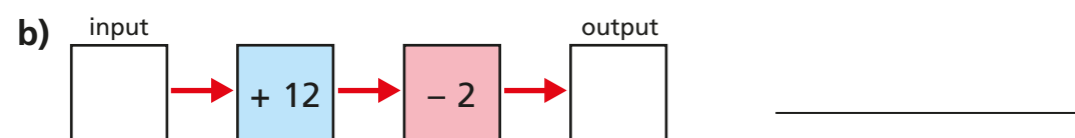
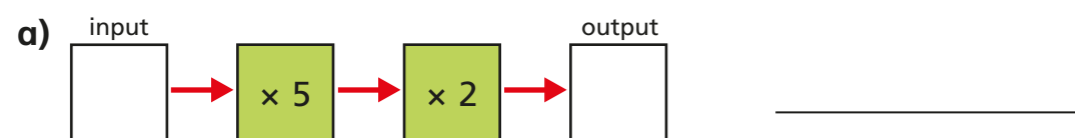


Explain your reasoning to a partner.

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.



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.



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.

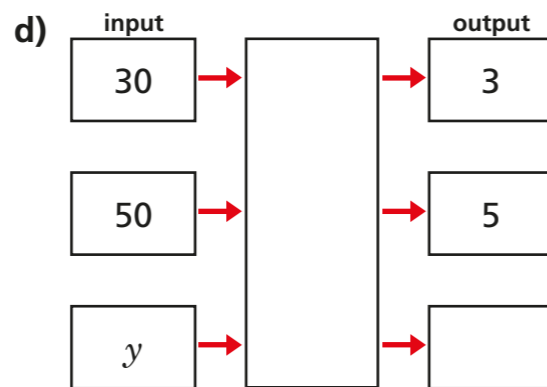
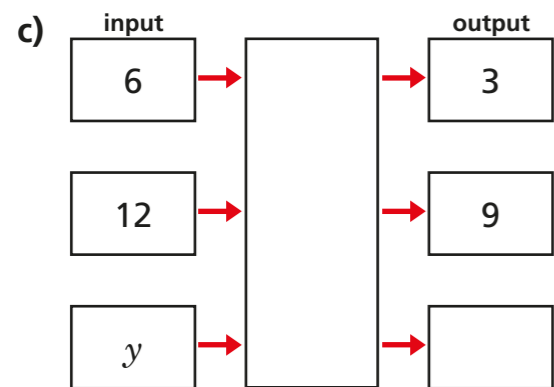
a) Mr Hall orders 16 photos.

How much does he pay?



b) Mrs Rose pays £6.05

How many photos did she order?



5 Match each statement to the equivalent algebraic expression.

Write the missing statements.

5 more than y

$2y$

y less than 5

$y - 5$

y multiplied by 5

$5 - y$

y divided by 5

$y + 5$

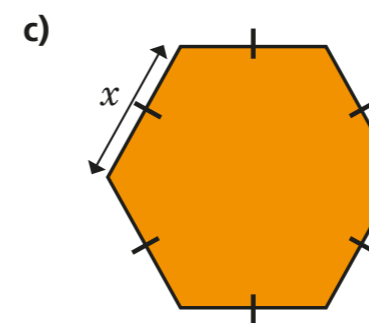
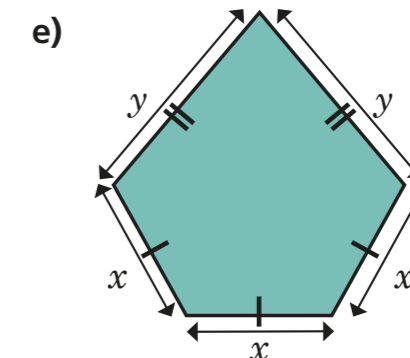
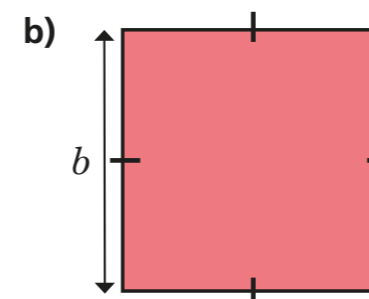
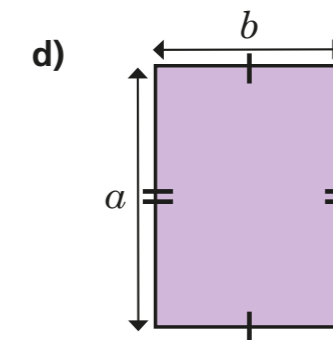
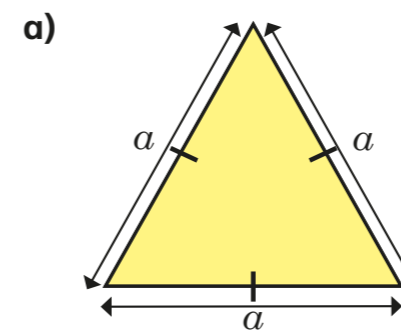
double y

$5y$

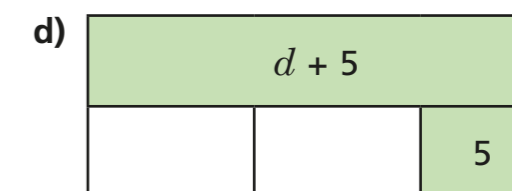
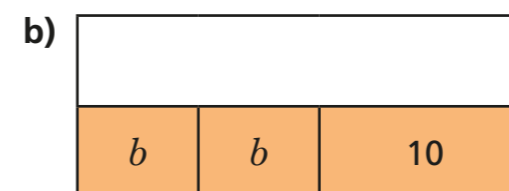
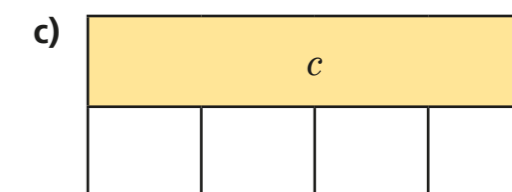
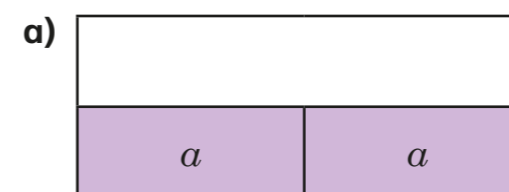
y^2

$\frac{y}{5}$

6 Write an algebraic expression to represent the perimeter of each shape.





7 Complete the bar models.



Substitution






1

 = 4	 = 5
---	---



Use the given facts to work out the calculations.

a)  +  + 

b)  +  - 

c)  +  +  +  + 

2

 = 12	 = 5
--	---

Use the given facts to work out the calculations.

a)  - 

b)  × 

c) Create your own calculation that will be equal to 22

3 If $x = 5$, write the values of the expressions in the corresponding grid. The first one has been done for you.

$3x$	x^2	$2x - 5$
$4x + 2$	$\frac{x}{2}$	$2(x + 1)$
$7x$	$x + 9$	$x - 7$

15		

4 If $a = 10$ and $b = 6$, work out the values of the expressions.

a) $a + b =$

d) $2a + b =$

b) $a - b =$

e) $3a - 17 =$

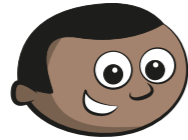
c) $2a =$

f) $2(a - b) =$

5 If $m = \frac{4}{5}$ and $k = 0.1$, work out the value of $m + 2k$



6



Mo

It does not matter what p and q are, $p + q$ and $q + p$ will always give the same answer.

Do you agree with Mo? _____

Explain your answer.

7

$$m = 7 \quad n = 5$$

Write $>$, $<$ or $=$ to compare the expressions.

a) $2m$ ○ 10

b) $n - 1$ ○ 5

c) $2n + m$ ○ $2m + n$

d) $7n$ ○ $5m$

8

$$a = 10$$

Write the expressions in order, starting with the smallest value.

$$5a$$

$$a + 5$$

$$\frac{a}{5}$$

$$a^2$$

9

$$a = 15$$

Write three different algebraic expressions that give a value of 40

10 Complete the table.

x	$5x$	$5x - 1$
2		
10		
12		
	25	
		34
		99



Solve simple one-step equations



1 Write an equation for each part-whole model.
Work out the value of the multilink cube in each equation.

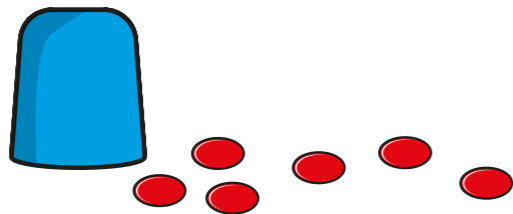
a)

=

b)

=

2 There are some counters under the cup.



There are 10 counters in total.

- a) If c is the number of counters under the cup, explain why $c + 6 = 10$
- b) Work out the value of c . $c =$
- c) How many counters are under the cup?



3 Write algebraic equations to represent the bar models.
Find the value of a in each one.

a)

$a =$

c)

$a =$

b)

$a =$

d)

$a =$

4 Nijah is solving the equation $x - 8 = 20$

$$x - 8 = 20$$

$$x = 20 - 8$$

$$x = 12$$

What mistake has Nijah made?

5 Solve the equations.

a) $x + 7 = 20$

$x =$

b) $10y = 80$

$y =$

c) $4m = 22$

$m =$

d) $g - 3 = 15$

$g =$

e) $32 = t - 5$

$t =$

f) $\frac{u}{6} = 3$

$u =$

6 Filip thinks of a number.

He subtracts 5 from his number.

He ends up with 10

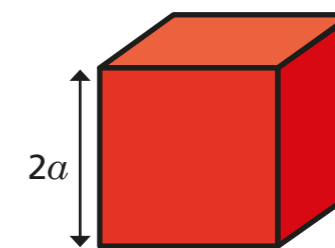
Write an algebraic equation to represent Filip's problem.

Solve the equation to work out his number.

7 Dexter builds a tower.

Each block is $2a$ high.

He uses 7 blocks.



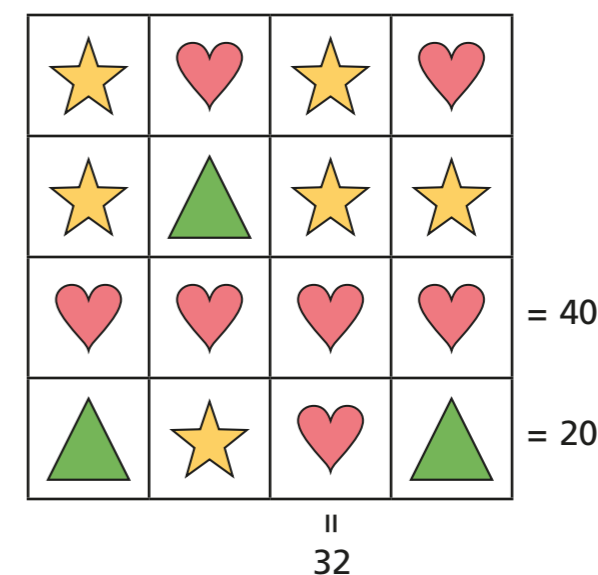
The total height of his tower is 42 cm.

Write an equation to represent the height of Dexter's tower and find the value of a .

$a =$ cm

8 Work out the value of each shape.

Write the equations that you solved to find the value of each shape.



=

=

=

Work out the missing total of each row and column.

Compare answers with a partner.

