









1) Rhys uses cubes to write expressions for function machines. Draw the missing cubes and write the missing inputs and expressions. The first one has been completed for you.


a)

Input	$+ 3$	Output
	$\rightarrow$	   
$y$	$\rightarrow$	$y + 3$


b)

Input	$+ 5$	Output
	$\rightarrow$	
	$\rightarrow$	


c)

Input	$\times 3$	Output
	$\rightarrow$	
	$\rightarrow$	


d)

Input	$\times 5$	Output
	$\rightarrow$	
	$\rightarrow$	

e)

Input	$\times 3, + 1$	Output
	$\rightarrow$	
$y$	$\rightarrow$	$3y + 1$

f)

Input	$+ 5, \times 2$	Output
	$\rightarrow$	
	$\rightarrow$	

- 1) Four children write expressions to describe their pocket money for the week. Are their expressions correct or incorrect? If an expression is incorrect, write the correct expression.



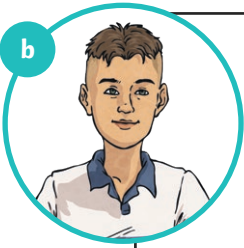
a



I spent half my pocket money going to the cinema. Then, I washed the car and earned £7.

$$y \div 2 + 7$$

b



I cleaned my bedroom and earned £4 to add to my pocket money. Then, my mum tripled my total pocket money for getting a great school report!

$$3(y + 5)$$

c



I spent £3 of my pocket money on a magazine. Then, I completed my paper round and earned £10.

$$10(y - 3)$$

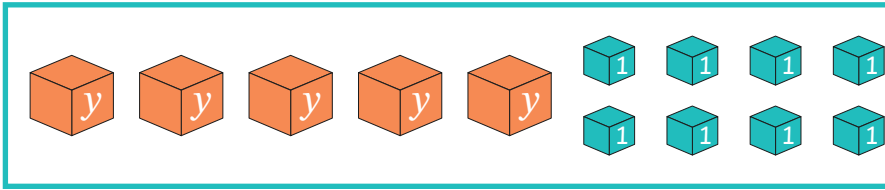
d



My grandpa gave me £12 to add to my pocket money. Then, I gave half of all my pocket money away to charity.

$$y + 12 - 2$$


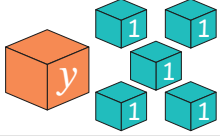
1) Harry is using the following cubes to form expressions.


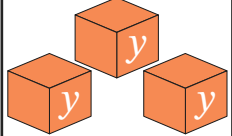



Using any amount of the cubes, how many different expressions can you write that use addition and/or multiplication?

A large empty rectangular box for writing answers.


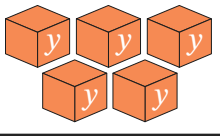
1) b) 


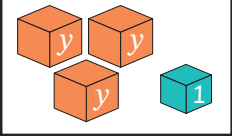
Input	+ 5	Output
	→	
y	→	y + 5

Input	× 3	Output
	→	
y	→	3y


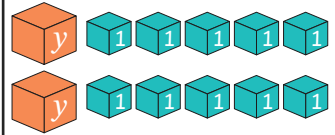



d) 

Input	× 5	Output
	→	
y	→	5y

Input	× 3 + 1	Output
	→	
y	→	3y + 1

f) 

Input	+ 5 × 2	Output
	→	
y	→	2(y + 5)

- 1) a) *This is correct.*  
 b) *Incorrect - the correct expression is 3(y + 4).*  
 c) *Incorrect - the correct expression is y - 3 + 10.*  
 d) *Incorrect - the correct expression is y + 12 ÷ 2.*
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1) y	y + 6	2y + 8	4y + 2	5y + 4	3(y + 2)
2y	y + 7	3y + 1	4y + 3	5y + 5	4(y + 1)
3y	y + 8	3y + 2	4y + 4	5y + 6	4(y + 2)
4y	2y + 1	3y + 3	4y + 5	5y + 7	5(y + 1)
5y	2y + 2	3y + 4	4y + 6	5y + 8	2(2y + 1)
y + 1	2y + 3	3y + 5	4y + 7	2(y + 1)	2(2y + 2)
y + 2	2y + 4	3y + 6	4y + 8	2(y + 2)	2(2y + 3)
y + 3	2y + 5	3y + 7	5y + 1	2(y + 3)	2(2y + 4)
y + 4	2y + 6	3y + 8	5y + 2	2(y + 4)	
y + 5	2y + 7	4y + 1	5y + 3	3(y + 1)	

