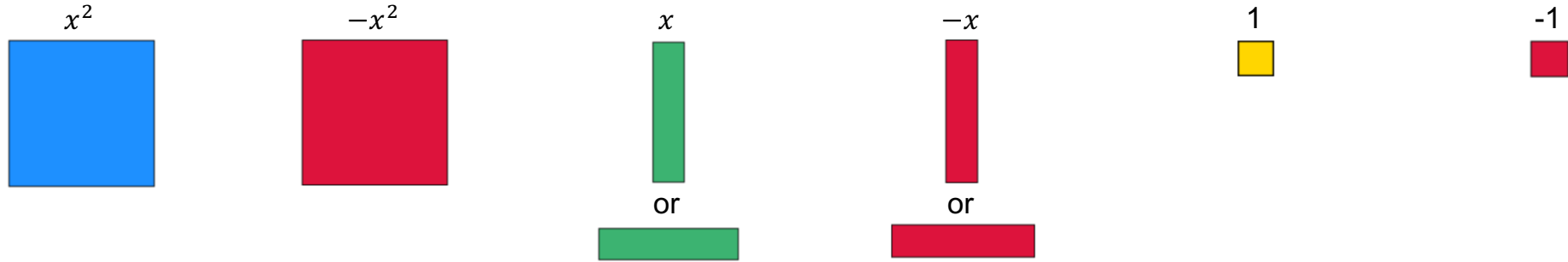




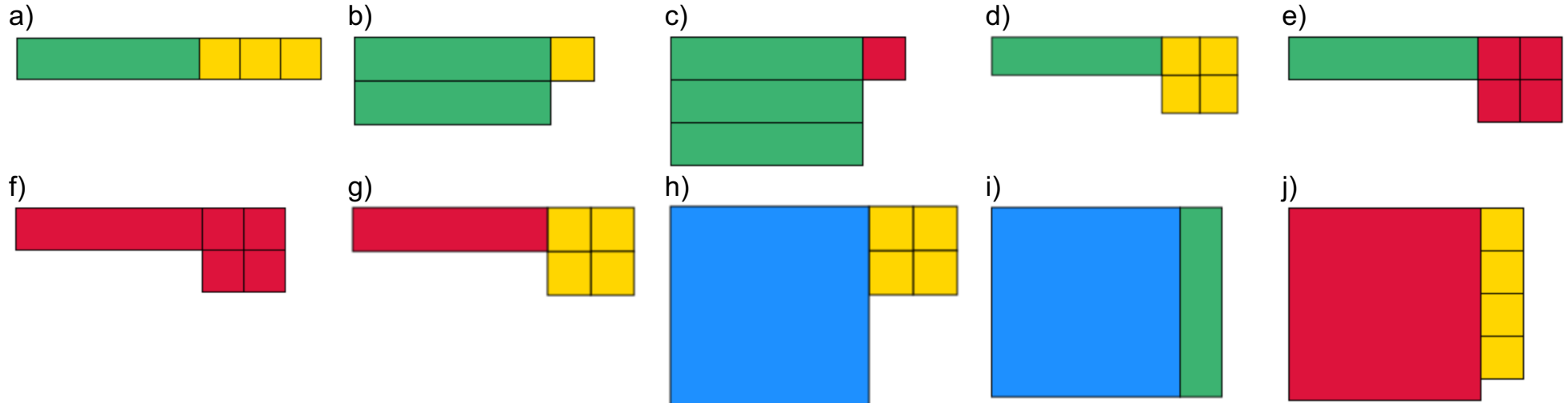
Introduction to Expanding Brackets

Using Algebra Tiles (Physical Stage)

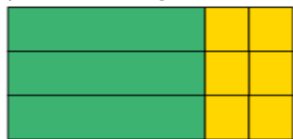
This worksheet uses **Algebra Tiles**, for the purposes of this worksheet we will use the following representations:



1 For each diagram below, write down the expression that is represented in its simplest form.



2 a) The diagram below represents the expression $3x + 6$.

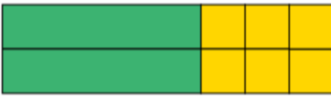

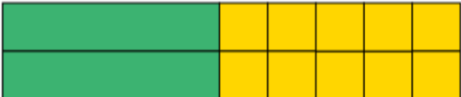
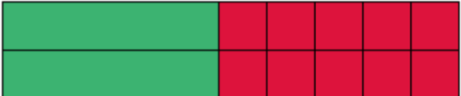



What do you notice about how the tiles have been set out?

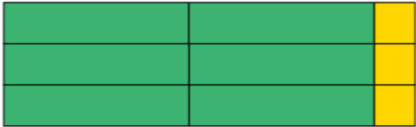
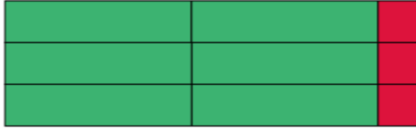
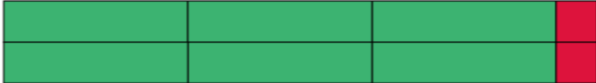
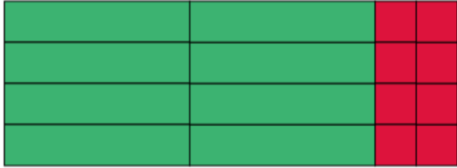
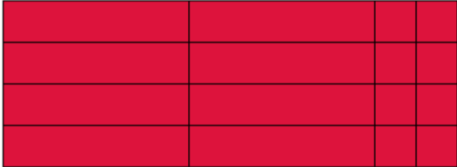
b) Based on your answer to part a), complete the algebraic identity

$$\square (\square x + \square) = 3x + 6$$

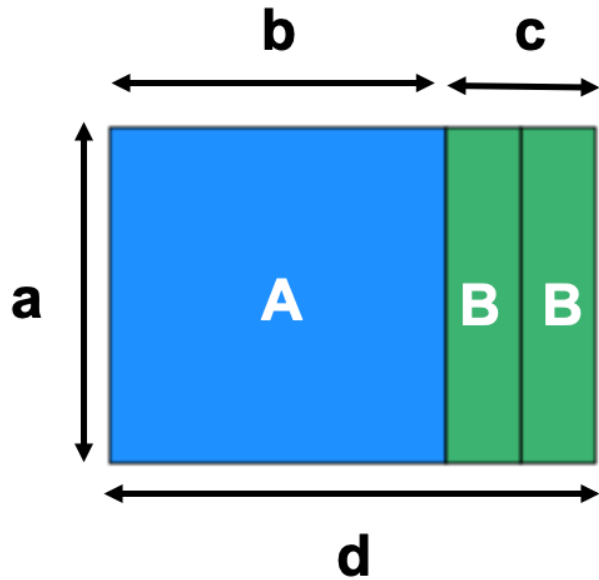
- 3 Complete the table below. Use a set of Algebra Tiles to help you.
An example has been done for you.

Expression	Meaning	Diagram	Total x 's	Total 1's	Expanded Expression
$2(x + 3)$	"2 lots of $x + 3$ "		2	6	$2x + 6$
$2(x + 4)$					
$3(x + 4)$			3	12	
	"3 lots of $x + 5$ "				
					
	"2 lots of $x - 5$ "			-10	
$2(x - 1)$					
$2(-x + 1)$					
$2(1 - x)$					

- 4 Complete the table below. Use a set of Algebra Tiles to help you.
An example has been done for you.

Expression	Meaning	Diagram	Total x 's	Total 1's	Expanded Expression
$3(2x + 1)$	"3 lots of $2x + 1$ "		6	3	$6x + 3$
$3(2x - 1)$				-3	
$2(3x - 1)$					
	"4 lots of $3x - 1$ "				
					
$4(-2x - 2)$			-8		

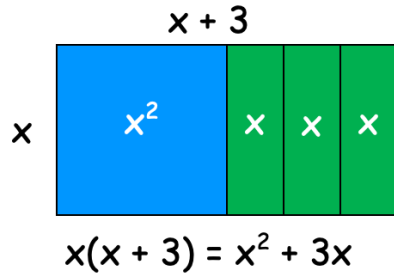
5 Billy represents an expression using the Algebra Tiles shown.



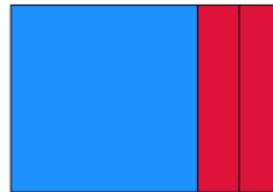
- What is the length of the side marked with an **a**?
- What is the length of the side marked with an **b**?
- What is the length of the side marked with an **c**?
- What is the length of the side marked with an **d**?
- What is the area of the shape marked with an **A**?
- What is the total area of the shapes marked with a **B**?
- What is the total area of the full shape?
- Write your answer to part g) in a different way using your answers to part a) and d).

6 For each diagram below, write down two expressions for the total area of the shape. An example has been done for you.

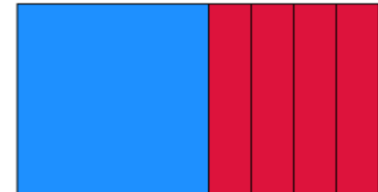
Example



a)



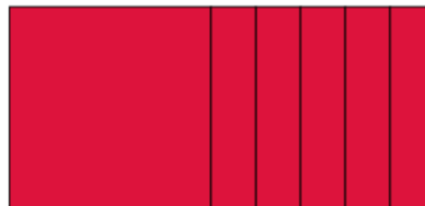
b)



c)



d)



e)

