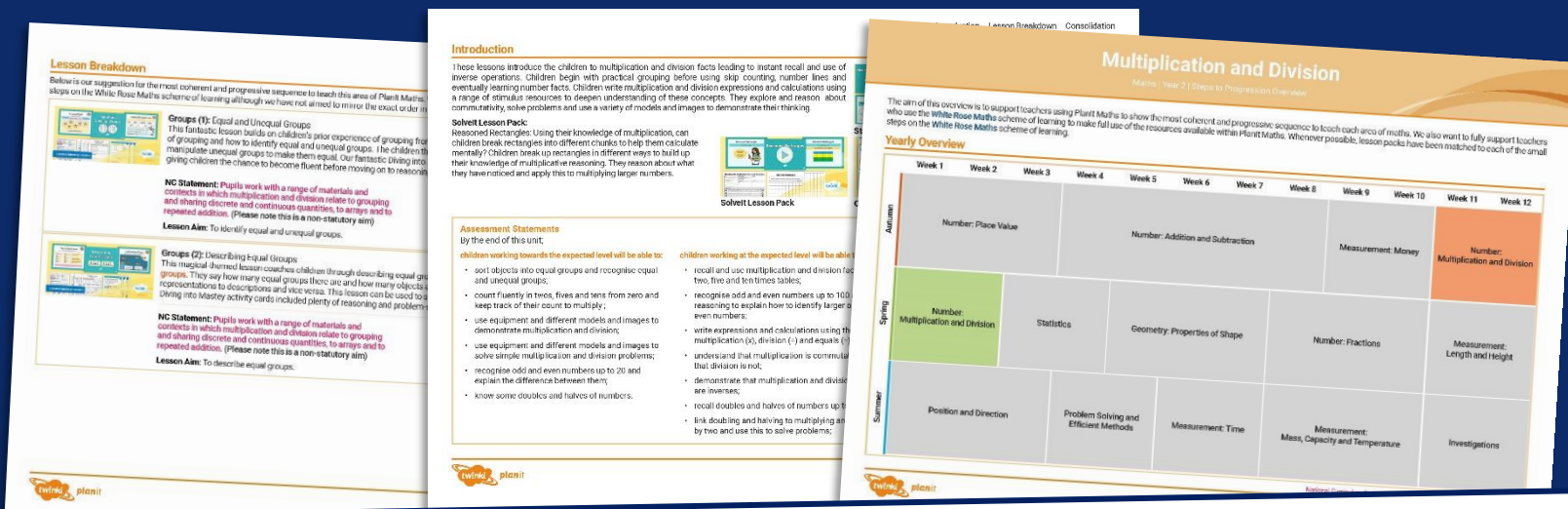




# Maths

## Multiplication and Division

# Need a coherently planned sequence of lessons to complement this resource?

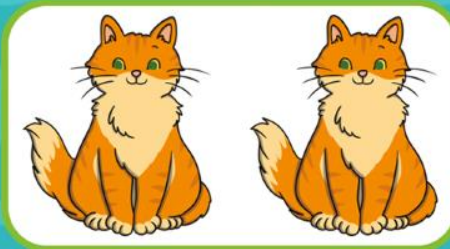
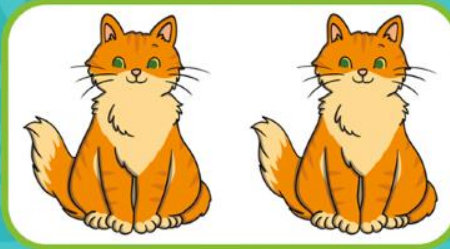
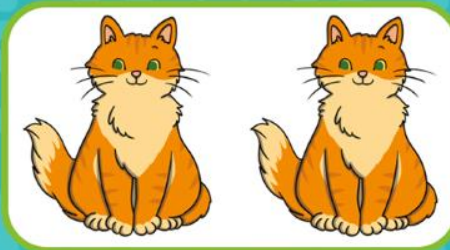


See our [Multiplication and Division Steps to Progression](#) document.

Twinkl Planit is our award-winning scheme of work with over 4000 resources.



# Arrays



## **Aim**

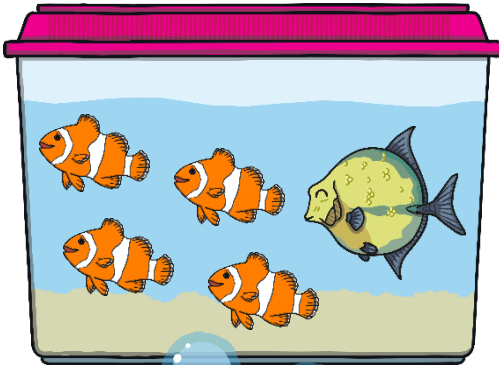
- To use arrays to represent multiplication.

## **Success Criteria**

- I can explain the link between an array and a repeated addition expression.
- I know that multiplication is commutative.
- I can write two multiplication expressions to match an array.
- I can draw an array and write a multiplication expression to represent a picture.

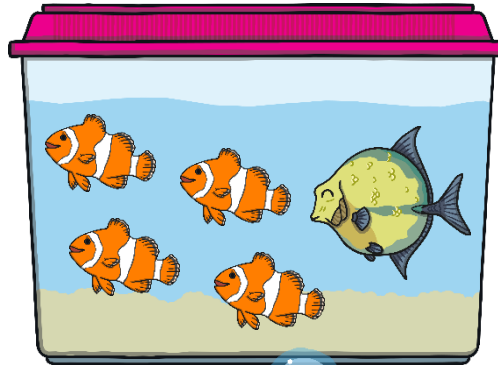
Describe the groups using a:

repeated addition  
expression

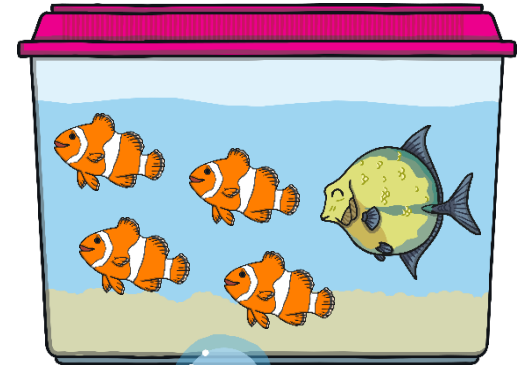


$$5 + 5 + 5$$

bar model

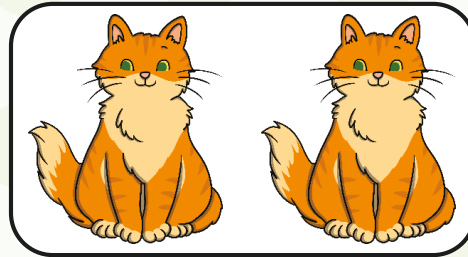


multiplication  
expression

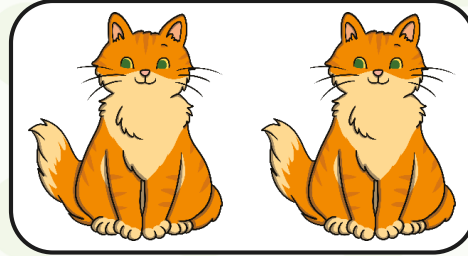


$$3 \times 5$$

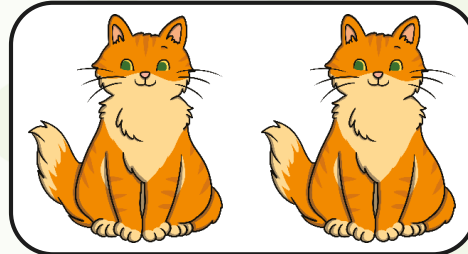
Arrays are objects or pictures arranged in columns and rows.



first row



second row



third row

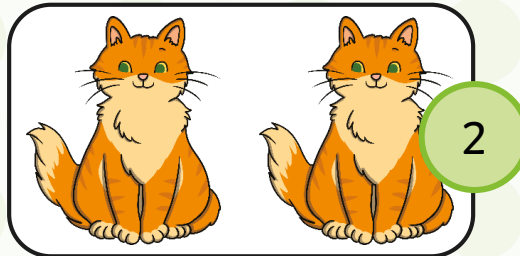
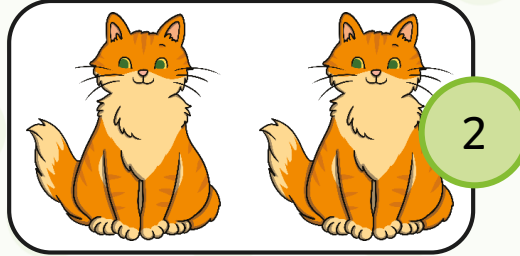
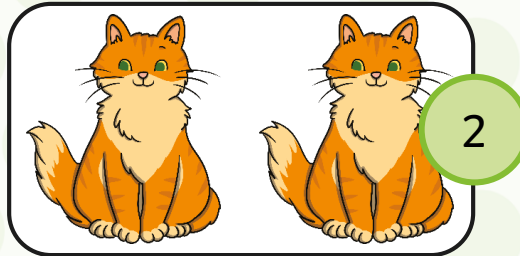
There are 3 rows.  
There are 2 cats in each row.

# Animal Arrays

Arrays are objects or pictures arranged in columns and rows.

What repeated addition expression could you write to represent this array?

$$2 + 2 + 2$$

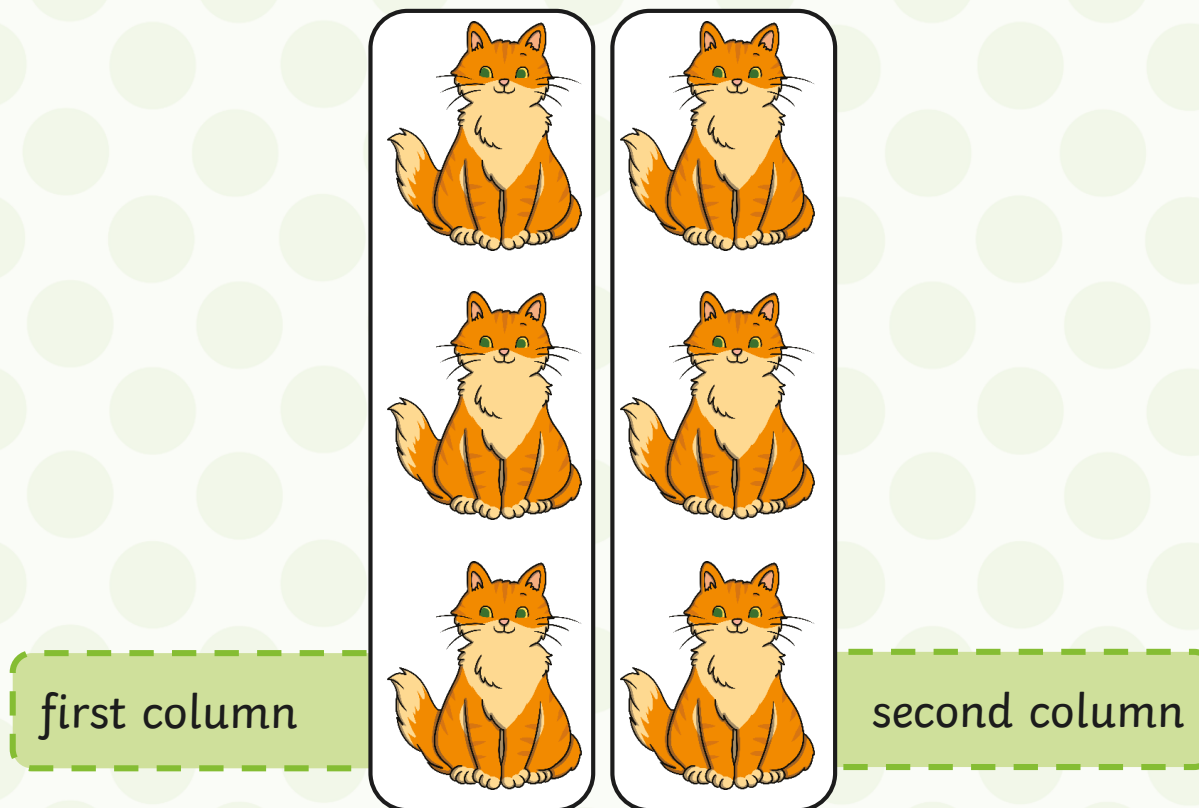


3 groups of 2 cats

What multiplication expression could you write to represent this array?

$$3 \times 2$$

Arrays are objects or pictures arranged in columns and rows.



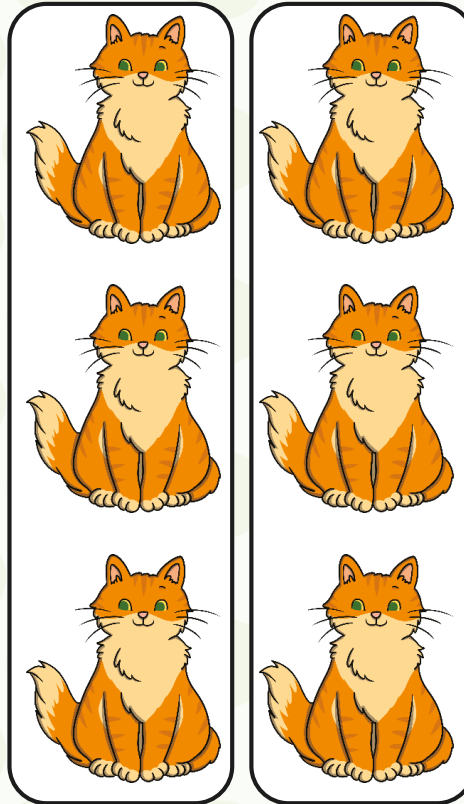
There are 2 columns.  
There are 3 cats in each column.



Arrays are objects or pictures arranged in columns and rows.

$$3 + 3$$

2 groups of  
3 cats

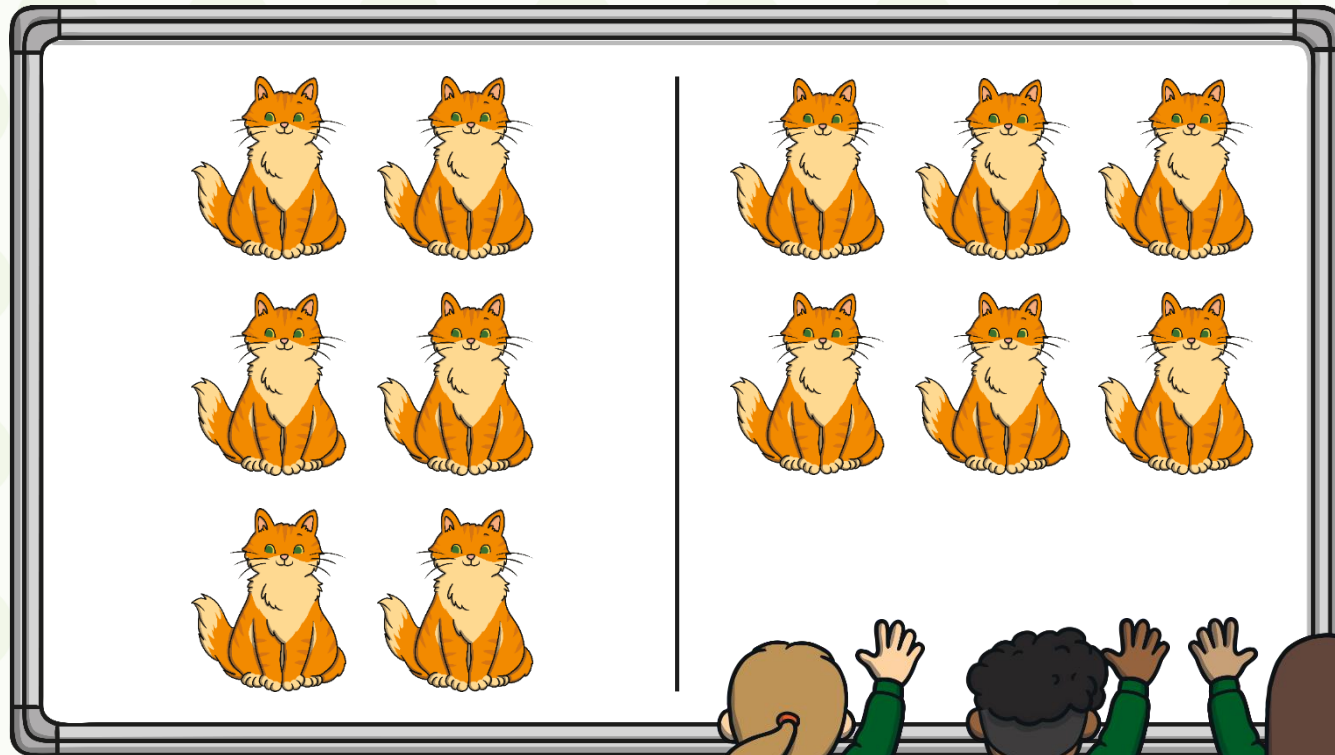


3

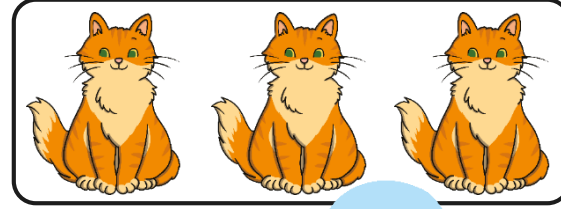
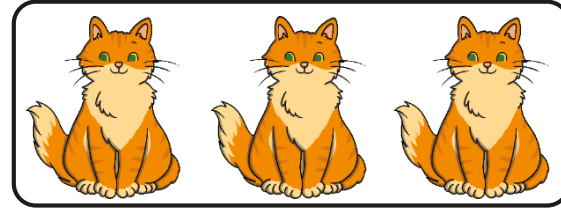
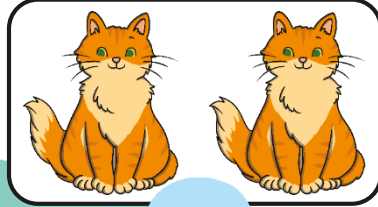
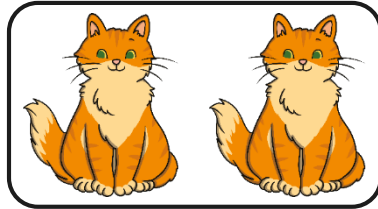
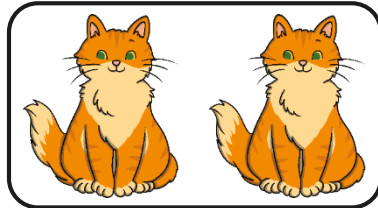
3

$$2 \times 3$$

Compare these arrays. What's the same? What's different?



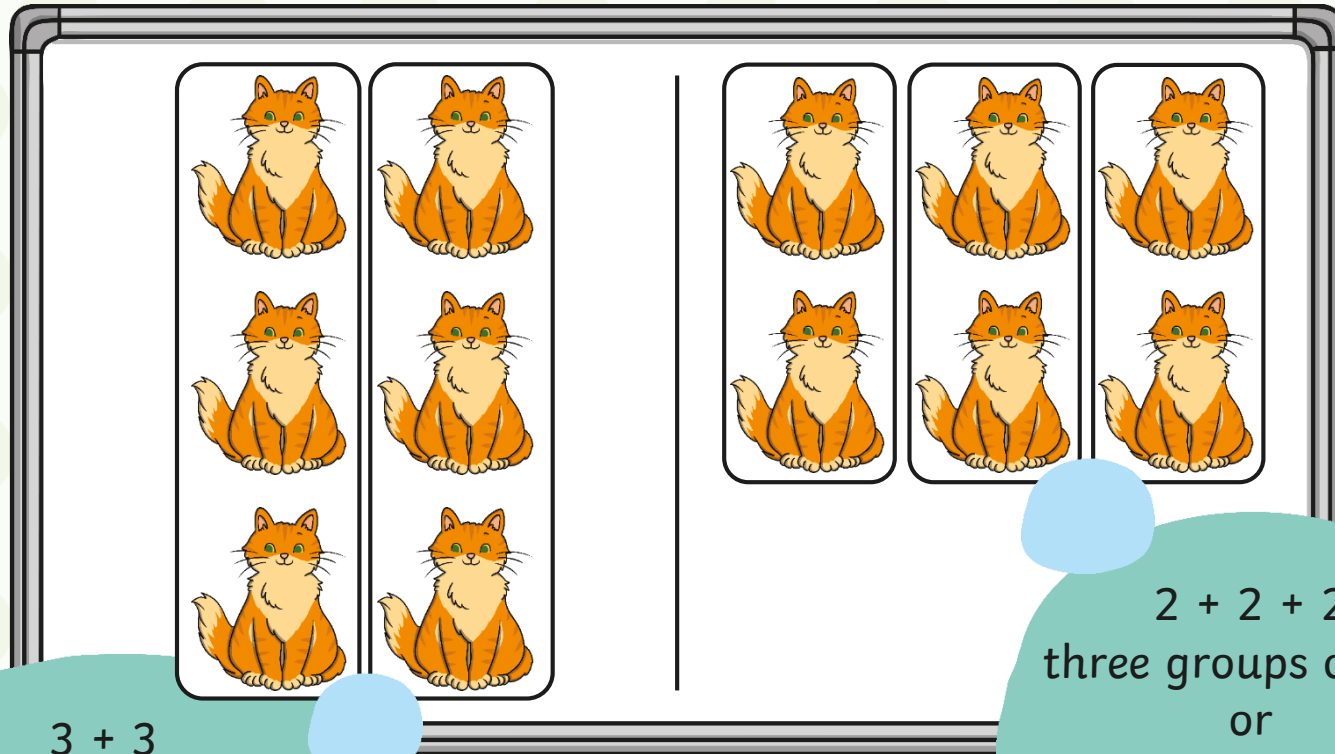
The arrays show the same number of cats represented in two different ways. **In rows...**



$2 + 2 + 2$   
three groups of two  
or  
two, three times

$3 + 3$   
two groups of three  
or  
three, two times

The arrays show the same number of cats represented in two different ways. **In columns...**



$3 + 3$   
two groups of three  
or  
three, two times

$2 + 2 + 2$   
three groups of two  
or  
two, three times

# Commutativity

In the pet shop there are 15 puppies.  
There are 3 beds with 5 puppies in each bed.



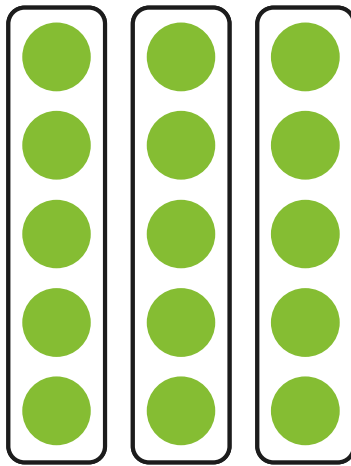
3 represents the  
number of beds

$5 + 5 + 5$   
3 groups of 5  
 $3 \times 5$

5 represents the  
number of puppies  
in each bed

Or it could be drawn this way.

$$3 \times 5$$



three groups of five  
**or**  
five, three times

# Commutativity

In another pet shop there are also 15 puppies.  
There are 5 beds with 3 puppies in each bed.



5 represents the  
number of beds

$$3 + 3 + 3 + 3 + 3$$

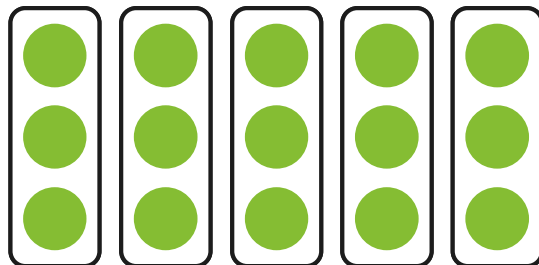
5 groups of 3

$$5 \times 3$$

3 represents the  
number of puppies  
in each bed

Or it could be drawn this way.

$$5 \times 3$$



five groups of three  
or  
three, five times



# Commutativity

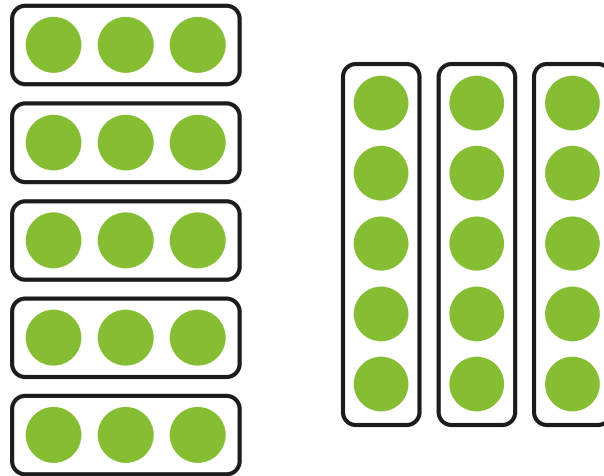
One multiplication expression can be written in two different ways.

Multiplication is **commutative**.

This means that the numbers can be either way around.

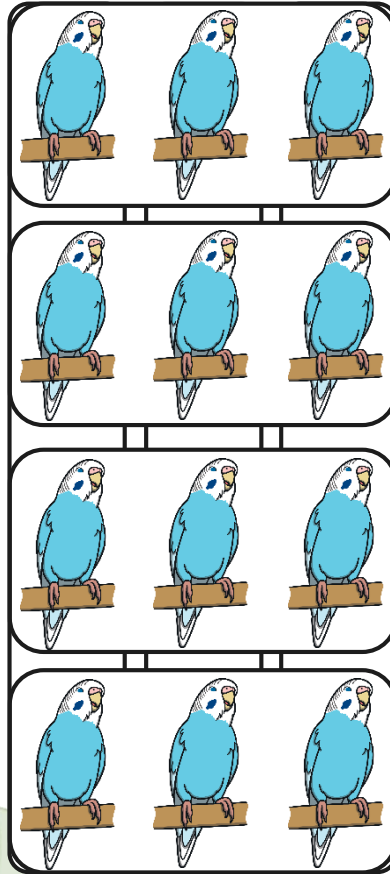
$$5 \times 3 = 3 \times 5$$

What do you notice?



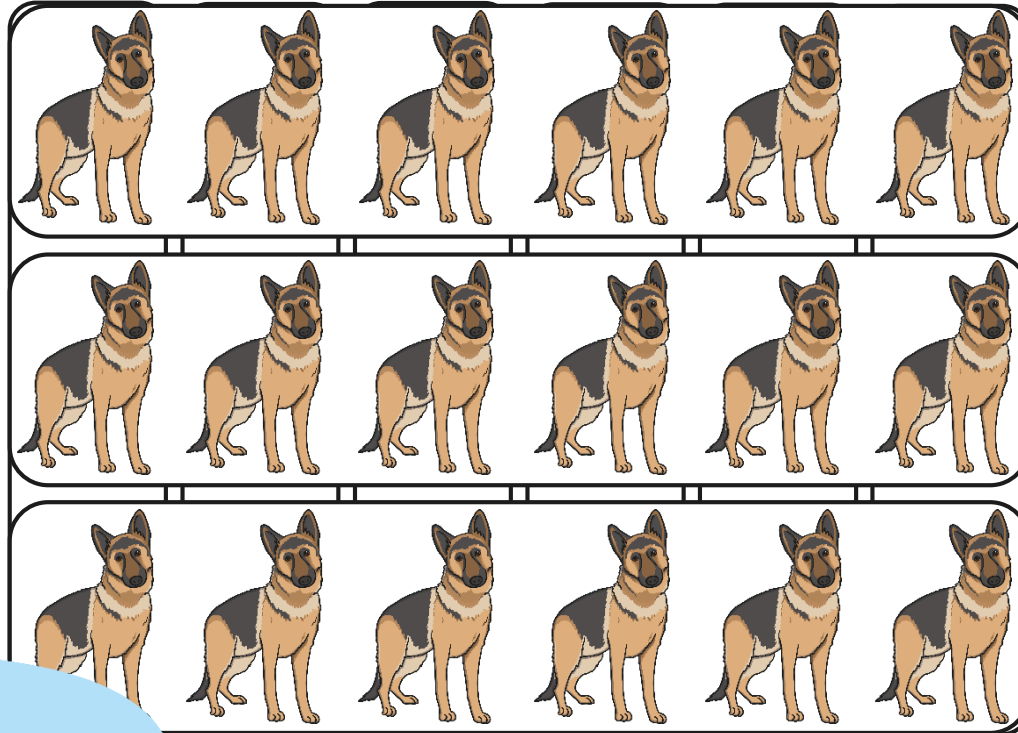
Both pet shops had the same number of puppies  
but they were grouped in two different ways.

Complete the multiplication expressions to represent this array.



$$3 \times \square = \square \times \square$$

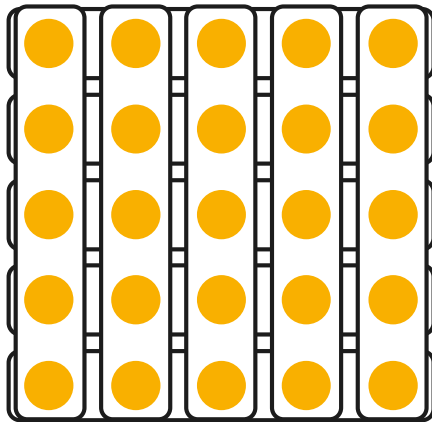
Complete the multiplication expressions to represent this array.



Did everyone write  
the expressions in  
the same way?  
Does it matter?

$$\square \times \square = \square \times \square$$

Draw an array and write a multiplication expression to represent this picture.



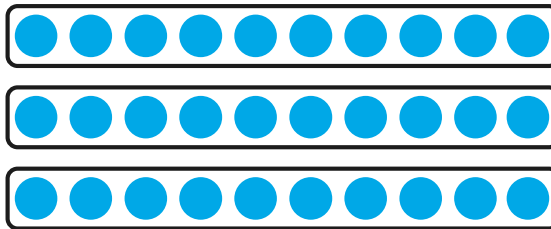
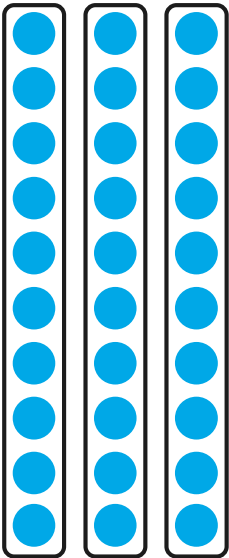
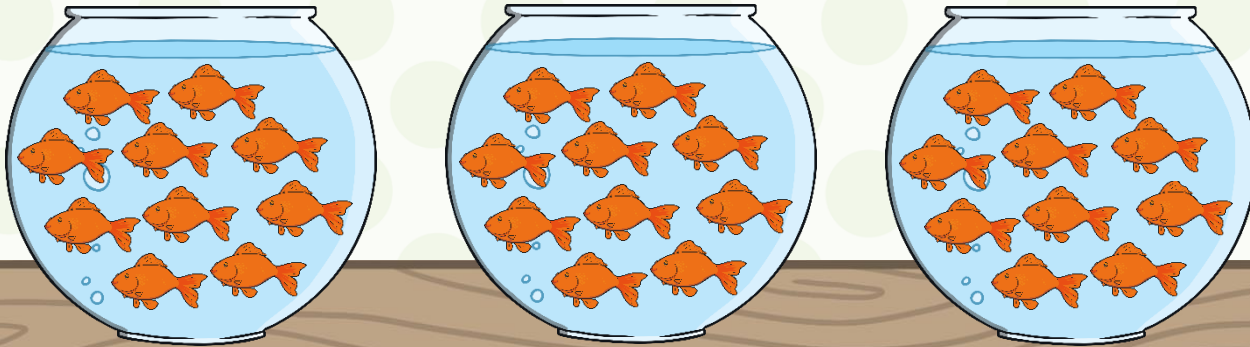
**5 groups of 5  
five, five times  
 $5 \times 5$**

We can ring the rows or columns to show 5 groups of 5.



## Drawing Arrays

Draw an array and write a multiplication expression to represent this picture.

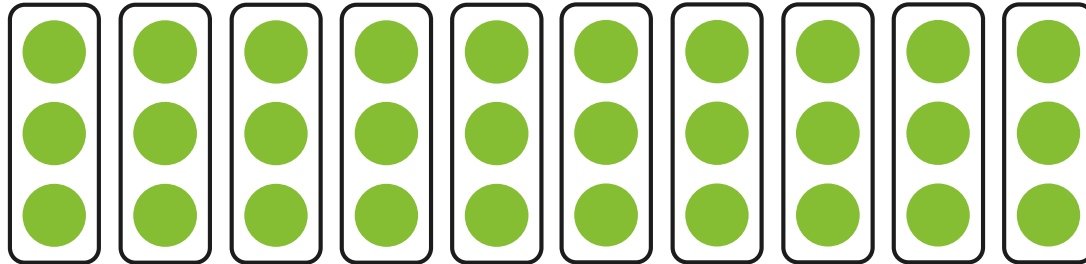
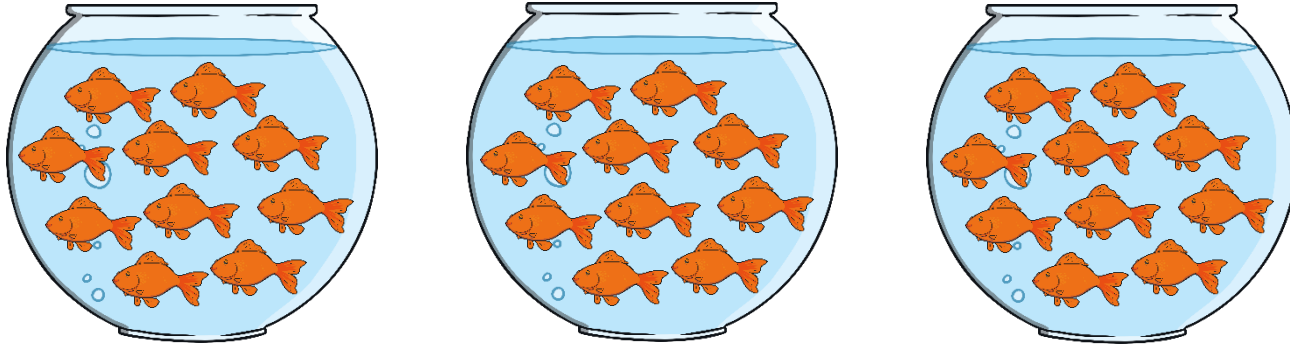


**3 groups of 10  
ten, three times**

$$3 \times 10$$

Which array did you draw?

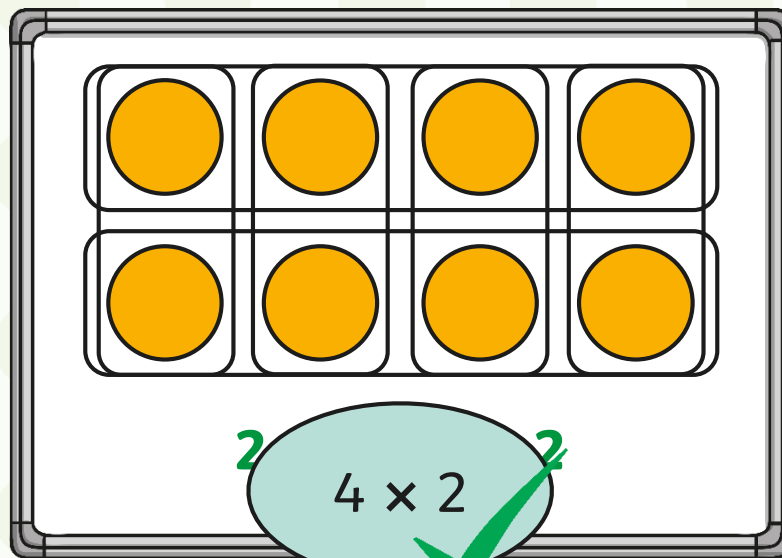
Ali drew this array to represent the fish in their tanks.



What would you say to Ali to help him?



Three children have written expressions to match the array.



$4 + 4$  ✓

$4 \times 2$  ✓

$2 \times 4$  ✓

Can you think of another expression to describe the array?

Pr

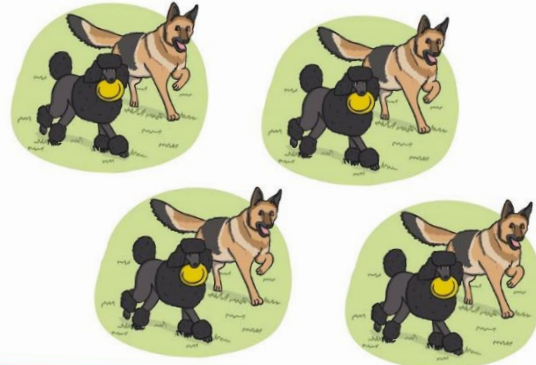
ys.

## Instructions

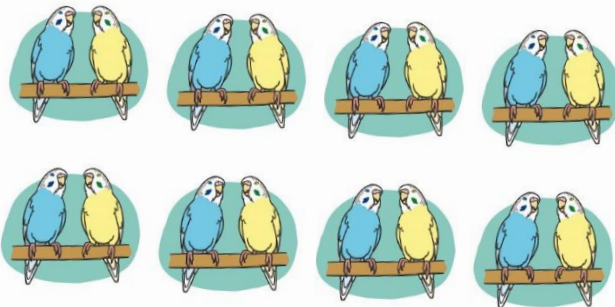
Draw an array to represent each picture.  
Write a multiplication expression.

**Challenge:** Are there any pairs of pictures that represent the same multiplication expression?

### Arrays Challenge Cards



### Arrays Challenge Cards

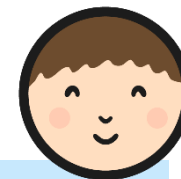


### Arrays Challenge Cards





# Diving into Mastery



Dive in by completing your own activity!



**Arrays**

Complete the table.

	$4 + 4 + 4$	<input type="text"/> $\times$ <input type="text"/>
	<input type="text"/> + <input type="text"/> + <input type="text"/> + <input type="text"/>	$4 \times 3$
	<input type="text"/> + <input type="text"/>	
	<input type="text"/> + <input type="text"/> + <input type="text"/> + <input type="text"/> + <input type="text"/>	
	<input type="text"/> + <input type="text"/> + <input type="text"/>	

**Arrays**

This array represents  $3 \times 5 = 5 \times 3$

Do you agree? Explain your answer.

I can see the multiplication expression  $4 \times 6$  in this array.

Do you agree or disagree? Why?

**Arrays**

Using 16 counters, how many different arrays can you make?

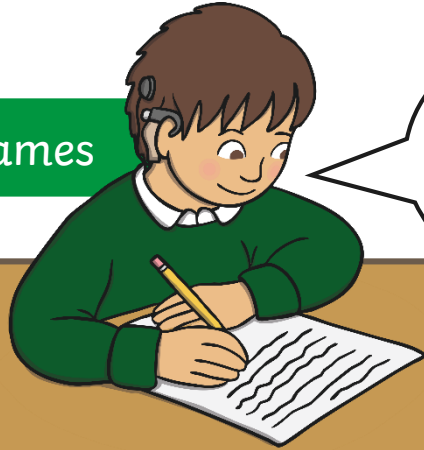
Write two multiplication expressions for each one.

$\times$   =   $\times$

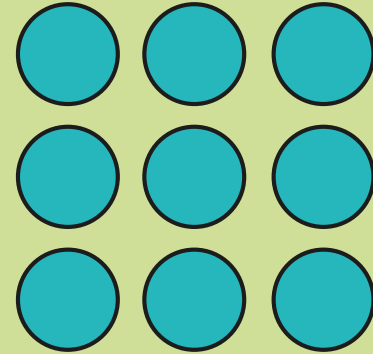
Now repeat this activity, using 20 counters.

James draws this array and says:

James



I can only write one multiplication expression to go with this array.



Explain why he is right.

When does this happen?

What multiplication expression do you think he has written?

It happens when there is the same number of rows and columns.  
He has written  $3 \times 3$ .

## Aim



- To use arrays to represent multiplication.

## Success Criteria

- I can explain the link between an array and a repeated addition expression.
- I know that multiplication is commutative.
- I can write two multiplication expressions to match an array.
- I can draw an array and write a multiplication expression to represent a picture.

