Lesson 6 – Multiplication & Division – Use Arrays

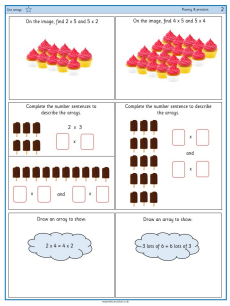
NC Objective:	Resources needed:	Vocabulary:
Show that multiplication of two numbers can be done in any order Solve problems using arrays	Differentiated Sheets Teaching Slides	Multiplication, division, arrays, lots of, represent, commutative

Children explore arrays to see the commutativity of multiplication facts e.g. 5 x 2 = 2 x 5.
The use of the arrays could be used to help children calculate multiplication statements.
The multiplication symbol and language of 'lots of' should be used interchangeably.

Key Questions:

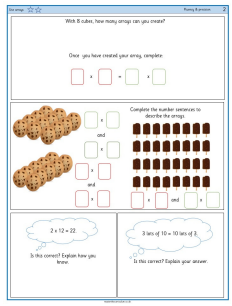
Where are the 2 lots of 3?
Where are the 3 lots of 2?
What do you notice?
What can we use to represent the cakes?
Can you draw an image?

★ Working Towards



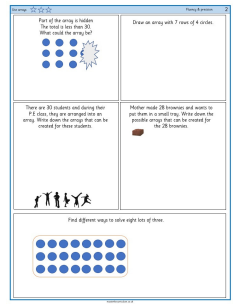
On this sheet, children explore arrays to see the commutativity between multiplication facts. Arrays could be used to help them calculate multiplication statements.

★★ Working Within



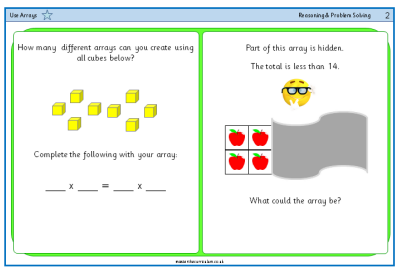
On this sheet, children learn about how many arrays can be created in a given number. They are also asked to find ways to solve a given array.

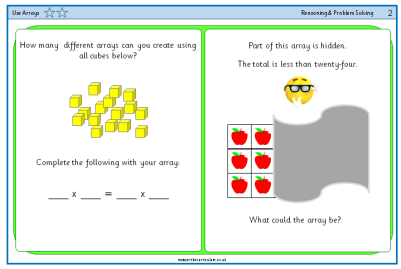
★★★ Greater Depth

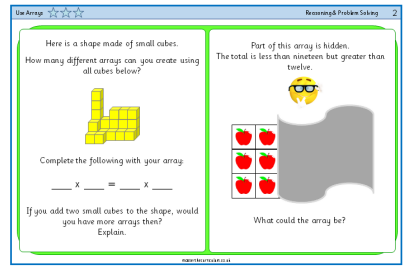


This sheet consists of word problems that require children to count and create the possible arrays as well as possible ways to solve an array by adding the two arrays. This sheet develops the children's analytical thinking by solving word problems.

Reasoning & Problem Solving



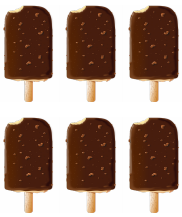




On the image, find 2 x 5 and 5 x 2

On the image, find 4 x 5 and 5 x 4

Complete the number sentences to describe the arrays.

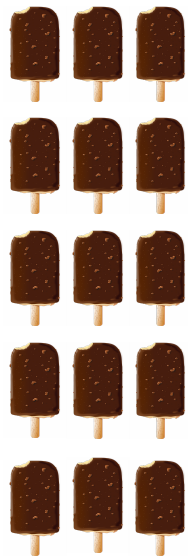


2 x 3

□ x □

□ x □ and □ x □

Complete the number sentence to describe the arrays.



□ x □

and

□ x □

Draw an array to show:

2 x 4 = 4 x 2

Draw an array to show:

3 lots of 6 = 6 lots of 3

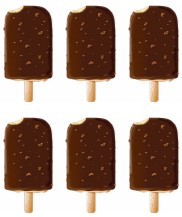
On the image, find 2 x 5 and 5 x 2

2 x 5 and 5 x 2

On the image, find 4 x 5 and 5 x 4

4 x 5 and 5 x 2

Complete the number sentences to describe the arrays.

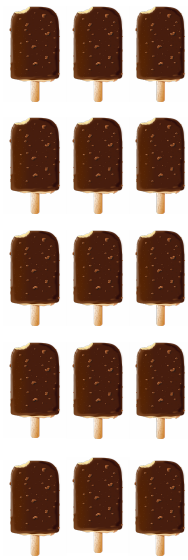


2 x 3

3 x 2

10 x 1 and 10 x 1

Complete the number sentence to describe the arrays.



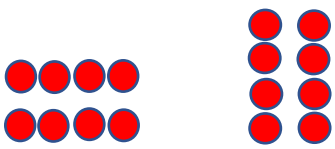
3 x 5

and

5 x 3

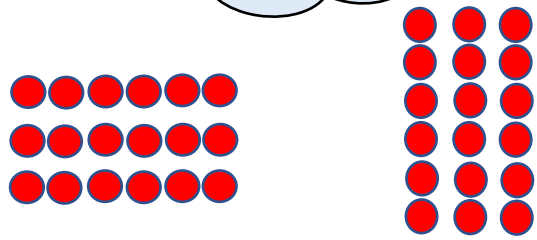
Draw an array to show:

2 x 4 = 4 x 2



Draw an array to show:

3 lots of 6 = 6 lots of 3



With 8 cubes, how many arrays can you create?

Once you have created your array, complete:

□ x □ = □ x □

□ x □

and

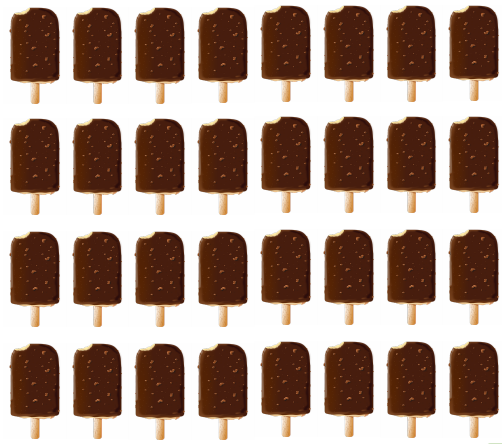
□ x □

□ x □

and

□ x □

Complete the number sentences to describe the arrays.



□ x □ and □ x □

2 x 12 = 22

Is this correct?
Explain how you know.

3 lots of 10 = 10 lots of 3

Is this correct? Explain your answer.

With 8 cubes, how many arrays can you create?

Once you have created your array complete:

2 x 4 = 4 x 2

3 x 4

and

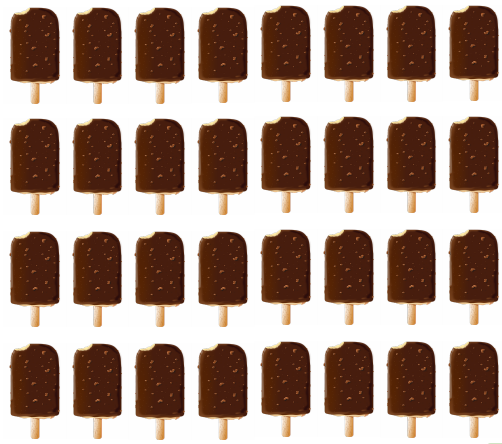
4 x 3

2 x 5

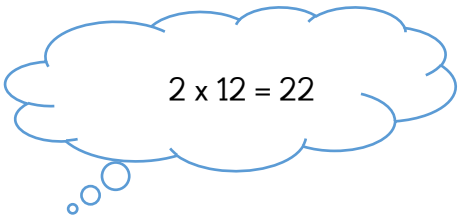
and

5 x 2

Complete the number sentences to describe the arrays.

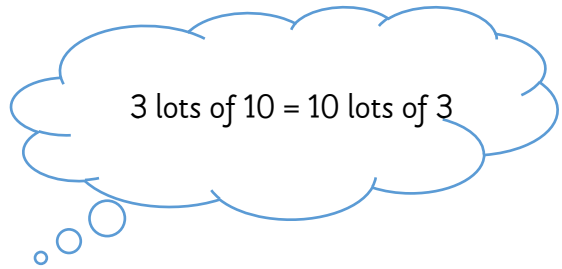


4 x 8 and 8 x 4



Is this correct? Explain how you know.

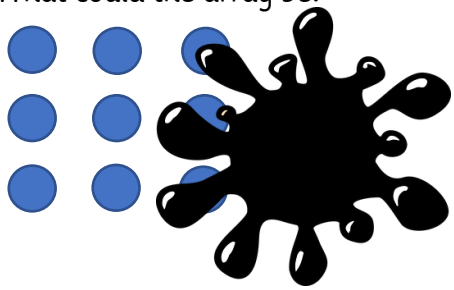
No, the answer should be 24. Children could have draw an array or a picture to show their answer.



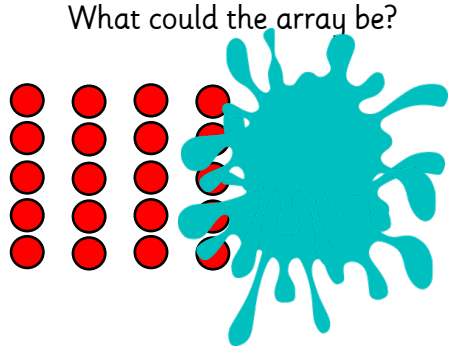
Is this correct? Explain your answer.

Yes, because of the commutative law. 3 x 10 is the same as 10 x 3.

Part of the array is hidden.
The total is less than 30.
What could the array be?



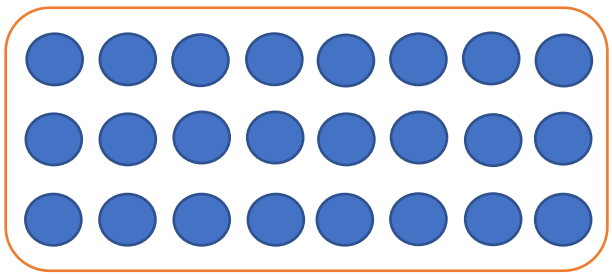
Part of the array is hidden.
The total is less than 45.
What could the array be?



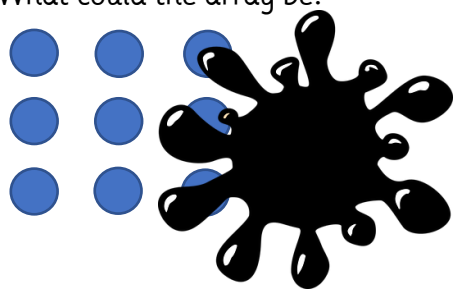
There are 30 students and during their P.E class, they are arranged into an array.
Write down the arrays that can be created for these students.

My mum made 28 brownies and wants to put them in a small tray.
Write down the possible arrays that can be created for the 28 brownies.

Find different ways to solve eight lots of three in this image.



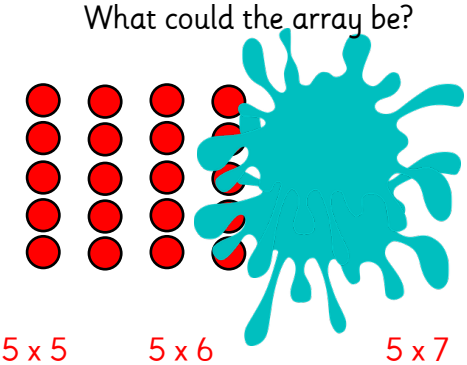
Part of the array is hidden
The total is less than 30.
What could the array be?



3 x 4 3 x 6 3 x 8

3 x 5 3 x 7

Part of the array is hidden
The total is less than 45.
What could the array be?



5 x 5 5 x 6 5 x 7

5 x 8

There are 30 students and during their P.E class, they are arranged into an array.
Write down the arrays that can be created for these students.

1 x 30
2 x 15
3 x 10
5 x 6

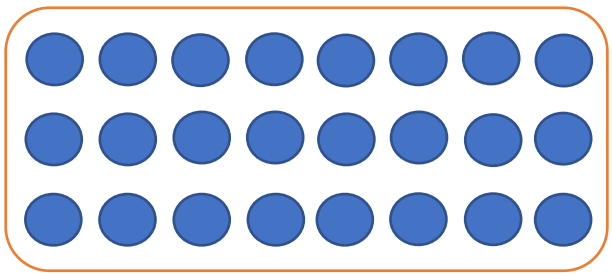
30 x 1,
15 x 2,
10 x 3,
6 x 5

My mum made 28 brownies and wants to put them in a small tray.
Write down the possible arrays that can be created for the 28 brownies.

1 x 28
2 x 14
4 x 7

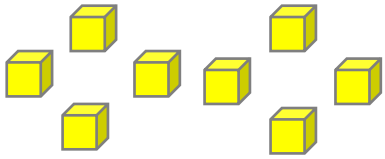
28 x 1,
14 x 1,
7 x 4

Find different ways to solve eight lots of three in this image.



4 lots of 5 add 2 lots of 2
2 lots of 6 add 2 lots of 6
3 lots of 4 add 3 lots of 4
1 lot of 12 add 1 lot of 12
1 lot of 12 add 2 lots of 6
2 lots of 6 add 3 lots of 4

How many different arrays can you create using all of the cubes below?

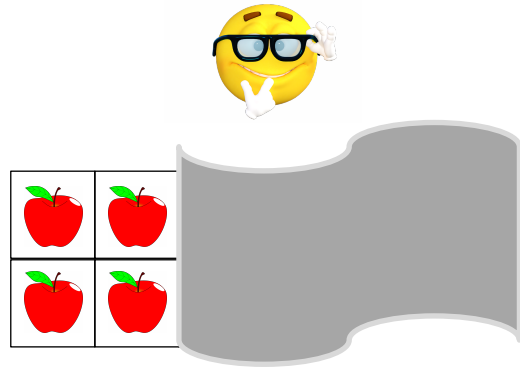


Complete the following with your array:

____ x ____ = ____ x ____

Part of this array is hidden.

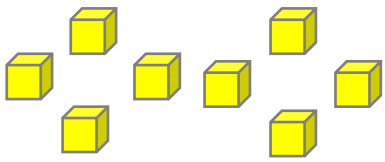
The total is less than 14.



What could the array be?

Use Arrays ☆ Reasoning & Problem Solving 2

How many different arrays can you create using all of the cubes below?

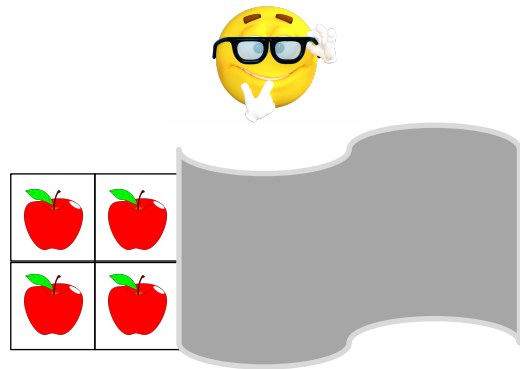


Complete the following with your array:

____ x ____ = ____ x ____

Part of this array is hidden.

The total is less than 14.



What could the array be?

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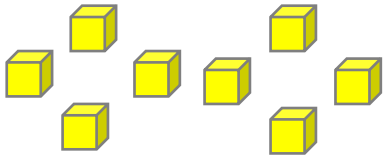
How many different arrays can you create using all of the cubes below?



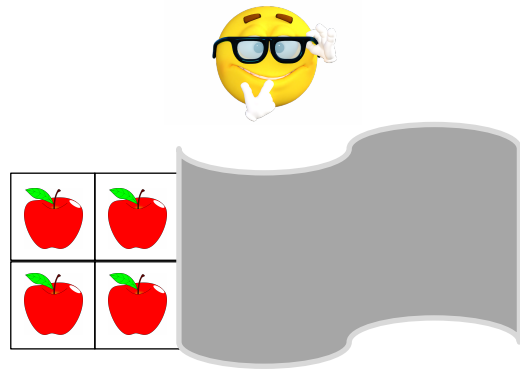
Complete the following with your array:

2 x 4 = 4 x 2

1 x 8 = 8 x 1

Part of this array is hidden.

The total is less than 14.



What could the array be?

2 x 6
2 x 5
2 x 4
2 x 3

6 x 2
5 x 2
4 x 2
3 x 2

Use Arrays ☆ Answers Reasoning & Problem Solving 2

How many different arrays can you create using all of the cubes below?

Complete the following with your array:

2 x 4 = 4 x 2

1 x 8 = 8 x 1

Part of this array is hidden.

The total is less than 14.

What could the array be?

2 x 6
2 x 5
2 x 4
2 x 3

6 x 2
5 x 2
4 x 2
3 x 2

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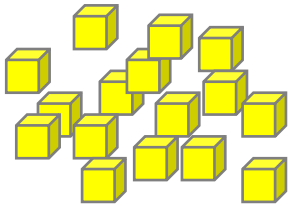
How many different arrays can you create using all of the cubes below?

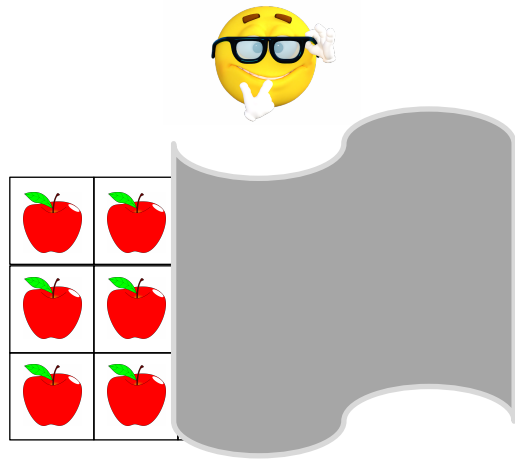


Complete the following with your array:

____ x ____ = ____ x ____

Part of this array is hidden.

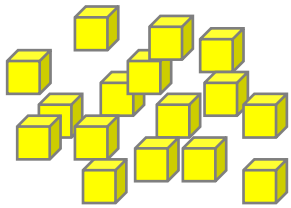
The total is less than twenty-four.



What could the array be?

Use Arrays ☆☆ Reasoning & Problem Solving 2

How many different arrays can you create using all of the cubes below?

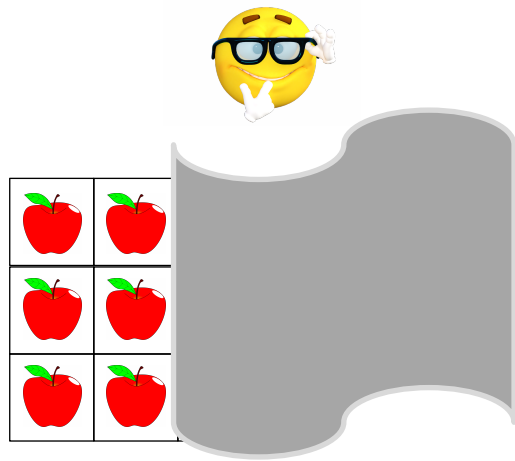


Complete the following with your array:

____ x ____ = ____ x ____

Part of this array is hidden.

The total is less than twenty-four.



What could the array be?

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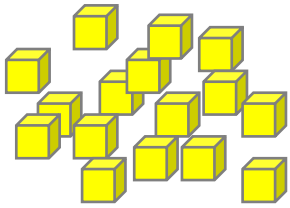
How many different arrays can you create using all of the cubes below?



Complete the following with your array:

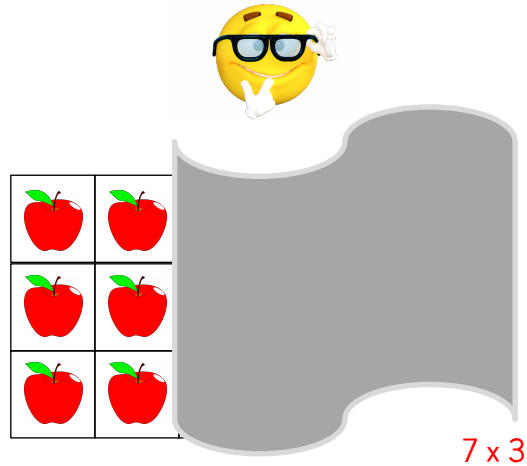
2 x 8 = 8 x 2

4 x 4 = 4 x 4

1 x 16 = 16 x 1

Part of this array is hidden.

The total is less than twenty-four.

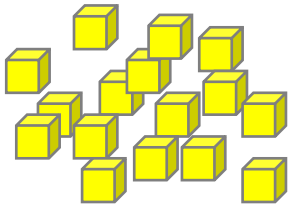


What could the array be?

7 x 3
6 x 3
5 x 3
4 x 3
3 x 3

Use Arrays ☆☆ Answers Reasoning & Problem Solving 2

How many different arrays can you create using all of the cubes below?



Complete the following with your array:

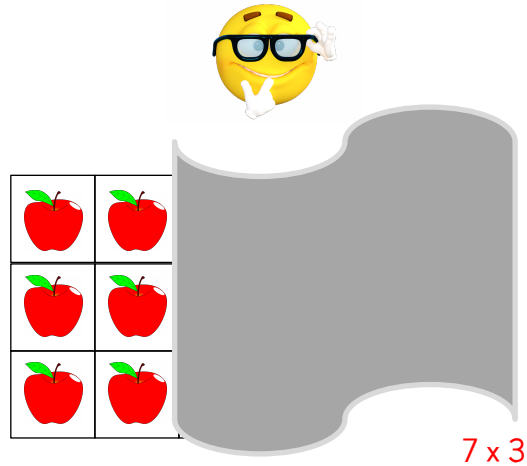
2 x 8 = 8 x 2

4 x 4 = 4 x 4

1 x 16 = 16 x 1

Part of this array is hidden.

The total is less than twenty-four.



What could the array be?

7 x 3
6 x 3
5 x 3
4 x 3
3 x 3

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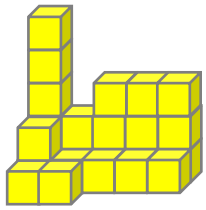
Here is a shape made of small cubes.

How many different arrays can you create using all of the cubes below?

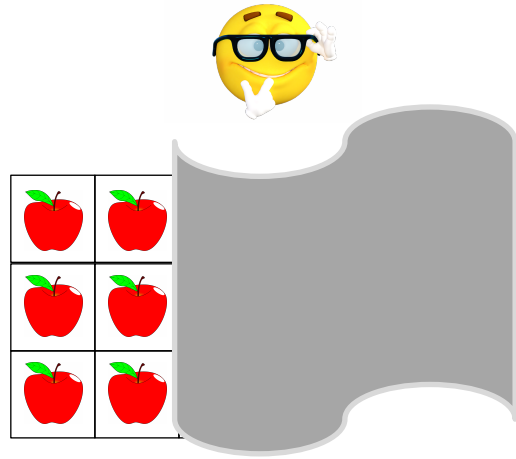


Complete the following with your array:

____ x ____ = ____ x ____

If you add two small cubes to the shape, would you have more arrays then?
Explain.

Part of this array is hidden.
The total is less than nineteen but greater than twelve.

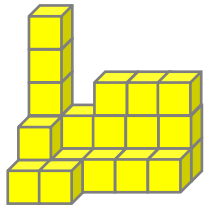


What could the array be?

Use Arrays ☆☆☆ Reasoning & Problem Solving 2

Here is a shape made of small cubes.

How many different arrays can you create using all of the cubes below?

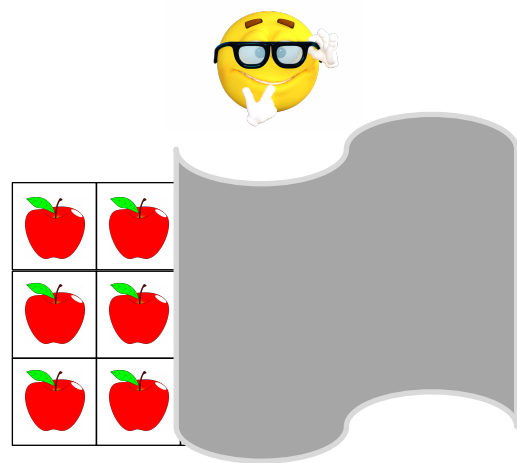


Complete the following with your array:

____ x ____ = ____ x ____

If you add two small cubes to the shape, would you have more arrays then?
Explain.

Part of this array is hidden.
The total is less than nineteen but greater than twelve.



What could the array be?

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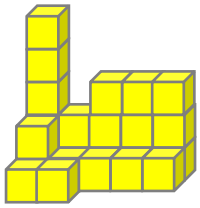
Here is a shape made of small cubes.

How many different arrays can you create using all cubes below?



Complete the following with your array:

2 x 12 = 12 x 2

4 x 6 = 6 x 4

3 x 8 = 8 x 3

1 x 24 = 24 x 1

If you add two small cubes to the shape, would you have more arrays then?

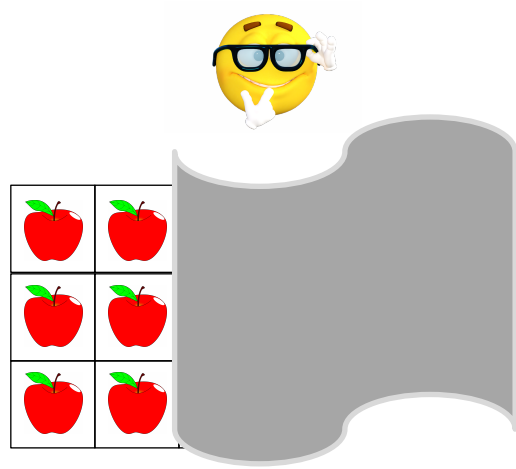
Explain.

No, just two arrays in total:

1 x 26 = 26 x 1 and 2 x 13 = 13 x 2

Part of this array is hidden.

The total is less than nineteen but greater than twelve.



What could the array be?

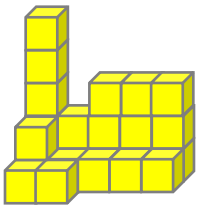
6 x 3

5 x 3

Use Arrays ☆☆☆ Answers Reasoning & Problem Solving 2

Here is a shape made of small cubes.

How many different arrays can you create using all cubes below?



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2 x 12 = 12 x 2

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If you add two small cubes to the shape, would you have more arrays then?

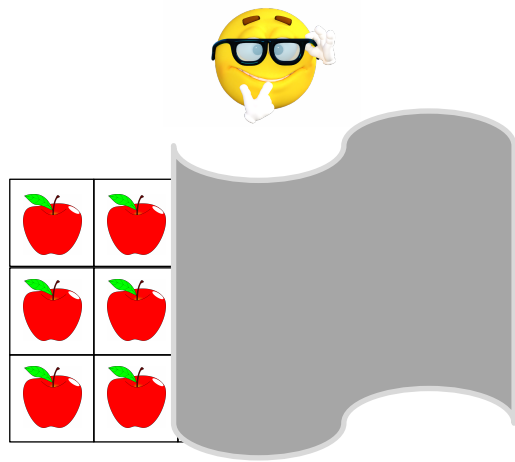
Explain.

No, just two arrays in total:

1 x 26 = 26 x 1 and 2 x 13 = 13 x 2

Part of this array is hidden.

The total is less than nineteen but greater than twelve.



What could the array be?

6 x 3

5 x 3

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