20.1.21

# WALT Recognise Factor Pairs

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R

PS

# Vocabulary

factors

multiple

factor pairs

concrete

apparatus

array

times table

multiply

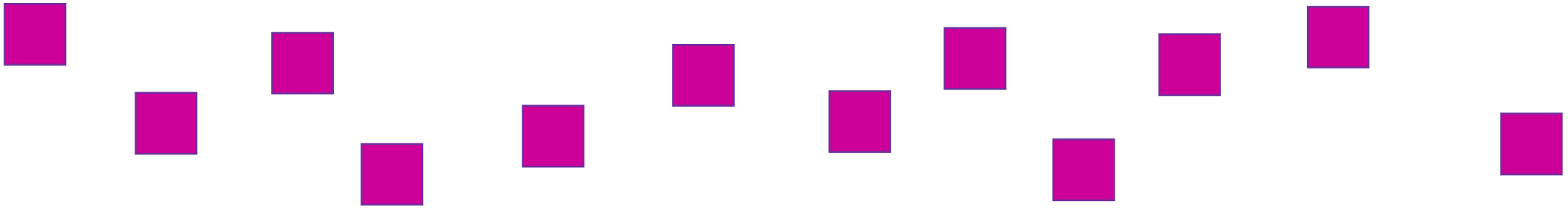
multiplication

number sentence

odd

even

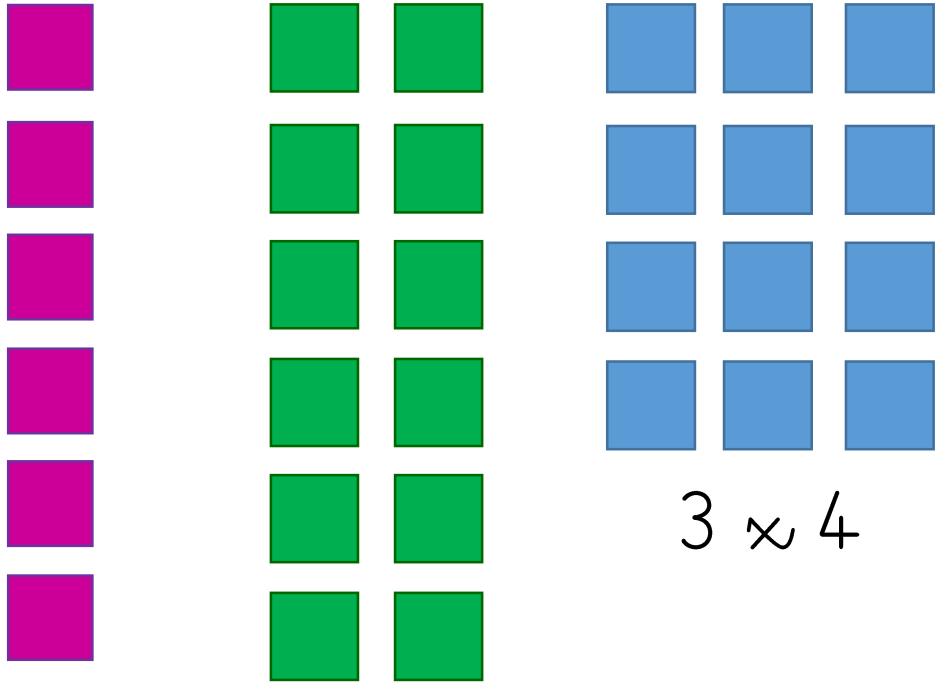
# Concrete Apparatus – Making Arrays



Remember that an array is an arrangement of shapes in rows and columns.
Each row in the array must have the same number of shapes.
Also, every column must have an equal number of shapes.

Using 12 squares, what different arrays could you arrange all 12 squares into?

How many squares would you have in each row and column?



3 × 4

2 × 6

1 × 12

These arrays show us the different pairs of numbers that multiply together to make 12.
There are 3 arrays.

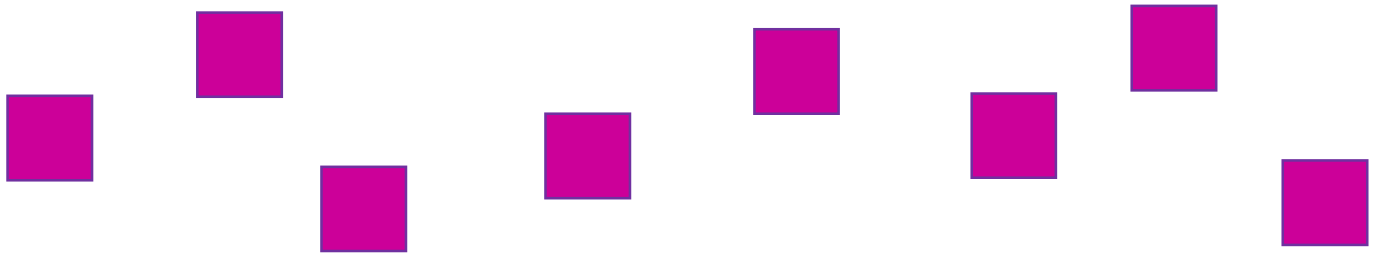
The numbers that multiply together to make 12 are called **factors.**

Factors are usually written in pairs.
These are the pairs of factors for 12:

1 × 12  2 × 6  3 × 4

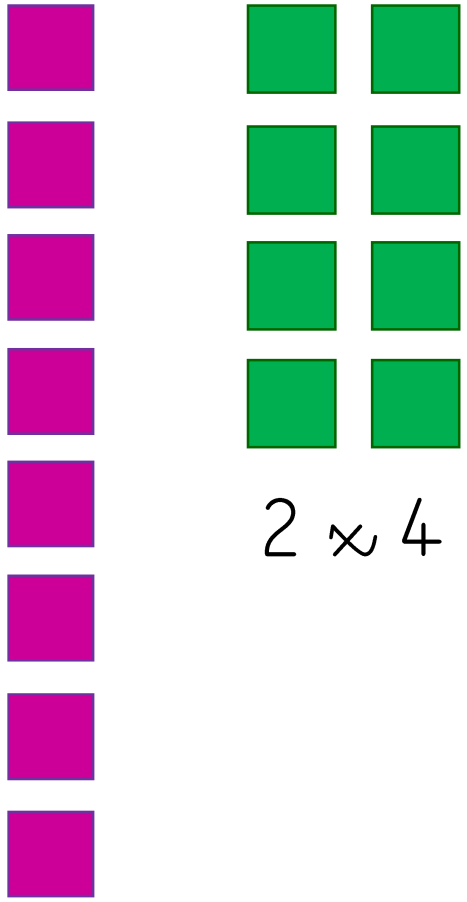
There are 3 pairs of factors for 12.
There are 6 factors for 12.

# Concrete Apparatus - Making Arrays



How many different arrays do you think there might be for the number 8?

How many squares would you have in each row and column?



2 x 4

1 x 8

There are 2 arrays for the number 8.

The factors for 8 are:

1 x 8 2 x 4

How many pairs of factors are there for 8?

2 pairs of factors

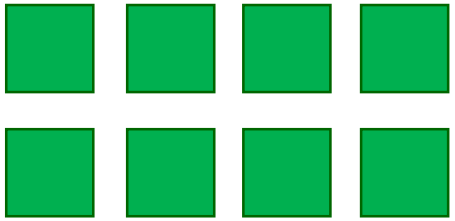
How many factors are there for 8?

4 factors

# Different Ways to Show the Factors of 8

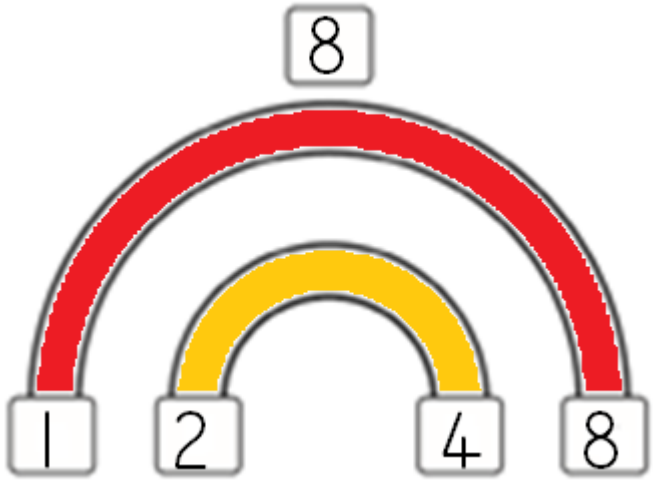
As arrays:

1 x 8



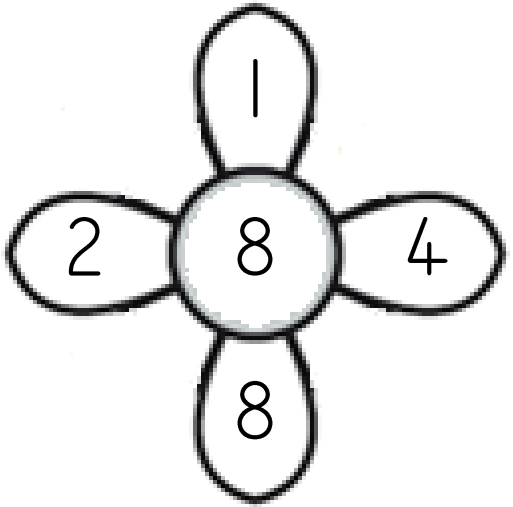
2 x 4

As a factor rainbow:

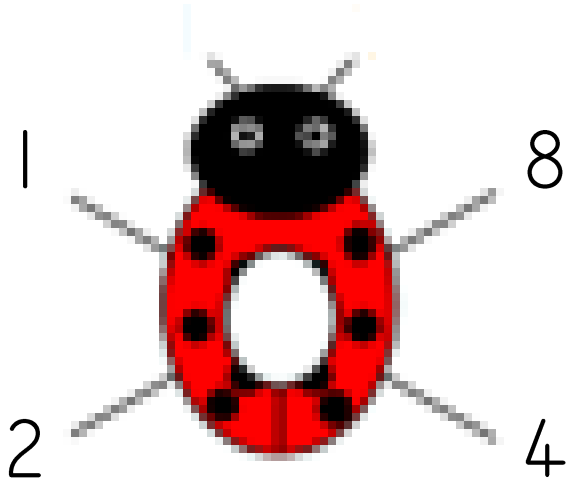


# Different Ways to Show the Factors of 8

As a factor flower:




As a factor number bug:




Written as pairs of numbers:

$1 \times 8$

$2 \times 4$

# Finding Factors – Hints and Tips

When you are finding factors:

- every number has 1 as a factor
- when a number is even, 2 will always be a factor
- when a number ends in 5 or 0, 5 will always be a factor
- when a number is a multiple of 10, 10 will always be a factor

# Finding Factors – Hints and Tips

If you can't work the factors out, write down every number from 1 to the number you need to find the factors for

Example:
To find the factors of 10, write down all of the numbers from 1 to 10

1 2 3 4 5 6 7 8 9 10

We already know that 1 is a factor of every number and 1 pairs with 10 because 1 × 10 = 10

1 and 10 are both factors of 10

# Finding Factors – Hints and Tips

1 2 3 4 5 6 7 8 9 10

Now, check 2 to see if 10 is in the 2x table:

2 4 6 8 10

10 is in the 2x table so 2 is a factor of 10.

How many 2s are in 10?

5, so 2 pairs with 5 because 2 x 5 = 10

2 and 5 are both factors of 10

Check 3 next:

3 6 9 12

10 is not in the 3x table, so 3 is not a factor of 10

# Finding Factors – Hints and Tips

1 2 3 4 5 6 7 8 9 10

Next check 4:

4 8 12

10 is not in the 4x table, so 4 is not a factor of 10

We have already found out that 5 is a factor of 10

What about 6, 7, 8 and 9?

6 12 7 14 8 16 9 18

10 is not in any of these times tables

So, we've found 2 factor pairs for 10: 1 x 10, 2 x 5

## Fluency

1. Circle (or write) the factors for each number. Then, write how many factors each number has.

The factors of 10 have been filled in to show you what to do.

| find the factors of | circle the factors | number of factors |
|---|---|---|
| 10 | (1) (2) 3 4 (5) 6 7 8 9 (10) | 4 |
| 8 | 1 2 3 4 5 6 7 8 | |
| 15 | 1 2 3 4 5 6 7 8 9 10<br>11 12 13 14 15 | |
| 21 | 1 2 3 4 5 6 7 8 9 10<br>11 12 13 14 15 16 17 18 19 20 21 | |
| 11 | 1 2 3 4 5 6 7 8 9 10 11 | |

2. Draw two different arrays to show the factors of 6. One array has been started for you. Write down the two factor pairs you have drawn.

_____ x _____ _____ x _____

3. Complete the pairs of numbers to show the factors for these numbers: Write one number in each rectangle.

12

□ × □

□ × □

□ × □

27

□ × □

□ × □

5

□ × □

28

□ × □

□ × □

□ × □

17

□ × □

14

□ × □

□ × □

## Reasoning 1

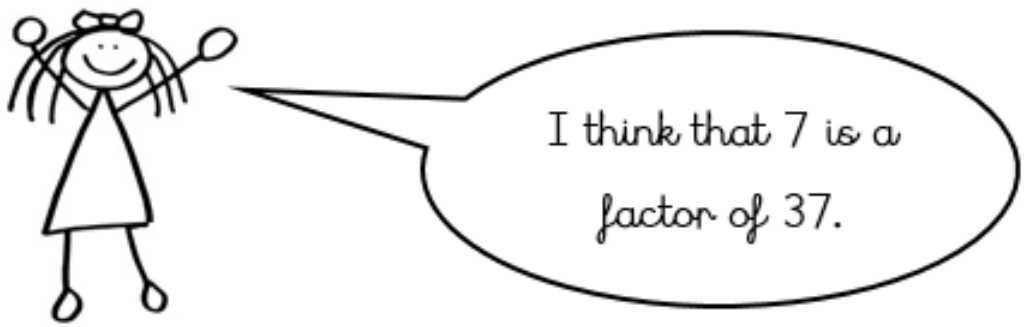
Can you find 4 different ways to complete this number sentence?

● × ▲ = 24

Explain how you found the factor pairs.

## Reasoning 2

Georgie was finding factors.




Is Georgie correct? Explain your reasoning using mathematical vocabulary.

## Problem Solving

Which number below 50 has the highest number of factors (10 factors)?

HINT: Try finding how many factors some different numbers have. Also, think about whether the number is likely to be odd or even.

# Extra Practice

If you finish your work quickly or if you want to do some more practice of your times tables, you could use 'Hit the Button'.
https://www.topmarks.co.uk/maths-games/hit-the-button

Also, practise counting forwards and backwards in 6s, 7s and 9s.
Remember, you only need to count up to 12 x each number.