Name _____ Date _____

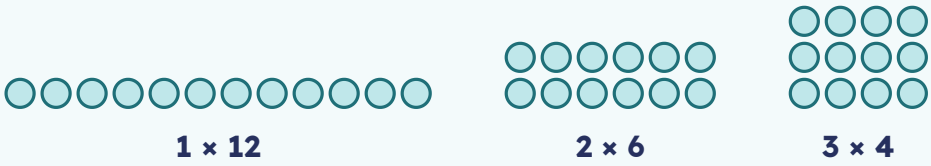
# Factor pairs

A factor divides into a number exactly. Factors come in pairs.

## 1 Learn



A **factor** of 12 divides into 12 with **nothing left over**. Factors come in **pairs** that multiply to make 12.



**1 × 12** **2 × 6** **3 × 4**

12 counters make 3 different rectangles, so the factors of 12 are **1, 2, 3, 4, 6** and **12**.

**Example: find all the factors of 18**

Start at 1 and work up. Does it divide 18 exactly?

1 × **18** yes · 2 × **9** yes · 3 × **6** yes · 4 no · 5 no

6 is already in a pair, so **stop**. You have found them all.

Factors of 18: **1, 2, 3, 6, 9, 18**




A factor rainbow joins each pair.

**Flip's tip:** 1 and the number itself are **always** factors. Work up from 1 in order, and stop when the next number is already in a pair.

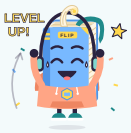
**Warm up:** write **yes** or **no**.

| | | | | |
|---|---|---|---|---|
| Is **5** a factor of **30**? | Is **4** a factor of **30**? | Is **7** a factor of **28**? | Is **6** a factor of **40**? | Is **9** a factor of **36**? |
| _____ | _____ | _____ | _____ | _____ |

**Grown-ups:** ask your child to say each factor pair as a times fact ("3 sixes are 18"). If they are unsure whether a number is a factor, they can divide and check for a remainder.

Name _____ Date _____

## 2 Try it together a child and a grown-up, about 10 minutes




### Rectangle hunt

**You need:** 24 small things that are all alike (buttons, coins, dried pasta or bottle tops) and a table to work on.

1. Count out 24 things. Lay them in **1 long row**. That is 1 × 24.
2. Now try **2 equal rows**, then 3 rows, then 4, 5, 6… A rectangle works if every row is full and **none are left over**.
3. Write each rectangle that works as a factor pair. Which number of rows did not work, and how many were left over?
4. Now try with **13** things. How many rectangles can you make? Then choose your own number.

| How many things? | Rectangles that work (factor pairs) | All the factors |
|---|---|---|
| **24** | | |
| **13** | | |
| | | |

**Grown-ups:** ask "Is 2 rows of 12 different from 12 rows of 2?" (It is the same rectangle turned round, so it is the same factor pair.) Notice that 13 only makes one long row: 13 is a prime number, which comes later in the game.

## 3 Practise

**A.** Draw a ring round every **factor of 20**.

**1 2 3 4 5 6 8 10 12 15 20 40**

**B.** Draw a factor rainbow for **28**: join each factor pair with an arc.

**1 2 4 7 14 28**

# Factor pairs

Scan to play this chapter in the game

Name _____ Date _____

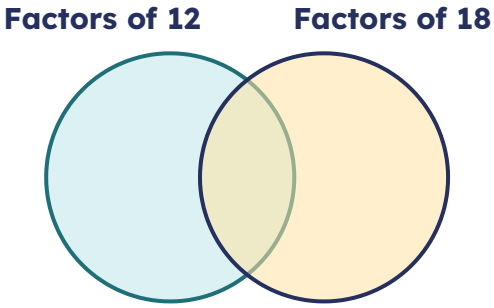
**C.** Finish the factor pairs. For 48, find all **5** pairs yourself.

**36:** 1 × 36, 2 × ☐, 3 × ☐, ☐ × 9, 6 × ☐

**30:** 1 × ☐, 2 × 15, ☐ × 10, 5 × ☐

**48:** ☐ × ☐, ☐ × ☐, ☐ × ☐, ☐ × ☐, ☐ × ☐

**D. Common factors** are factors of both numbers. Write each number in the right part.




**1 2 3 4 6 9 12 18**

Common factors: _____

The **highest common factor** is ____

**E.** Mia has **18 red beads** and **24 blue beads**. She makes bracelets that are all exactly the same, and uses every bead. What is the greatest number of bracelets she can make? How many red and blue beads go on each?

____ bracelets

____ red and ____ blue on each

## Challenge

Leo says, "The factors of 16 are 1, 2, 4, 8, 16 and 32." Is he right? Explain how you know.

_____

_____

_____

## I can... Tick when you can.

- ☐ find all the factor pairs of a number
- ☐ find the common factors of two numbers
- ☐ find the highest common factor of two numbers