MATHS FIELD GUIDE · GRADE 2

# Equal parts of a whole

OPENING PROBLEM

## Where should a fold go for two equal pieces?



one half

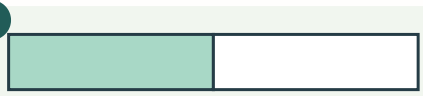
02 Fold and share fairly
03 Rules and worked cases
04 Fair pieces of flatbread
05 Decide what the whole is
06 Check your reasoning

ILLUSTRATED PROBLEM SHEET

# Fold and share fairly

Use equal shares of the same whole.

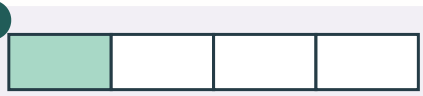
1




### Where should a fold go for two equal pieces?

At the middle. One piece covers exactly the same length as the other.

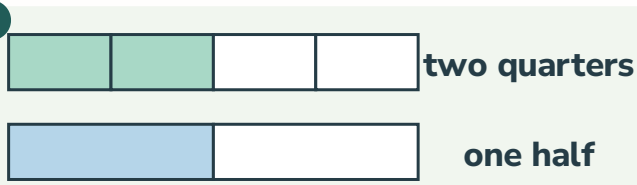
2




### How many pieces exactly this size make the whole strip?

Four. Put them end to end without gaps.

3




### Which shaded piece covers more?

They reach the same point. Two quarters make one half.

4




### Share four counters equally between two people. What is half of four?

Two. Each person gets one of the two equal groups.

**Four equal shares**
**a quarter each.**

**Four unequal pieces**
**the count alone cannot name each piece a quarter.**

CHAPTER PROBLEM

### Why must the four parts be equal before we call each part a quarter?

A quarter is an equal share of a whole partitioned into four parts.

MATHS REFERENCE · GRADE 2

# Equal parts of a whole

A fraction describes an amount using equal parts of a whole. One quarter is one of four equal parts.

A fraction can describe part of a shape, an amount on a number line or a share of a collection. First identify the whole.

## Four cases to recognise

| Situation | What to do and why |
|---|---|
| **Cut a square into four identical smaller squares** | Each covers a quarter of the original square. |
| **Two quarters of one orange** | Two out of four equal parts make one half. |
| **Half of eight counters** | Split into two equal groups. Four counters make a half. |
| **One quarter of twelve counters** | Split into four equal groups. Each group contains three. |

## Read the model

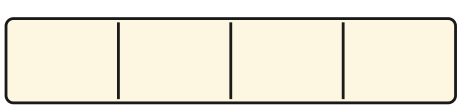
### Build the idea

Split one rectangle into four equal strips. Each strip is one quarter. Two strips are two quarters.

The denominator, the lower number in 1/4, tells us the whole is partitioned into four equal parts. The numerator counts how many parts we mean.

**Equal parts**

The parts are the same size



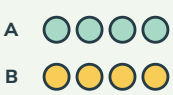
A whole split into parts

### Why it works

Four equal quarters remake one whole. This explains why 4/4 represents one.

If the whole is unchanged and the number of equal parts increases, each part gets smaller. A quarter is smaller than a half of that same whole.

**fraction** An amount described using equal parts.
**numerator** The number of parts being counted.
**denominator** The number of equal parts making a whole.




### Share eight equally between two children. How many each?

Four. Each pair of turns gives both children one.

WORKED INVESTIGATION

# Fair pieces of flatbread

Fold one flatbread into four equal pieces. One piece is a quarter because four pieces of this size cover the whole bread.

| Look at this part | What it tells you |
|---|---|
| **1 piece** | one quarter |
| **2 pieces** | one half |
| **4 pieces** | one whole |

### Work it through

Lay two quarters along one half of an equal flatbread. Both cover the same amount even though you count more pieces in the first share.

### Catch the mistake

Four pieces of different sizes cannot each be a quarter. Check the amount of bread in each piece.

## Compare the cases

### Follow an example

Share eight counters into four equal groups. Each group has two counters. One group is one quarter of the original eight.

The number two counts objects. The fraction one quarter describes the group's relationship to the whole.

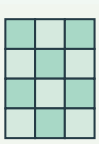
### What changes? What stays true?

Unequal pieces are not quarters just because there are four of them.

Compare fractions using the same-sized whole. A quarter of a very large cake may be larger than a half of a very small cake.

### Change one condition

Cut each half of a bread in half again. You double the number of pieces and halve the size of each piece.



**Twelve counters go into groups of three. How many groups?**

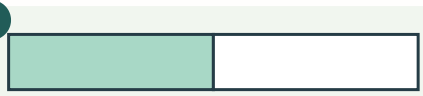
Four complete rows.

ILLUSTRATED PROBLEM SHEET

# Decide what the whole is

A half is one of two equal shares of the same whole.

1

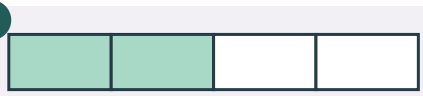


one half

### How could you check the green part?

The unshaded part is the same size. The two parts remake the strip.

2



two quarters

### Can a half have a line inside it?

Yes. Two of four equal pieces cover one half.

3

A



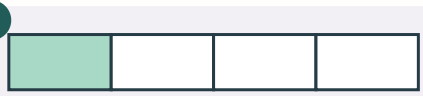
B



### Half of six buttons goes into each box. How many in one box?

Three. Both shares are equal.

4



one quarter

### Is one shaded piece always one half?

No. Here four equal pieces make the whole. One is a quarter.

**Half of eight buttons**
**four buttons.**

**Two halves of eight buttons**
**all eight.**

CHAPTER PROBLEM

### A toast slice is cut into two pieces. Is each piece always one half? Explain.

Only if the pieces have equal area. Two unequal pieces still make the whole slice, but neither is a half.

QUESTION BANK · FOLD OR COVER THE RIGHT COLUMN

# Check your reasoning

| Try the problem | Solution and reasoning |
|---|---|
| **01** A strip has a tiny piece and a large piece. Are they halves just because there are two? | No. Both pieces must be equal shares. |
| **02** Two pieces look different in size. Can both be halves of one sheet? | They must have equal area. Two pieces alone do not prove equal shares. |
| **03** Three of four equal quarters remain. How many quarters did someone eat? | One quarter. The missing piece and the three remaining quarters remake one whole bread. |
| **04** Which is larger on the same sandwich, one half or one quarter? | One half covers two quarters, so it is larger. |
| **05** A strip is marked into five unequal pieces. Can each be a fifth? | No. Fifths require five equal shares of the original strip. |

A ○○○
B ●●●
C ○○○

**Nine are shared among three. How can you check?**

Three groups of three rebuild nine.

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