Fractions: fact sheet

Planner week 6 · Learn these facts

Fraction of an amount

$\frac{1}{5}$ of 300 = 300 ÷ 5 = 60

Divide by the denominator, multiply by the numerator

$\frac{3}{8}$ of 720: 90 × 3 = 270

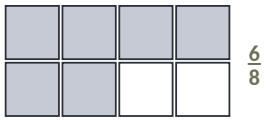
Simplifying

$\frac{28}{70} = \frac{2}{5}$

Divide the numerator and denominator by the same number

÷ 14 here

Fraction of a shape



$\frac{6}{8}$

Shaded parts ÷ total parts (all equal)

$\frac{6}{8} = \frac{3}{4}$

One amount as a fraction

40 out of 560 = $\frac{40}{560} = \frac{1}{14}$

Part as the numerator, whole as the denominator

Then simplify

Which sheet do I need?

Fractions of amounts and shapes ▸
you have the WHOLE or a PART

Writing and simplifying fractions ▸
you have BOTH and want the fraction

Calculating with fractions ▸
+ − × ÷ fractions or mixed numbers

Key words

- **Numerator** the top number
- **Denominator** the bottom number
- **Mixed number** e.g. $2\frac{1}{4}$
- **Improper fraction** top bigger than bottom

Adding and subtracting

$\frac{5}{12} + \frac{1}{6} = \frac{5}{12} + \frac{2}{12} = \frac{7}{12}$

Make the **bottoms the same** first

Then add the tops only

Multiplying

$\frac{3}{10} \times \frac{5}{8} = \frac{15}{80} = \frac{3}{16}$

Top × top, bottom × bottom

Then simplify

Dividing

$\frac{3}{5} \div \frac{1}{6} = \frac{3}{5} \times \frac{6}{1} = \frac{18}{5}$

Keep, change, flip

$\frac{18}{5} = 3\frac{3}{5}$

Mixed numbers

To improper	$2\frac{1}{3} = \frac{7}{3}$ (2 × 3 + 1)
To mixed	$\frac{35}{24} = 1\frac{11}{24}$
× and ÷	change to improper first

Exam tips

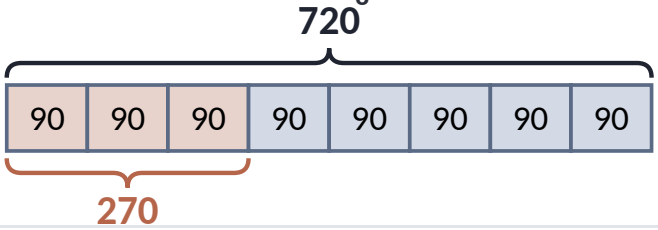
- "Simplest form": keep dividing until nothing else goes into both.
- Adding: find a common denominator, don't add the bottoms.
- Multiplying and dividing: change mixed numbers to improper fractions first.
- Dividing: keep the first, change ÷ to ×, flip the second.
- Fraction of a shape: the parts must be **equal** sizes.
- Give the answer in the form asked (mixed number?).

Fractions of amounts and shapes: fact sheet

Fractions · Planner week 6 · Work out which type it is, follow the example

1 WHOLE given

A school has 720 students. $\frac{3}{8}$ of them walk to school. How many walk?

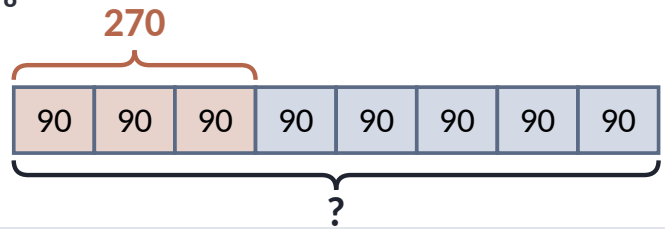


1. **Divide by the denominator**: 720 ÷ 8 = 90
2. **Multiply by the numerator**: 90 × 3 = 270
3. **Check**: 270 + 5 × 90 = 720 ✓

Use this when: you know the whole amount and want a fraction of it

2 PART given

$\frac{3}{8}$ of the students at a school walk. 270 students walk. How many students are there?

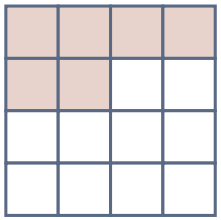


1. The 270 is **3 parts out of the 8**
2. **Divide by the numerator**: 270 ÷ 3 = 90 for one part
3. **Multiply by the denominator**: 90 × 8 = 720
4. **Check**: $\frac{3}{8}$ of 720 = 270 ✓

Use this when: the number is only some of the whole: it matches the numerator

3 Fraction of a shape

What fraction of the shape is shaded? Give your answer in its simplest form.



1. Count the **shaded** parts: 6
2. Count **all** the equal parts: 16
3. $\frac{6}{16} = \frac{3}{8}$ (divide by 2)

Use this when: there is a shape split into equal parts

The big question

Have I been given the **WHOLE**, a **PART**, or **BOTH** the part and the whole?

Whole or part: Fractions of amounts sheet. Both: Writing and simplifying fractions sheet.

Watch out

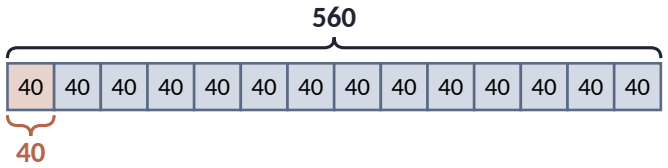
- Dividing by the numerator instead of the denominator.
- Counting parts that are not the same size.
- Forgetting "the rest" in a question with more than one step.

Writing and simplifying fractions: fact sheet

Fractions · Planner week 6 · Work out which type it is, follow the example

1 BOTH given

A farmer has 560 sheep. 40 of the sheep are black. What fraction of the sheep are black?



1. 40 sheep out of 560 are black: $\frac{40}{560}$
2. **Simplify**: divide the numerator and denominator by 40
3. Answer: $\frac{\mathbf{1}}{\mathbf{14}}$
4. **Check**: $\frac{1}{14}$ of 560 = 40 ✓

Use this when: you know the part and the whole, and want the fraction

2 The part you need is "the rest"

Bill has 400 counters. He gives away 160 of them. What fraction does he have left?

400 − 160 = 240 left

$\frac{240}{400} = \frac{\mathbf{3}}{\mathbf{5}}$

1. Find the part the question asks about: 400 − 160 = **240**
2. Write it over the whole: $\frac{240}{400}$
3. **Simplify**: divide by 80 → $\frac{\mathbf{3}}{\mathbf{5}}$

Use this when: the question asks about what is left, not what is given

3 Different units

Write 60 m as a fraction of 1 km. Give your answer in its simplest form.

1 km = 1000 m

$\frac{60}{1000} = \frac{\mathbf{3}}{\mathbf{50}}$

1. Make the units the same: 1 km = **1000 m**
2. Part over whole: $\frac{60}{1000}$
3. **Simplify**: divide by 20 → $\frac{\mathbf{3}}{\mathbf{50}}$

Use this when: the two amounts are in different units

The big question

Have I been given the **WHOLE**, a **PART**, or **BOTH** the part and the whole?

Whole or part: Fractions of amounts sheet. Both: Writing and simplifying fractions sheet.

Watch out

- Putting the whole as the numerator.
- Stopping before the simplest form.
- Mixing units (m and km, p and £).

Calculating with fractions: fact sheet

Fractions · Planner week 6 · Learn the method

Worked example

QUESTION

Work out $\frac{2}{3} + \frac{1}{4}$

ANSWER

1. Make the bottoms the same (12): $\frac{2}{3} = \frac{8}{12}$ and $\frac{1}{4} = \frac{3}{12}$
2. Add the tops: $\frac{8}{12} + \frac{3}{12} = \frac{11}{12}$

$\frac{11}{12}$

Make the bottom numbers the same, then add the tops.

How to do it

1. Change mixed numbers to **improper** fractions.
2. Add or subtract: same denominator first, then add the tops.
3. Multiply: tops together, bottoms together.
4. Divide: keep, change, flip, then multiply.
5. Simplify, and change back to a mixed number if asked.

Model answer:

$$\frac{8}{12} + \frac{3}{12} = \frac{11}{12}$$

Watch out

- Adding the bottoms ($\frac{2}{3} + \frac{1}{4}$ is not $\frac{3}{7}$).
- Flipping the wrong fraction when dividing.
- Not simplifying at the end.