# Fractions, decimals and percentages: fact sheet

Planner week 1 · Learn these facts

## Decimal place value

| Units | · | tenths | hundredths |
|---|---|---|---|
| 0 | . | 3 | 7 |

3 tenths and 7 hundredths

The first digit after the point is **tenths**

$0.37 = \frac{37}{100}$

## Percent means "out of 100"



**37%**

37 out of 100

Every percentage is a fraction over 100

$37\% = \frac{37}{100} = 0.37$

## Decimal → percentage

$0.6 \xrightarrow{\times 100} 60\%$

**Multiply by 100**: digits move 2 places left

$0.23 = 23\%\ 0.3 = 30\%$

## Percentage → decimal

$15\% \xrightarrow{\div 100} 0.15$

**Divide by 100**: digits move 2 places right

$38\% = 0.38\ 3\% = 0.03$

## Which sheet do I need?

**Converting fractions, decimals and percentages ▸**
change one form into another

**Ordering decimals ▸**
put decimals in order

**Ordering fractions and mixed lists ▸**
order fractions, or a mix of all three

## Key words

- **Percent** (%) means out of 100
- **Numerator** the top of a fraction
- **Denominator** the bottom of a fraction
- **Simplify** divide top and bottom by the same number

## Decimal → fraction

$0.31 = \frac{31}{100}$ 2 d.p. → 100

1 decimal place → over 10. 2 places → over 100

$0.7 = \frac{7}{10}\ 0.31 = \frac{31}{100}$

## Fraction → decimal

$\frac{4}{5} \overset{\times 20}{=} \frac{80}{100} = 0.8$

Make the bottom 10 or 100, or divide top ÷ bottom

$\frac{3}{4} = \frac{75}{100} = 0.75$

## Ordering decimals

0.4 → **0.400**
0.152 → **0.152**
0.37 → **0.370**

**Line up the points**, fill the gaps with 0s

$0.152 < 0.37 < 0.4$

## Learn these by heart

| | | |
|---|---|---|
| $\frac{1}{2}$ | 0.5 | 50% |
| $\frac{1}{4}$ | 0.25 | 25% |
| $\frac{3}{4}$ | 0.75 | 75% |
| $\frac{1}{5}$ | 0.2 | 20% |
| $\frac{1}{10}$ | 0.1 | 10% |
| $\frac{1}{100}$ | 0.01 | 1% |

## Exam tips

- To compare, turn everything into **decimals** first.
- 0.5 is **bigger** than 0.45: compare tenths first, not the number of digits.
- "Smallest first" means **ascending** order.
- Write your answer in the form asked: fraction, decimal **or** percentage.
- Copy the numbers back in their **original form** when you order them.
- Fractions like $\frac{35}{100}$ can be simplified ($\frac{7}{20}$), but $\frac{35}{100}$ still gets the mark.

# Converting fractions, decimals and percentages: fact sheet

Fractions, decimals and percentages · Planner week 1 · Learn the method

## Worked example

QUESTION

Write $\frac{3}{4}$ as a decimal and as a percentage.

ANSWER




$3 \div 4 = 0.75$

$0.75 \times 100 = 75\%$

$75\% = \frac{75}{100} = \frac{3}{4}$

The same amount written three ways.

## How to do it

1. **Decimal → %**: multiply by 100 (0.3 → 30%, 0.73 → 73%).
2. **% → decimal**: divide by 100 (45% → 0.45, 3% → 0.03).
3. **% → fraction**: put it over 100 (17% = $\frac{17}{100}$).
4. **Decimal → fraction**: 1 decimal place over 10, 2 places over 100 (0.9 = $\frac{9}{10}$).
5. **Fraction → decimal**: make the bottom 10 or 100 ($\frac{4}{5} = \frac{8}{10} = 0.8$), or divide.
6. "17 as a fraction of 30" means $\frac{17}{30}$.

Model answers:

0.75 and 75%

## Watch out

- 0.3 = 3% × — it is **30%**.
- 3% = 0.3 × — it is **0.03**.
- 0.31 = $\frac{31}{10}$ × — two decimal places means over **100**.

# Ordering decimals: fact sheet

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## Worked example

QUESTION

Write these numbers in order of size. Start with the smallest number.

**0.4  0.02  0.37  0.152  0.2**

ANSWER

| Line up the points | | Smallest first |
|---|---|---|
| **0.400** | | **1. 0.02** |
| **0.020** | | **2. 0.152** |
| **0.370** | compare → | **3. 0.2** |
| **0.152** | | **4. 0.37** |
| **0.200** | | **5. 0.4** |

**Answer: 0.02, 0.152, 0.2, 0.37, 0.4**

Fill the gaps with zeros so every number has the same number of decimal places.

## How to do it

1. Write the numbers in a column with the **decimal points lined up**.
2. Fill the gaps with **zeros** so they are all the same length.
3. Compare the whole numbers first, then tenths, then hundredths, …
4. Write them out **smallest first** (unless the question says otherwise).
5. Write them back in their **original form** (0.4, not 0.400).
6. Negative numbers are smaller than 0: −6 is smaller than −5.

Model answer:

0.02, 0.152, 0.2, 0.37, 0.4

## Watch out

- Thinking 0.152 is bigger than 0.4 because it has more digits.
- Putting the list largest first.
- Missing a number out: count them!

# Ordering fractions and mixed lists: fact sheet

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## Worked example

**QUESTION**

Write these numbers in order of size. Start with the smallest number.

$\frac{7}{12}$ **0.56** **57%** $\frac{6}{11}$ **0.558**

**ANSWER**

$\frac{7}{12}$ **0.56** **57%** $\frac{6}{11}$ **0.558**

| Number | Work | Decimal |
|---|---|---|
| $\frac{7}{12}$ | 7 ÷ 12 | **0.583...** |
| **0.56** | | **0.560** |
| **57%** | 57 ÷ 100 | **0.570** |
| $\frac{6}{11}$ | 6 ÷ 11 | **0.545...** |
| **0.558** | | **0.558** |

**Smallest first:** $\frac{6}{11}$, 0.558, 0.56, 57%, $\frac{7}{12}$

(write them back as they were given)

Turn everything into decimals, then order the decimals.

## How to do it

1. Change each fraction to a **decimal** (divide the top by the bottom), or
2. give the fractions the **same denominator** ($\frac{1}{4} = \frac{16}{64}$, $\frac{3}{8} = \frac{24}{64}$).
3. Change percentages to decimals (57% = 0.57).
4. Order the decimals, smallest first.
5. Write the answer using the numbers **exactly as they were given**.

Model answer:

$\frac{6}{11}$, 0.558, 0.56, 57%, $\frac{7}{12}$

## Watch out

- Thinking $\frac{1}{4}$ is bigger than $\frac{1}{3}$ because 4 is bigger than 3.
- Only converting some of the numbers.
- Writing the decimals as the answer instead of the original numbers.