Percentages and interest: fact sheet

Planner week 7 · Learn these facts

Non-calculator

10% of 80 = 8

5% = 4, 1% = 0.8

15% = 8 + 4 = 12

Find 10%, 5%, 1%, then build it

50% = half, 25% = quarter

Calculator

60% of 70

0.6 × 70 = 42

Change the % to a decimal and multiply

3% = 0.03, not 0.3

One number as a %

45 out of 60

45 ÷ 60 × 100 = 75%

Divide, then × 100

Fractions: $\frac{4}{5}$ = 80%

Increase and decrease

Increase 240 by 20%

240 × 1.2 = 288

Multiplier: 100% ± the change

Decrease 3%: × 0.97

Percentage problems

Work out each part

then add or subtract

the rest = 100% − ...

Write down every step

Check against the total

Simple interest

£600 at 2.5% for 5 years

600 × 0.025 = £15 a year

× 5 = £75

The **same** interest every year

Interest × number of years

Compound interest

£4500 at 3.4% for 2 years

4500 × 1.034^2

= £4811.20

Interest on the interest

amount × $\text{multiplier}^{\text{years}}$

Multipliers

+20%	× 1.2
+3%	× 1.03
−4%	× 0.96
−15%	× 0.85

Which sheet do I need?

Finding percentages ▸
a % of an amount, or one number as a %

Percentage problems ▸
several steps: "the rest", VAT, deposits

Simple and compound interest ▸
interest, per annum, depreciation

Key words

- **Per cent** out of 100
- **Interest** money added to savings
- **Per annum** each year
- **Depreciate** lose value each year

Exam tips

- Simple interest: the same amount each year.
- Compound interest: multiply by the multiplier for **each** year.
- "Total amount of interest" = final amount − starting amount.
- "Value at the end" = the final amount.
- VAT 20%: × 1.2.
- Write money to 2 decimal places: £600.74.

Finding percentages: fact sheet

Percentages and interest · Planner week 7 · Find your skill, learn the method

1 Without a calculator

You will see: **15% of 80**

1. Find **10%**: divide by 10.
2. Halve it for **5%**. Divide 10% by 10 for **1%**.
3. Add the pieces you need.

10% of 80 = 8

5% = 4

15% = 8 + 4 = **12**

50% = half, 25% = quarter, 10% = ÷ 10

2 With a calculator

You will see: **37% of £260**

1. Change the % to a decimal: **÷ 100**.
2. Multiply by the amount.
3. Money? Give 2 decimal places.

37% = 0.37

0.37 × 260 = **£96.20**

3% = 0.03, not 0.3

3 One number as a percentage

You will see: **45 out of 60 as a percentage**

1. Write it as a fraction: **part ÷ whole**.
2. Multiply by 100.
3. Fraction with 100 on the bottom? Read it off.

45 ÷ 60 = 0.75

0.75 × 100 = **75%**

$\frac{4}{5} = \frac{80}{100} = 80\%$

Part ÷ whole × 100

4 Compare two percentages

You will see: **Which is greater, 15% of 88 or 20% of 62?**

1. Work out **both** amounts.
2. Show both answers.
3. Say which is bigger, with the numbers.

15% of 88 = 13.2

20% of 62 = 12.4

15% of 88 is greater

Show both calculations, then answer the question

Which skill do I need?

No calculator, a % of an amount	1
Calculator, a % of an amount	2
"Write … as a percentage", "what percentage"	3
"Which is greater?"	4

Watch out

- Writing 3% as 0.3 (it is 0.03).
- Finding the increase but not adding it on.
- Answering without showing both calculations.

Percentage problems: fact sheet

Percentages and interest · Planner week 7 · Find your skill, learn the method

1 Percentage of the right amount

You will see: **60% of the 450 boys …**

1. Write down what each number means.
2. Find the % of the amount it says (“of the boys”).
3. Label each answer as you go.

800 students, 450 are boys

60% of the boys walk

0.6 × 450 = **270 boys**

Check which total the % is of

2 “The rest”

You will see: **35% are dogs, 40% are cats, the rest are fish**

1. Add the percentages you know.
2. Take them away from **100%**.
3. Then find that % of the total if asked.

100 − 35 − 40 = **25%** fish

of 240 pets:

0.25 × 240 = **60**

The rest = 100% − the parts

3 Part as a % of the whole

You will see: **“What percentage of the students …?”**

1. Find the **part** and the **whole**.
2. Part ÷ whole × 100.
3. Write the % sign.

248 of 800 bring lunch

248 ÷ 800 × 100 = **31%**

Part ÷ whole × 100

4 Increase or decrease

You will see: **VAT, a deposit, a pay rise or a sale**

1. Increase: × (1 + %). Decrease: × (1 − %).
2. Or find the % and add / take it away.
3. Answer the question asked (each month? the total?).

£240 + 20% VAT

240 × 1.2 = **£288**

Don’t stop one step too early

Which skill do I need?

“… % of the boys / of the rest”	1
“The rest”, or percentages to add up	2
“What percentage …?”	3
VAT, sale, deposit, pay rise	4

Watch out

- Taking the percentage of the wrong total.
- Forgetting VAT or the deposit.
- Stopping one step too early.

Simple and compound interest: fact sheet

Percentages and interest · Planner week 7 · Find your skill, learn the method

1 Simple interest

You will see: **£600 at 2.5% simple interest for 5 years**

1. Find the interest for **one** year.
2. Multiply by the number of years.
3. Add it on if asked for the final amount.

$$0.025 \times 600 = £15 \text{ a year}$$

$$15 \times 5 = \textbf{£75} \text{ interest}$$

final amount: 600 + 75 = £675

The same interest every year

2 Compound interest

You will see: **£4500 at 3.4% compound interest for 2 years**

1. Find the multiplier: 1 + 0.034 = **1.034**.
2. Amount × multiplier$^{\text{years}}$.
3. Round money to 2 d.p.

$$4500 \times 1.034^2$$

$$= \textbf{£4811.20}$$

Interest on the interest: × multiplier each year

3 Depreciation

You will see: **A car loses 15% of its value each year**

1. The multiplier is 1 − 0.15 = **0.85**.
2. Value × 0.85$^{\text{years}}$.
3. It gets smaller every year.

£12 000, 3 years

$$12\,000 \times 0.85^3 = \textbf{£7369.50}$$

Losing value: the multiplier is less than 1

4 Interest or final amount?

You will see: **Read the last line of the question**

1. “Final amount” / “value at the end”: amount × multiplier.
2. “Total interest”: final amount − starting amount.
3. Check the % as a decimal: 1.8% = 0.018.

£4811.20 − £4500

$$= \textbf{£311.20} \text{ interest}$$

Answer what the question asks for

Which skill do I need?

“Simple interest”	1
“Compound interest”, “per annum” each year	2
“Depreciates”, “loses value”	3
“How much interest?” or “how much at the end?”	4

Watch out

- Using simple interest when it says compound.
- Giving the final amount when asked for the interest.
- Using 1.18 for 1.8% (it is 1.018).