UNIT 9 *Fractions and Percentages*   Teaching Notes

Historical Background and Introduction

The historical background to fractions and percentages has been given in Y7A and Y7B. Most of the concepts considered in this unit have been met earlier and may be regarded as revision for many pupils. Those who have struggled with fractions and percentages in earlier units will be able to use this as a time for consolidation and understanding. Since it is absolutely vital that *all* pupils can deal with the basic operations with both fractions and percentages some may require more basic material than is covered here. You must use your judgement, but please note that unless pupils have gained understanding and mastery of the basic topics given here, they will continue to struggle, to their grave disadvantage. It may be tempting to go on to other units in which these topics are not directly needed, but this would be a short term policy which would prove, in the longer term, to be misguided. These topics are absolutely fundamental in mathematics, so you need to engender confidence in your pupils before moving on.

Routes

		Standard	Academic	Express
9.1	Revision of Operations with Fractions	✓	✓	✓
9.2	Fractions in Context	✓	✓	✓
9.3	Conversion of Fractions and Percentages	✓	✓	✓
9.4	Finding Percentages	✓	✓	✓
9.5	Increasing and Decreasing Quantities by a Percentage	(✓)	✓	✓
9.6	Finding the Percentage Increase and Decrease	✗	(✓)	✓
9.7	Reverse Percentage Calculations	✗	✗	✓

Language

	Standard	Academic	Express
VAT (Value Added Tax)	✓	✓	✓
Percentage increase / decrease	(✓)	✓	✓

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Misconceptions

As well as misconceptions given in earlier units, there are numerous problems and difficulties here; for example:

- realising that fractions and percentages are in fact equivalent, i.e. 10% of a quantity is equivalent to $\frac{1}{10}$ of the quantity.

- note that, although 10% is $\frac{1}{10}$, 5% is *not* $\frac{1}{5}$, but in fact, $\frac{5}{100} \equiv \frac{1}{20}$, etc.

- when finding a percentage increase (or decrease), the calculation used is not

  $$\left(\frac{\text{increase}}{\text{new price}} \times 100 \right)\% \quad \text{but} \quad \left(\frac{\text{actual increase}}{\text{original price}} \times 100 \right)\% .$$

- if you increase the cost of an item by 10% and then decrease it by 10%, you do not end up with the original price (this can be illustrated by taking the original cost as £100; increased by 10% gives £110; and now decreased by 10% gives $110 \times \frac{90}{100} = £99$).

Challenging Questions

The following questions are more challenging than others in the same section:

	Section	Question No.	Page
Practice Book Y8A	9.3	10	154
" "	9.5	11	159
" "	9.6	10	163
" "	9.7	9	165