UNIT 18 *Speed, Distance and Time*   Teaching Notes

Historical Background and Introduction

The unit brings together concepts (on units) from Unit 17, with that of speed, using compound measures. Mathematical calculations involving speed are put in context; you should be aware that there is a key difference between:

> *average speed* (over a period of time or distance)

and

> *instantaneous speed* (at a particular time or place)

and

> *uniform speed* (when the speed remains constant over a period of time or distance).

The unit deals, in the main, with average speed and uniform (constant) speed and only considers instantaneous speed in the context of qualitative description of motion, derived from a distance-time graph.

Routes	**Standard**	**Academic**	**Express**
18.1 Speed	✓	✓	✓
18.2 Calculating Speed, Distance and Time	(✓)	✓	✓
18.3 Problems with Mixed Units	(✓)	✓	✓
18.4 Distance-Time Graphs	✗	✓	✓
18.5 Other Compound Measures	✗	(✓)	✓

Language	**Standard**	**Academic**	**Express**
Instantaneous speed	✓	✓	✓
Average speed	✓	✓	✓
Distance-time graphs	✗	✓	✓
Gradient	✗	✓	✓

Misconceptions

• the differences between *instantaneous* speed, *uniform* speed and *average* speed often cause confusion.

• using the wrong formula for converting speed, distance and time causes problems,

  e.g. $\text{speed} = \dfrac{\text{time}}{\text{distance}}$ or $\text{speed} = \text{distance} \times \text{time}$, instead of $\text{speed} = \dfrac{\text{distance}}{\text{time}}$.

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Challenging Questions

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

	Section	*Question No.*	*Page*
Practice Book Y8B	18.2	9, 10	115
" "	18.4	8	125
" "	18.4	11	126