UNIT 14 *Straight Line Graphs*   Teaching Notes

Historical Background and Introduction

The unit brings together the earlier work on

Formulae, Linear Equations and *Coordinates* (Y7A, Unit 3)

focusing on the construction and use of linear graphs. The importance of this unit is that it forms a key building block in mathematics, leading to graphs of more general functions, and their use in practical situations.

Most pupils will be challenged by the work, and the preciseness of maths should be stressed here. There are rules which, if followed, should ensure that there is no confusion and no difficulty; it is essential that pupils *understand* the rules, conventions and notation.

| *Routes*	Standard	Academic	Express
14.1 Coordinates	✓	✓	✗
14.2 Plotting Points on Straight Lines	✓	✓	(✓)
14.3 Plotting Graphs Given Their Equations	(✓)	✓	✓
14.4 Equation of a Straight Line	✗	✓	✓
14.5 Equation of a Line Given Two Points	✗	✗	✓

Language	Standard	Academic	Express
Gradient	(✓)	✓	✓
Intercept	✗	✓	✓
Equation of a straight line	✗	✓	✓

Misconceptions

•   a commonly-held misconception is that gradients are always *positive,* whereas they can be *positive* or *negative* or even *zero* or *infinity* !

•   pupils often think that several points are needed to define a straight line: in fact, just 2 points uniquely define a straight line.

•   many pupils will consider that two graphs like those shown on the right have different slopes (or gradients). They don't. The slope is determined by

$$\frac{\text{the change in the value of } y}{\text{the change in the value of } x}$$

and these changes *must* be found by reading them on the appropriate axes. When this is done, both graphs will be found to have a slope of 1.
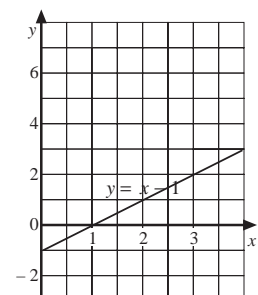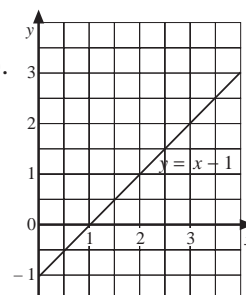
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Challenging Questions

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

	Section	*Question No.*	*Page*
Practice Book Y8B	14.1	9, 10	36
" "	14.3	11	46
" "	14.5	5	51