

UNIT 6 *Probability*

Teaching Notes

This unit both revises and extends the earlier work on probability; additionally it emphasises the concept of theoretical and experimental frequencies and probabilities. Pupils should appreciate that experimental frequencies will not in general be exactly equal to the theoretical values, but that the theoretical model is still a valid one. An interesting source of material here is the national lottery results where the probability of any number being drawn is $\frac{1}{49}$, but the frequencies are not all equal! (See <http://lottery.merseyworld.com/>).

Routes

	Standard	Academic	Express
6.1 The Probability Scale	✓	(✓)	✗
6.2 The Probability of a Single Event	✓	✓	(✓)
6.3 The Probability of Two Events	✗	✓	✓
6.4 Theoretical and Experimental Probabilities	✗	(✓)	✓

Language

	Standard	Academic	Express
Experimental and theoretical probabilities	✗	(✓)	✓

Misconceptions

- pupils must know that the probability of any event, p , must satisfy $0 \leq p \leq 1$, and that p can never be greater than 1 (or negative)
- pupils must know when probabilities must be *added* and when *multiplied*,
e.g. $p(\text{six}) = \frac{1}{6}$ so $p(2 \text{ sixes}) = \frac{1}{6} + \frac{1}{6} = \frac{1}{3}$, etc. is one error seen over and over again!
- if you obtain 4 Heads in a row when tossing a fair coin, then the probability of Heads on the fifth throw is still $\frac{1}{2}$: this result often seems to be in conflict with the expectation that, over a period of many tosses of the coin, the number of Heads will approximately equate to the number of Tails. However, pupils must realise that each toss of the coin is an *independent event*.

(Other misconceptions are shown on Y7B, OS 21.10.)

Challenging Questions

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

	<i>Section</i>	<i>Question No.</i>	<i>Page</i>
<i>Practice Book Y9A</i>	6.1	12	125
" "	6.2	11, 15	130/132
" "	6.3	13 - 17	140-143