

TEACHER'S NOTES

Maths Level 1

Chapter 7

Working with probability

SECTION K 1 Measuring probability

- 2 Remember what you have learned

Maths Level 1

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Chapter 7: Working with probability

Use these free pilot resources to help build your learners' skill base

We are delighted to continue to make available our free pilot learner resources and teacher notes, to help teach the skills learners need to pass Edexcel FS Mathematics, Level 1.

But use the accredited exam material and other resources to prepare them for the real assessment

We developed these materials for the pilot assessment and standards and have now matched them to the final specification in the table below. They'll be a useful interim measure to get you started but the assessment guidance should no longer be used and you should make sure you use the accredited assessments to prepare your learners for the actual assessment.

New resources available for further support

We're also making available new learner and teacher resources that are completely matched to the final specification and assessment – and also providing access to banks of the actual live papers as these become available. We recommend that you switch to using these as they become available.

Coverage of accredited specification and standards

The table below shows the match of the accredited specification to the unit of pilot resources. This table supersedes the pilot table within the teacher notes.

Coverage and Range	Exemplification	Learner Unit
Use data to assess the likelihood	<ul style="list-style-type: none">Put events in order of likelihood on a probability scaleJustify decisions based on the probability scaleExplain results from the context of statistical diagrams and calculations	K1 Measuring probability Wider coverage can be found in our new publishing (see below)
		K2 Remember what you have learned

Where to find the final specification, assessment and resource material

Visit our website www.edexcel.com/fs then:

- **for the specification and assessments:** under **Subjects**, click on **Mathematics (Levels 1–2)**
- **for information about resources:** under **Support**, click on **Published resources**.

Performance	Coverage and Range	Unit Objectives
<p>Learners can:</p> <ul style="list-style-type: none"> ■ understand practical problems in familiar and unfamiliar contexts and situations, some of which are non-routine ■ identify and obtain necessary information to tackle the problem ■ select mathematics in an organised way to find solutions to practical problems for different purposes ■ apply mathematics in an organised way to find solutions to practical problems for different purposes ■ use appropriate checking procedures at each stage ■ interpret and communicate solutions to practical problems, drawing simple conclusions and giving explanations. 	<p>Learners can:</p> <ul style="list-style-type: none"> ■ extract and interpret information from lists, tables, diagrams, charts and graphs ■ collect and record discrete data and organise and represent information in different ways ■ find mean and range. 	<p>K1 Use probability to show that some events are more likely to occur than others</p> <p>K2 Remember what you have learned</p>

Approaches to teaching

This section covers the skills necessary for students to be able to work efficiently with probability. The unit focuses on the delivery of working with the concept of the likelihood of events occurring and measuring simple probability. The questions set allow the learner to practise the full range of skills being taught. The table identifies the coverage and range from the functional skills standards: mathematics level 1 which are covered in this section.

K1 Measuring probability

The main idea is that students understand that some events are impossible and some are certain, while others are likely or unlikely to occur. Students need to understand the concept of possible outcomes e.g. the outcomes of heads or tails when tossing a coin. Demonstrate the likelihood of events using everyday examples where the likelihood is clear, e.g. an event such as living on mars next year. Demonstrate possible outcomes by tossing a fair coin or die: students can easily see possible outcomes and this will set the scene for measuring probability. Use the die example to demonstrate that there is sometimes more than one way of an event happening, e.g. throwing an even number when you toss a die.

Activities

Make A4 size cards with the numbers 0, 1 and $\frac{1}{2}$ on them. Peg the 0 card onto one end of a piece of string, the $\frac{1}{2}$ card in the centre and the 1 card at the other end. Make everyday event cards, such as 'I will eat chips in the canteen tomorrow' and a second set of cards labelled 'certain', 'impossible', 'likely', 'unlikely' and 'equally likely'. As students to volunteer to peg the cards from this second set onto an appropriate position on the string. Ask students to discuss where the event cards should then each be pegged onto the string.

Misconceptions

The likelihood of some events is subjective, e.g. 'I will eat chips tomorrow', and students need to understand the difference between estimating a probability from experience, as with this case, and measuring probability by calculation (e.g. tossing a coin).

Where there are multiple outcomes, students may not remember to simplify fractional answers, for example leaving the answer to the probability of throwing a number greater than 4 with an ordinary die as $\frac{2}{6}$, instead of $\frac{1}{3}$. Reinforce simplification of fractions in this case.

Apply the skills

The learners need to develop their Process Skills, which are:

Representing	Analysing	Interpreting
Making sense of situations and representing them	Processing and using the mathematics	Interpreting and communicating the results of the analysis

At level 1 the learners may receive some guidance on how to first approach a problem but then must decide on the methods used and identify the information they need for themselves. A suitable activity to practise their skills in probability would be to calculate the probabilities of scoring different points a game. The practice task below involves probabilities in a simple dice game. The rules and questions can be adapted accordingly; a sample Level 1 task is given below:

Sample task

Players A and B play a game of dice.

Here are the rules:

- Each player throws 1 die in turn.
- If a player throws a six, they earn 3 points.
- If a player throws an odd number, they earn 1 point.
- In any one turn, whoever throws the largest number earns 1 point.
- If both players throw the same number, they each earn 2 points.
- The winner is the player with the highest number of points after 5 throws each.

- a. Which player is more likely to win the game?
- b. What is the probability of a player throwing a six?
- c. What is the probability of a player throwing an odd number?
- d. If player A throws a two, what is the probability of player B also throwing a two?
- e. If player A throws a five, what is the probability of player B throwing a larger number?



Answers: Section K

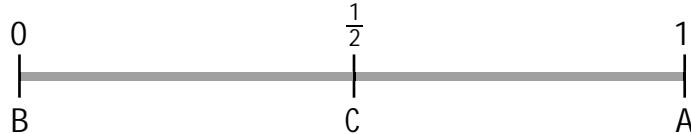
K Working with probability

1 The likelihood of events – page 119

- a certain
- b certain
- c unlikely
- d unlikely
- e unlikely

2 Measuring probability – page 121

1. example solution



2. a 1
 b 0
 c $\frac{1}{2}$

3 Probabilities which are not 0 or 1 – page 121

1. a $\frac{1}{6}$
 b $\frac{3}{6} = \frac{1}{2}$
 c probability (scoring 4, 5 or 6) = $\frac{3}{6} = \frac{1}{2}$
 d probability (scoring 1 or 2) = $\frac{2}{6} = \frac{1}{3}$

2. a $\frac{5}{25} = \frac{1}{5}$
 b $\frac{10}{25} = \frac{2}{5}$

3. a $\frac{1}{20}$
 b $\frac{1}{5}$
 c probability (5, 10, 15 or 20) = $\frac{4}{20} = \frac{1}{5}$

4 Remember what you have learned – page 123

1. A
 2. C
 3. B
 4. B