CENTRES FOR EXCELLENCE IN MATHS

FE centre resource

Pearson

Lesson plan

Basic probability

1. Lesson objectives

- Review the equivalence of fractions, decimals and percentages
- Find the simple probability of equally likely events as a fraction, decimal or percentage
- Locate the probability of simple events and mutually exclusive events on a probability scale.

2. GCSE curriculum

P3 relate relative expected frequencies to theoretical probability, using appropriate language and the 0 – 1 probability scale.
P4 apply the property that the probabilities of an exhaustive set of outcomes sum to one; apply the property that the probabilities of an exhaustive set of mutually exclusive events sum to one.
N10 work interchangeably with terminating decimals and their corresponding fractions.

3. Lesson plan

This is an overview of the lesson. More notes can be found in the notes in the lesson slides.

Activity	Purpose of this activity	Time (min)	Guidance	Materials
Introduction	Introduce the key language and concept of probability	10	This whole class activity involves ordering events according to their probability of occurring. It can be done in either of two ways: • A ‘washing line’ hung across the classroom, or along one wall • By asking learners to stand in a line across the classroom, or along one wall. Ask learners to pick events cards and place themselves (or their card) in a line and justify their position.	Slide 2 Event cards Handout
Discuss 1	Review previous learning of the language and concept of probability	10	Introduce the decimal probability number line and ask questions to identify where impossible, certain, likely and unlikely would fit on this. Discuss some of the events from the previous activity, and what numbers would apply to them, then match the percentages to the probability scale. Use slide 4 to confirm key vocabulary and ways of expressing probabilities in numbers.	Slides 3 and 4

Activity	Purpose of this activity	Time (min)	Guidance	Materials
Discuss 2	Review knowledge of fraction, decimal, percentage equivalences	15	Show the grid on slide 5 and ask learners to say what they see. Probe to get more mathematical responses, draw out the fractions, decimals and percentages represented by the blocks of squares. Ask learners to label their handout with this information. Use slide 6 to draw out common misconceptions about fractions, decimals and percentages.	Slides 5 and 6 Say what you see Handout
Explore 1	Find probabilities of equally likely events	25	Explain the game scenario of the grid, with a light stopping on squares at random. Use questioning with mini-whiteboards to identify the probability of the light stopping on different squares. Next, provide pairs of learners with handouts of different grids (or ask them to make their own), and tell them to write their own probability questions relating to the grid – including easier and more difficult questions. Learners then pass their questions on for a different pair to answer. Finally, those who set the questions mark the answers. Check for what learners found difficult. Summarise by presenting slide 9, showing the formula for finding the probability of equally likely events sum of equally likely. Emphasise that the sum of all possible events always adds to one. Use slide 10 to discuss a scenario where the events are not equally likely.	Slides 7–10 Mini-whiteboards and markers Hundred square grid Handouts

Activity	Purpose of this activity	Time (min)	Guidance	Materials
Explore 2	Locate the probability of simple events and mutually exclusive events on a probability scale	20	Return to the probability scale, and provide an A3 copy for pairs/small groups to work with. Ask learners to work in pairs or small groups and give each group card sets A. Ask them to calculate the probability of the event on each card and stick on the probability scale handout. When learners have completed card set A, provide them with set B and repeat. These are more challenging probabilities, involving mutually exclusive events (and an example of a simple combined probability). Ask learners to attach their A3 handouts to the wall and review each other's. Use slide 12 to extend this task, and address a misconception about probabilities adding to 1.	Slides 11–13 Probability scale Handout Probability card sets A and B Handout
Practice questions	Practice questions	10	Ask learners to answer the selection of practice questions and after a few minutes discuss their thinking.	Slides 14–16 Probability practice questions Handout