Your notes

KS3 Maths: revision notes

Probability

Contents

1. The probability scale
2. Adding to 1
3. Listing outcomes
4. Experiments
5. Key terms
6. Quick questions
7. What to do next

The probability scale

- **Probability** measures how likely something is, from 0 (impossible) to 1 (certain). An even chance is 0.5.
- Probabilities can be written as fractions, decimals or percentages.
- If the **outcomes** are **equally likely**: **probability** = number of ways it can happen ÷ total number of outcomes. The probability of rolling a 6 on a fair dice is 1/6.



Adding to 1

- The probabilities of all the possible **outcomes** add up to 1.
- The **probability** of something not happening = 1 – the **probability** that it happens. If P(rain) = 0.3, then P(no rain) = 0.7.

Listing outcomes

- List all the **outcomes** systematically. Two coins: HH, HT, TH, TT (4 **outcomes**). Two dice: a **sample space** diagram with 6 × 6 = 36 outcomes.
- The **probability** of two heads is 1/4. The **probability** of a total of 7 with two dice is 6/36 = 1/6.

Experiments

- **Expected frequency** = **probability** × number of trials. Roll a dice 60 times and you would expect about 60 × 1/6 = 10 sixes.

- **Relative frequency** (experimental **probability**) = number of times it happens ÷ number of trials. More trials give a better estimate.

Key terms

Probability	How likely something is to happen, from 0 to 1.
Outcome	A possible result, such as rolling a 4.
Event	One or more outcomes, such as rolling an even number.
Equally likely	Having the same chance of happening.
Fair	Every outcome is equally likely.
Sample space	A list or table of all the possible outcomes.
Expected frequency	How many times you expect something to happen: probability × number of trials.
Relative frequency	How often something happened in an experiment ÷ the number of trials.

Quick questions

Cover the answers and test yourself: remembering is what makes it stick.

1. What is the probability of an impossible event?
2. What is the probability of rolling a 6 on a fair dice?
3. The probability that it rains tomorrow is 0.3. What is the probability that it doesn't rain?
4. A bag has 3 red and 7 blue counters. What is the probability of picking a red one?
5. How many outcomes are there when two coins are flipped?
6. How many outcomes are there when two dice are rolled?
7. What is the probability of getting two heads when two coins are flipped?
8. A fair dice is rolled 60 times. About how many 3s would you expect?

Answers

1. 0
2. 1/6
3. 0.7
4. 3/10
5. 4
6. 36
7. 1/4
8. 10

What to do next

Practise 13 questions on this topic

Try 4 exam questions, with mark schemes

Your notes

Read the lesson, one step at a time

Free revision for GCSE and KS3 at lycolearn.co.uk. Some notes are for one exam board only, and say so in brackets.

Your notes