Your notes

GCSE Statistics: revision notes

Probability

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The probability scale

- **Probability** measures how likely an event is, from 0 (impossible) to 1 (certain). Write it as a fraction, decimal or percentage.
- For equally likely outcomes, P(event) = number of ways it can happen ÷ total number of outcomes. P(even number on a fair dice) = 3 ÷ 6 = 1/2.
- The probabilities of all possible outcomes add up to 1, so P(not A) = 1 – P(A). If P(rain) = 0.35, P(no rain) = 0.65.

Experimental probability

- **Relative frequency** (experimental **probability**) = number of times the event happens ÷ number of trials. 18 heads in 50 throws gives 0.36.
- The more trials, the more reliable the estimate. **Relative frequency** is used when outcomes aren't equally likely, such as a **biased** dice.
- **Expected frequency** = **probability** × number of trials. If P = 0.2 and there are 150 trials, expect 30.

Sample spaces

- A **sample space** diagram lists every possible outcome. Two dice give 36 outcomes. 6 of them sum to 7, so P(sum of 7) = 6/36 = 1/6.

Risk

- Risk is the **probability** of something harmful. **Absolute risk** = number affected ÷ total, such as 4 in 100.
- **Relative risk** compares two groups: risk in one group ÷ risk in the other. 4 in 100 compared with 2 in 100 gives a **relative risk** of 2, so the risk is twice as high.

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Key terms

Probability	How likely an event is, from 0 to 1.
Relative frequency	The number of times an event happens divided by the number of trials.
Expected frequency	Probability multiplied by the number of trials.
Sample space	A list of all possible outcomes.
Biased	Not fair, so outcomes aren't equally likely.
Absolute risk	The probability of a harmful event in a group.
Relative risk	The risk in one group divided by the risk in another.

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 P(even number) on a fair six-sided dice?
3. P(rain) = 0.35. What is P(no rain)?
4. A coin lands on heads 18 times in 50 throws. What is the relative frequency of heads?
5. P(win) = 0.2 and a game is played 150 times. How many wins are expected?
6. How many outcomes are there when two dice are rolled?
7. What is P(sum of 7) with two fair dice?
8. How can you make a relative frequency estimate more reliable?

Answers

1. 0
2. 1/2
3. 0.65
4. 0.36
5. 30
6. 36
7. 1/6
8. Do more trials

What to do next

Practise 10 questions on this topic

Try 3 exam questions, with mark schemes

Read the lesson, one step at a time

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