Probability & Statistics 2

A-Level Mathematics · Vocabulary in context

Word	Example
Probability & Statistics /ˌprɒbə'bɪlɪti ænd stə'tɪstɪks/	**Probability & Statistics** studies chance and data.
Poisson distribution /'pɔɪsn ˌdɪstrɪ'bju:ʃn/	The **Poisson distribution** models random events, such as calls per hour.
approximation /əˌprɒksɪ'meɪʃn/	An **approximation** simplifies a calculation when a change is small.
continuity correction /kɒntɪ'nju:ɪti kə'rekʃn/	Use a **continuity correction**: $P(X \leq 5)$ becomes $P(Y < 5.5)$. $P(X \leq 5)$ $P(Y < 5.5)$
expectation /ekspɪk'teɪʃn/	The **expectation** of a fair die's score is 3.5. 3.5
variance /'veərɪəns/	The **variance** is the square of the standard deviation.
normal distribution /'nɔ:ml ˌdɪstrɪ'bju:ʃn/	A **normal distribution** has a symmetric bell-shaped density curve.
continuous random variable /kən'tɪnju:əs 'rændəm 'veərɪəbl/	A person's height is a **continuous random variable**.
probability density function /ˌprɒbə'bɪlɪti 'densɪti 'fʌŋkʃn/	A **probability density function** describes a continuous random variable.
cumulative distribution function /'kju:mjʊlətɪv ˌdɪstrɪ'bju:ʃn 'fʌŋkʃn/	The **cumulative distribution function** $F(x)$ gives $P(X \leq x)$. $F(x)$ $P(X \leq x)$
median /'mi:di:ən/	Put the values in order before you find the **median**.

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Word	Example
percentiles /pəˈsentaɪlz/	The 10th and 90th **percentiles** mark the bottom and top tenth of the data. 10 90
sample /ˈsæmpl/	The **sample** contains the people selected for this study.
population /ˌpɒpjʊˈleɪʃn/	Define the **population** before deciding whom to include.
randomness /ˈrændəmnəs/	**Randomness** means each result cannot be predicted in advance.
biased /ˈbaɪəst/	Asking only your friends gives a **biased** sample.
Central Limit Theorem /ˈsentrəl ˈlɪmɪt ˈθɪərəm/	The **Central Limit Theorem** says sample means are roughly normal for large samples.
unbiased estimates /ʌnˈbaɪəst ˈestɪməts/	The sample mean gives **unbiased estimates** of the population mean.
confidence interval /ˈkɒnfɪdəns ˈɪntəvl/	A narrow **confidence interval** means the estimate is precise.
population proportion /ˌpɒpjʊˈleɪʃn prəˈpɔːʃn/	The **population proportion** of left-handed people is about 0.1. 0.1
hypothesis test /haɪˈpɒθəsɪs test/	The **hypothesis test** found no evidence against the 30-minute claim. 30
null hypothesis /nʌl haɪˈpɒθəsɪs/	The **null hypothesis** specifies the parameter value being tested.
alternative hypothesis /ɔːlˈtɜːnətɪv haɪˈpɒθəsɪs/	The **alternative hypothesis** says the coin favours heads.

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Word	Example
one-tailed /wʌn teɪld/	A **one-tailed** test checks only whether the mean has gone up.
two-tailed /tuː teɪld/	A **two-tailed** test looks for a difference in either direction.
significance level /sɪgˈnɪfɪkəns ˈlevl/	Set the **significance level** before looking at the observed result.
test statistic /test stəˈtɪstɪk/	The **test statistic** is the value calculated from the sample and compared with the critical region.
rejection region /rɪˈdʒekʃn ˈriːdʒn/	If the test statistic falls in the **rejection region**, reject the null hypothesis.
Type I error /taɪp aɪ ˈerə/	A **Type I error** rejects a true null hypothesis.
Type II error /taɪp ˈtuː ˈerə/	A **Type II error** fails to reject a false null hypothesis.

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