

INKMATHS FLASHCARDS

Statistics essentials

12 cards · fronts and backs

Print double-sided, flipping on the long edge, and each answer lands behind its question. Cut along the card borders.

Definitions in precise wording, the standard results the formulae booklet does not print, a check-yourself question per topic, and the slips that lose marks. The same cards run on the website with spaced-repetition scheduling, at inkmaths.co.uk/flashcards.

STANDARD RESULT

Histograms:

frequency density = ?

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STANDARD RESULT

Variance from sums:

$\sigma^2 = ?$ from $\sum x$ and $\sum x^2$

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STANDARD RESULT

Outlier fences:

outliers lie beyond ?

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STANDARD RESULT

Addition rule:

$P(A \cup B) = ?$

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STANDARD RESULT

Conditional probability:

$P(A|B) = ?$

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STANDARD RESULT

The sample mean's distribution:

mean of n obs of $N(\mu, \sigma^2)$: ?

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DEFINITION

Define: Independent events.

STATISTICS ESSENTIALS

DEFINITION

Define: Actual significance level.

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STANDARD RESULT

$$\sigma^2 = (\sum x^2)/(n) - ((\sum x)/(n))^2$$

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STANDARD RESULT

$$\text{frequency density} = (\text{frequency})/(\text{class width})$$

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STANDARD RESULT

$$P(A \cup B) = P(A) + P(B) - P(A \cap B)$$

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STANDARD RESULT

$$Q_1 - 1.5 \times \text{IQR and } Q_3 + 1.5 \times \text{IQR}$$

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STANDARD RESULT

$$N(\mu, \sigma^2/n)$$

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STANDARD RESULT

$$P(A|B) = (P(A \cap B))/(P(B))$$

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DEFINITION

The probability, calculated assuming the null hypothesis is true, of landing in the critical region: the test's real false-alarm rate.

STATISTICS ESSENTIALS

DEFINITION

Events A and B are independent when $P(A \cap B) = P(A) \times P(B)$; equivalently, when $P(A|B) = P(A)$, so B carries no news about A.

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CHECK YOURSELF

A firm has 900 full-time and 300 part-time staff. How many of each go into a stratified sample of 60?

STATISTICS ESSENTIALS

CHECK YOURSELF

$X \sim B(20, 0.15)$. Write $P(X \geq 5)$ in calculator-ready cumulative form.

STATISTICS ESSENTIALS

SPOT THE ERROR

Say what is wrong with this claim:

In a histogram, the tallest bar holds the most values.

STATISTICS ESSENTIALS

SPOT THE ERROR

Say what is wrong with this claim:

A strong correlation shows that one variable causes the other.

STATISTICS ESSENTIALS

CHECK YOURSELF

$P(X \geq 5) = 1 - P(X \leq 4)$: at least five means not four-or-fewer.

STATISTICS ESSENTIALS

CHECK YOURSELF

Full-time: $60 \times 900/1200 = 45$; part-time: $60 \times 300/1200 = 15$.

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SPOT THE ERROR

Correlation measures how two variables move together, nothing more. A third factor can drive both, the way summer heat lifts ice cream sales and drownings at once. Causation needs an experiment, not an r value.

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SPOT THE ERROR

Height is frequency density, so a tall narrow bar can hold fewer values than a low wide one. Area, height times width, is what counts values.

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