

Review Topic List

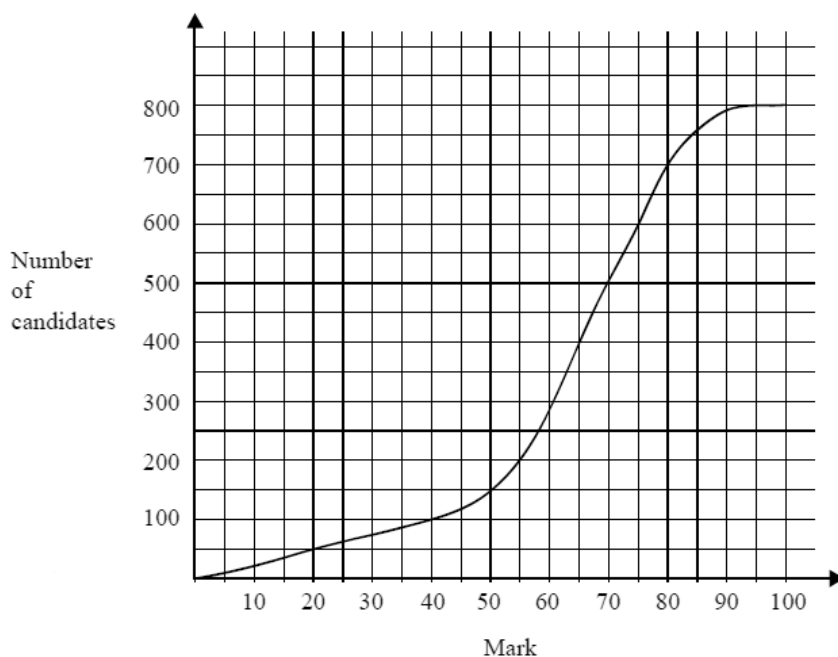
- Cumulative frequency diagrams (CFDs) and IQR (6C)
- Mean, variance (Mean of the squares minus the square of the mean), and standard deviation of a set of numbers (6D)
- Union and intersection ($P(A \cup B) = P(A) + P(B) - P(A \cap B)$), Venn diagrams, A vs A' (6E through rest of chapter)
- Probabilities and combinations (6G)
- Mutually exclusive ($P(A \cap B) = \emptyset$) and independent events ($P(A \cap B) = P(A) \cdot P(B)$) (6K)
- Conditional probability and tree diagrams (6J-6M)

1. The heights (rounded to nearest cm) of 6 randomly selected students were as follows;

176, 192, 181, 178, 188, 174

Find the mean, variance, and standard deviation of the possible outcomes.

2. A test marked out of 100 is written by 800 students. The cumulative frequency graph for the marks is given below.



- (a) Write down the number of students who scored 40 marks or less on the test.
- (b) The middle 50 % of test results lie between marks a and b , where $a < b$. Find a and b .

3. (a) The events A and B are such that $P(A \cup B) = \frac{3}{5}$, $P(B) = \frac{2}{5}$, and $P(B|A) = \frac{3}{7}$
- (i) Are A and B independent? State your reason.
- (ii) Find $P(A)$.

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4. There are 20 students in a class, of which 13 are girls and 7 are boys. Five students are selected at random to form a committee. Calculate the probability that the committee contains
- (a) no boys;
- (b) more boys than girls.

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5. In a population of rabbits, 1 % are known to have a particular disease. A test is developed for the disease that gives a positive result for a rabbit that **does** have the disease in 99 % of cases. It is also known that the test gives a positive result for a rabbit that **does not** have the disease in 0.1 % of cases. A rabbit is chosen at random from the population.
- (a) Find the probability that the rabbit tests positive for the disease.
- (b) Given that the rabbit tests positive for the disease, show that the probability that the rabbit does not have the disease is less than 10 %.
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