MARINA INTERNATIONAL SCHOOL

STATISTICS SCHEME OF WORK

FORM 7 - TERM 2

WEEK	TOPIC	TOPIC DETAILS
1.1	Representation of data	Select a suitable way of presenting raw statistical data, and discuss advantages and/or disadvantages that particular representations may have
1.2	Representation of data	Draw and interpret stem-and-leaf diagrams, box-and-whisker plots, histograms and cumulative frequency graphs; including back-to-back stem-and-leaf diagrams
1.3	Representation of data	Understand and use different measures of central tendency (mean, median, mode) and variation (range, interquartile range, standard deviation), e.g. in comparing and contrasting sets of data
2.1	Representation of data	Use a cumulative frequency graph, e.g. to estimate medians, quartiles, percentiles, the proportion of a distribution above (or below) a given value, or between two values
2.2	Representation of data	Calculate and use the mean and standard deviation of a set of data (including grouped data) either from the data itself or from given totals Σx and Σx^2, or coded totals $\Sigma(x - a)$ and $\Sigma(x - a)^2$, and use such totals in solving problems which may involve up to two data sets
2.3	Representation of data	Suitable past/specimen papers for practice and/or formative assessment include (I)(F): Jun 2014 Paper 62 Q6(iii); Nov 2013 Paper 62 Q4
2.4	Representation of data	Suitable past/specimen papers for practice and/or formative assessment include (I)(F): Jun 2014 Paper 62 Q6 (ii) (Constructing a histogram) Nov 2013 Paper 62 Q4 (Reading a histogram) Nov 2012 Paper 61 Q4 (Constructing a stem-and-leaf diagram) Nov 2011 Paper 63 Q5 (Cumulative frequency/box-and-whisker
3.1	Representation of data	Understand and use different measures of central tendency (mean, median, mode) and variation (range, interquartile range, standard deviation), e.g. in comparing and contrasting sets of data

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3.2	Representation of data	Use a cumulative frequency graph, e.g. to estimate medians, quartiles, percentiles, the proportion of a distribution above (or below) a given value, or between two values
3.3	Representation of data	Calculate and use the mean and standard deviation of a set of data (including grouped data) either from the data itself or from given total $\sum x$ and $\sum x^2$, or coded totals $\sum(x-a)$ and $\sum(x-a)^2$, and use such totals in solving problems which may involve up to two data sets
4.1	Probability	Evaluate probabilities in simple cases by means of enumeration of equiprobable elementary events or by calculation using permutations or combinations, e.g. the total score when two fair dice are thrown, or drawing balls at random from a bag containing balls of different colours (Knowledge of the following probability notation may also be required: $P(A)$, $P(A \cup B)$, $P(A \cap B)$, $P(A/B)$ and the use of A' to denote the complement of A)
4.2	Probability	Use addition and multiplication of probabilities, as appropriate, in simple cases; explicit use of the general formula $P(A \cup B) = P(A) + P(B) - P(A \cap B)$ is not required
5.1	Probability	Understand the meaning of exclusive and independent events, including determination of whether events A and B are independent by comparing the values of $P(A \cap B)$ and $P(A) \times P(B)$
5.2	Probability	Calculate and use conditional probabilities in simple cases, e.g. situations that can be represented by a sample space of equiprobable elementary events, or a tree diagram; the use of $P(A/B) = P(A \cap B)/P(B)$ may be required in simple cases
6.1	Discrete random variables	Draw up a probability distribution table relating to a given situation involving a discrete random variable X, and calculate $E(X)$ and $Var(X)$
7.1	Discrete random variables	Use formulae for probabilities for the binomial and geometric distributions, and recognise practical situations where these distributions are suitable models, including the notations $B(n, p)$ and $Geo(p)$; $Geo(p)$ denotes the distribution in which $pr = p(1-p)^{(r-1)}$ for $r = 1, 2, 3, ...$ Use formulae for the expectation and variance of the binomial distribution and for the expectation of the geometric distribution; proofs of formulae are not required
8.1	The normal distribution	Understand the use of a normal distribution to model a continuous random variable, and use normal distribution tables; sketches of normal curves to illustrate distributions or probabilities may be required

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9.1	The normal distribution	Solve problems concerning a variable X, where X ~ N(μ,σ^2) including: finding the value of P(X > x1), or a related probability, given the values of x1, μ, σ Finding a relationship between x1, μ, and σ given the value of P(X > x1) or a related probability for calculations involving standardisation, full details of the working should be shown, e.g. $Z = ((X-\mu))/\sigma$
10.1	Permutations and combinations	Recall conditions under which the normal distribution can be used as an approximation to the binomial distribution, and use this approximation, with a continuity correction, in solving problems; n sufficiently large to ensure that both np > 5 and nq > 5
11.1	Permutations and combinations	Recall conditions under which the normal distribution can be used as an approximation to the binomial distribution, and use this approximation, with a continuity correction, in solving problems; n sufficiently large to ensure that both np > 5 and nq > 5