**Statistical concepts**

In the two (imaginary) experiments summarized below, identify the independent variable, dependent variable, experimental group and control group (if they exist).

1. Twice a week, a teacher of young children introduces a 5 minute session of chess (substituted by chequers for non-chess players) at the beginning of mathematics sessions; on the other three days, there are no games at the beginning. At the end of each session, the children complete a set of twenty sums.

In this experiment, what are the dependent and independent variables?

The independent variable in this study is the presence or otherwise of games at the beginning of a mathematics session. The dependent or response variable is the score from the sums at the end of the class.

If you are going to create a control and experimental group as part of the procedure in this experiment to better assess the effects of the stimulus, how would you implement it?

The control group would not have the games stimulus at the beginning of a class. Those exposed to the stimulus will be the experimental group. Assuming similar levels of ability, the groups' performance at the end of class sums can be compared to see if there are significantly different performances.

1. The school principal asks teachers to keep a record of the number of times students do something objectionable in class. On all occasions, teachers are to react in the way they normally do. However, some classes are to be given a brief talk at the end of the class. The talk may criticise some of the behaviour previously observed, or it may praise the class as a whole for not engaging in such behavior. Some classes do not receive the talk.

After an agreed period of time, the average number of incidents is calculated.

In this experiment, which are the independent and dependent variables?

The independent variable is the presence of a talk or otherwise, and its nature. The dependent variable is the incidence of objectionable behavior over time.

Which groups are the control and experimental groups?

The control groups do not have a talk after lessons. The experimental groups have either a positive reinforcement talk or a critical feedback talk.

**Data types**

For each variable, identify the data type: continuous, ordinal or categorical).

Sex / Ethnicity / School grade / Age group / Social class / Sprint speed / Intelligence test

* Sex - categorical
* Ethnicity – categorical
* School grade - ordinal
* Age group - ordinal (for analytical purposes, you would normally convert to integers, e.g. 0 - 9 years becomes 1, 10 – 19 years becomes 2, and so on)
* Social class - ordinal
* Sprint speed - continuous
* Intelligence test - continuous