



S11-10min Experimental Design: 10-minute Pack

EDEXCEL 1ST0 · Calculator allowed · about 10 minutes

Total Marks

Name: _____ Date: ____ / ____ / ____

Answer ALL questions. Show all your working.

1 For each statement about experimental investigations, write down whether it is True or False.

(i) A hypothesis must be written as a question, rather than as a statement. **(1)**

.....

(ii) A control group experiences the same conditions as the treatment group, except **(1)**
for the variable being tested.

.....

(iii) The independent (explanatory) variable is the one that is measured as the **(1)**
outcome of the experiment.

.....

(Total for Question 1 is 3 marks)

- 2** A scientist plans two separate experimental investigations, described in the table below.

Investigation	Description
1	Testing whether the amount of daily sunlight affects the height a sunflower grows to
2	Testing whether the temperature of water affects the time taken for an ice cube to melt

- (a) For Investigation 1, identify the explanatory (independent) variable and the response (dependent) variable. (2)
- (b) For Investigation 2, identify the explanatory (independent) variable and the response (dependent) variable. (2)

(Total for Question 2 is 4 marks)

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- 3** A market researcher wants to collect people's opinions on a new bus route, either using face-to-face interviews or a written questionnaire.

- (a) Give one advantage of using face-to-face interviews rather than a written questionnaire for collecting this data. (1)
- (b) Give one advantage of using a written questionnaire rather than a face-to-face interview for collecting this data. (1)
- (c) Give one way in which the interviewer could affect the quality of the data collected in a face-to-face interview, that would not happen with a written questionnaire. (1)

(Total for Question 3 is 3 marks)

Mark scheme · S11-10min Experimental Design: 10-minute Pack

Question 1

- (i) **B1** False cao
- (i) **Answer: False**
- (ii) **B1** True cao
- (ii) **Answer: True**
- (iii) **B1** False cao
- (iii) **Answer: False**

Question 2

- (a) **B1** explanatory (independent) variable: amount of daily sunlight cao
- (a) **B1** response (dependent) variable: height the sunflower grows to cao
- (a) **Answer: Explanatory: amount of daily sunlight. Response: height the sunflower grows to.**
- (b) **B1** explanatory (independent) variable: temperature of the water cao
- (b) **B1** response (dependent) variable: time taken for the ice cube to melt cao
- (b) **Answer: Explanatory: temperature of the water. Response: time taken for the ice cube to melt.**

Question 3

- (a) **B1** any valid advantage, e.g. the interviewer can clarify a question the person does not understand, giving more accurate/complete answers, oe
- (a) **Answer: The interviewer can explain a question if someone does not understand it, leading to clearer, more complete answers.**
- (b) **B1** any valid advantage, e.g. respondents may answer more honestly with no interviewer present, or it is cheaper/quicker to reach many people, oe
- (b) **Answer: Respondents may give more honest answers without an interviewer present, and it is quicker and cheaper to send to many people.**
- (c) **B1** interviewer bias, e.g. the interviewer's tone, wording or body language could influence how a person answers, oe
- (c) **Answer: The interviewer's tone or body language could influence how someone answers (interviewer bias), which cannot happen with a written questionnaire.**