



S02-test The Statistical Enquiry Cycle: Test Pack

EDEXCEL 1ST0 · Calculator allowed · about 20 minutes

Total Marks

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Name: _____ Date: ____ / ____ / ____

Answer ALL questions. Show all your working.

- 1** A statistical enquiry always follows the same four stages, in the same order, before the cycle can begin again.

Complete each sentence by writing in the missing stage.

- (a) In the _____ stage, a suitable hypothesis is written and a method of collecting data is decided. (1)
- (b) In the _____ stage, the data described in the plan is gathered. (1)
- (c) In the _____ stage, the collected data is organised, calculated and presented, for example using tables, charts and averages. (1)
- (d) In the _____ stage, conclusions are drawn from the processed data and compared back to the original hypothesis. (1)

(Total for Question 1 is 4 marks)

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- 2** Write down the stage of the statistical enquiry cycle in which conclusions are compared back to the original hypothesis.

(Total for Question 2 is 1 mark)

3 A school council is investigating whether a new fundraising raffle was successful. For each activity below, write down which stage of the statistical enquiry cycle (plan, collect, process, interpret) it belongs to.

(a) Deciding how many raffle tickets to sell and writing a hypothesis about how much money will be raised. (1)

.....
(b) Selling the raffle tickets and recording how many are sold each day. (1)

.....
(c) Adding up the total money raised and drawing a bar chart of ticket sales by day. (1)

.....
(d) Comparing the total raised to the original hypothesis and deciding whether the raffle was a success. (1)

.....
(Total for Question 3 is 4 marks)

4 Before collecting any data, a researcher must plan her statistical enquiry carefully.

(a) State one issue relating to time that the researcher should consider when planning her enquiry. (1)

(b) State one issue relating to cost or resources. (1)

(c) State one ethical issue the researcher should consider. (1)

(Total for Question 4 is 3 marks)

5 A researcher completes a statistical enquiry into average commute times in her city, and finds that morning commutes take longer, on average, than evening commutes.

(a) Explain why the statistical enquiry cycle is described as a cycle, rather than a one-off process. **(2)**

(b) Suggest a new question, arising from the researcher's result, that could start a new statistical enquiry cycle. **(1)**

(Total for Question 5 is 3 marks)

6 An online forum runs a poll asking: 'Should the school day start later?' Only forum members who choose to vote take part. 400 of the 500 people who vote say yes. The forum owner concludes that 80% of all students at the school want the school day to start later.

Evaluate this conclusion.

(Total for Question 6 is 3 marks)

7 A gym chain wants to know whether offering a free fitness app to members increases how often they visit the gym. It gives the app to 30 members at one branch for a month, and finds their average number of visits rises from 4 to 7 per month. The gym manager concludes: "Giving every member the app will increase gym visits nationwide, and no further research is needed."

(Total for Question 7 is 3 marks)

Mark scheme · S02-test The Statistical Enquiry Cycle: Test Pack

Question 1

- (a) **B1** Plan cao
- (a) **Answer: Plan**
- (b) **B1** Collect cao
- (b) **Answer: Collect**
- (c) **B1** Process cao
- (c) **Answer: Process**
- (d) **B1** Interpret cao
- (d) **Answer: Interpret**

Question 2

- **B1** Interpret cao
- **Answer: Interpret**

Question 3

- (a) **B1** Plan cao
- (a) **Answer: Plan**
- (b) **B1** Collect cao
- (b) **Answer: Collect**
- (c) **B1** Process cao
- (c) **Answer: Process**
- (d) **B1** Interpret cao
- (d) **Answer: Interpret**

Question 4

- (a) **B1** how long collecting and processing the data will take, and whether this fits any deadline, oe
- (a) **Answer: Whether there is enough time to collect and process all the data before the deadline.**
- (b) **B1** whether she has enough money, equipment or people to collect and process the data, oe
- (b) **Answer: Whether she can afford the equipment, printing or staff needed to collect the data.**
- (c) **B1** whether participants' consent, privacy or confidentiality will be protected, oe
- (c) **Answer: Whether participants need to give their consent, and whether their data will be kept confidential.**

Question 5

- (a) **B1** after the interpret stage, the results can lead back into a new plan stage, oe
- (a) **B1** new questions or hypotheses often arise from the results of an enquiry, starting the cycle again, oe
- (a) **Answer: The interpret stage often raises new questions from the results, which leads back into a new plan stage, so the four stages can repeat as a new investigation.**
- (b) **B1** a sensible new question linked to the given result, e.g. investigating why morning commutes are longer, oe, or whether this is true on every day of the week
- (b) **Answer: Why are morning commutes longer than evening commutes, for example, is it caused by heavier traffic at that time of day?**

Question 6

- **B1** the conclusion is judged not to be valid, oe
- **B1** identifies that only forum members who choose to vote are included, so the sample is self-selecting, oe
- **B1** identifies that this sample is not the same as all students at the school, so the 80% figure cannot fairly be applied to everyone, oe
- **Answer: The conclusion is not valid. Only forum members who choose to vote are included, so the sample is self-selecting, and this group is not the same as all students at the school, so the 80% figure cannot fairly be applied to everyone.**

Question 7

- **B1** identifies that the manager's conclusion is not fully justified, e.g. one branch's 30 members is a small, potentially unrepresentative sample of all members nationwide
- **B1** recommends returning to the plan stage to design a larger-scale/randomised trial across multiple branches before rolling the app out nationwide, oe
- **B1** recognises the enquiry cycle should continue/repeat rather than stop, e.g. results should be interpreted again after a wider trial to check the increase holds nationally, oe
- **Answer: The manager's conclusion goes too far: 30 members at one branch is a small sample and may not represent all members nationwide. The gym should return to the plan stage and trial the app across a larger, more representative sample of branches, then collect, process and interpret those results again before deciding whether to roll it out to everyone, rather than stopping the enquiry cycle after just one trial.**