

Section E Research methods

Answer **all** questions in the spaces provided.

Total for this question: 20 marks

- 5** GCSE students were asked to design and conduct an experiment. The aim was to show that there is a difference between males and females in the accuracy of recognising fear in facial expression. This is what one student decided to do.

- She obtained **Picture C** from a website. It is a picture of someone showing the facial expression of fear.

Picture C



- She randomly selected 20 male and 20 female participants from the target population of everyone in her year group.
- She showed **Picture C** to each participant one at a time.
- She gave each participant a piece of paper that contained the following question:

What do you think the facial expression of the person in the picture is showing?
Choose your answer and put a tick in one of the boxes below.

Happiness	<input type="checkbox"/>
Anger	<input type="checkbox"/>
Fear	<input type="checkbox"/>
Disgust	<input type="checkbox"/>

- She then counted the number of males and females who ticked the correct box.



5 (a) Read the following statements about experiments. Only **one** of them is correct.
(Tick the correct box.)

An experiment looks at the effect of a dependent variable on an independent variable.	<input type="checkbox"/>
An experiment looks at the effect of an independent variable on a dependent variable.	<input type="checkbox"/>

(1 mark)

5 (b) (i) Identify the independent variable in this experiment. (Tick the correct box.)

- Picture C
- Whether the participants were male or female
- Whether or not the correct box was ticked

(1 mark)

5 (b) (ii) Identify the dependent variable in this experiment. (Tick the correct box.)

- Picture C
- Whether the participants were male or female
- Whether or not the correct box was ticked

(1 mark)

5 (c) Write a suitable hypothesis for this study.

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(2 marks)

Question 5 continues on the next page

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5 (d) Describe **one** way in which the student might have obtained a random sample of 20 males and 20 females from the target population.

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(3 marks)

5 (e) Another sampling method is systematic sampling.
Outline **one** advantage and **one** limitation of systematic sampling.

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(4 marks)



5 (f) The results of the experiment are shown in **Table 1**.

Table 1: The number of males and females who ticked each category of facial expression

Category of facial expression	Number of males	Number of females
Happiness	6	2
Anger	6	1
Fear	4	14
Disgust	4	3

5 (f) (i) Do the results shown in **Table 1** provide support for the aim of the experiment?
(Tick the correct box.)

Yes	<input type="checkbox"/>
No	<input type="checkbox"/>

(1 mark)

5 (f) (ii) Explain the reason for your answer to 5(f)(i).

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(3 marks)

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5 (g) Look at the following advantages of different experimental designs.

Differences between participants do not affect the findings in this design.	
Often the same material can be used for the task in both conditions in this design.	
There are no order effects in this design.	

From the following list of experimental designs, choose the one that matches **each** advantage and write either **A** or **B** in the box next to it. You can use each letter more than once.

- A** Independent groups
B Repeated measures

(3 marks)

5 (h) Read the following statement and decide whether it is **TRUE** or **FALSE**.

A disadvantage of conducting research in natural settings is that extraneous variables are hard to control. (*Tick the correct box.*)

True	False

(1 mark)

20

END OF QUESTIONS

