Exercise walk-through

4.1
Quantitative problem solving and data

GRE · GRE · GRE General Test

GRE Quantitative Problem Solving and Data

- Solve problems in arithmetic, algebra, geometry and data analysis; no calculus is needed.
- Use **conditional probability** and percentages of a subgroup.
- Answer in the format asked: one choice, all correct choices, or **numerical entry** .
- Check units and the form of the answer before submitting.

Figure: Conditional probability and subgroups



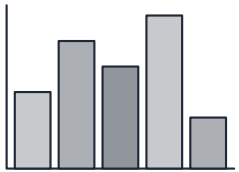
- Conditioning shrinks the denominator to the cyclists.
- Match each part of the diagram to the text.

Independent transfer

- A rectangular display has area $48\ \mathrm{cm}^2$, positive integer side lengths and perimeter at most $32\ \mathrm{cm}$.
- Select all possible lengths of its longer side: 6, 8, 12, 16, 24.
- Show why your list is complete.
- **8 and 12.** Let the longer side be L and shorter side $48/L$.

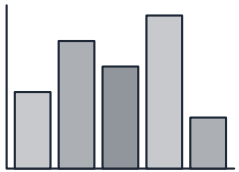
Exercise 2.1

2.1 In an original survey table, morning students number 30 and evening students 20. Twelve morning and eight evening students cycle. Enter the probability that a randomly chosen student cycles as a decimal. Enter the probability that a cyclist is an evening student as a fraction.



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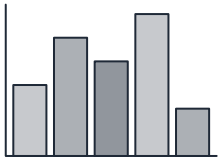
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2.1 Total students are 50 and cyclists 20. The unconditional probability is $20/50 = 0.4$. Restricting to cyclists gives evening probability $8/20 = 2/5$. The denominator changes from 50 to 20 because the second question supplies a condition. An evening student cycling has the reversed probability $8/20$ here only by numerical coincidence: the evening group and cyclist group both happen to have size 20.

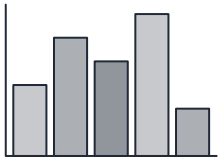
Exercise 3.1

3.1 A rectangular display has area 48 cm^2, positive integer side lengths and perimeter at most 32 cm. Select all possible lengths of its longer side: 6, 8, 12, 16, 24. Show why your list is complete.



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3.1 8 and 12. Let the longer side be L and shorter side $48/L$. Positive integer factor pairs are (1,48),(2,24),(3,16),(4,12),(6,8). Their perimeters are 98,52,38,32,28 cm. Only the last two meet the bound, with longer lengths 12 and 8. Six is the shorter side of the valid 6-by-8 rectangle, so it fails the requested role. Test both the geometric restriction and the word “longer”; numerical compatibility alone is insufficient.

Local review checklist: follow every response instruction; support the answer with the stated evidence; explain rejected alternatives or an opposing view; check scope, restrictions and clarity. For writing, this is a formative checklist, not an official rubric score.