

Quantitative problem solving and data

GRE General Test

Scope and task

Original classroom practice within the reviewed shorter-test task types. This does not simulate an adaptive test or predict a scaled or writing score.

- Solve algebraic, geometric and data-analysis problems
- Select all valid options where requested
- Enter numerical answers in the required form and use the on-screen calculator appropriately

conditional probability : Probability within a specified condition.

numerical entry : An answer entered as a number rather than an option.

Read the evidence and choose a method

GRE General quantitative content includes arithmetic, algebra, geometry and data analysis; calculus is not required.

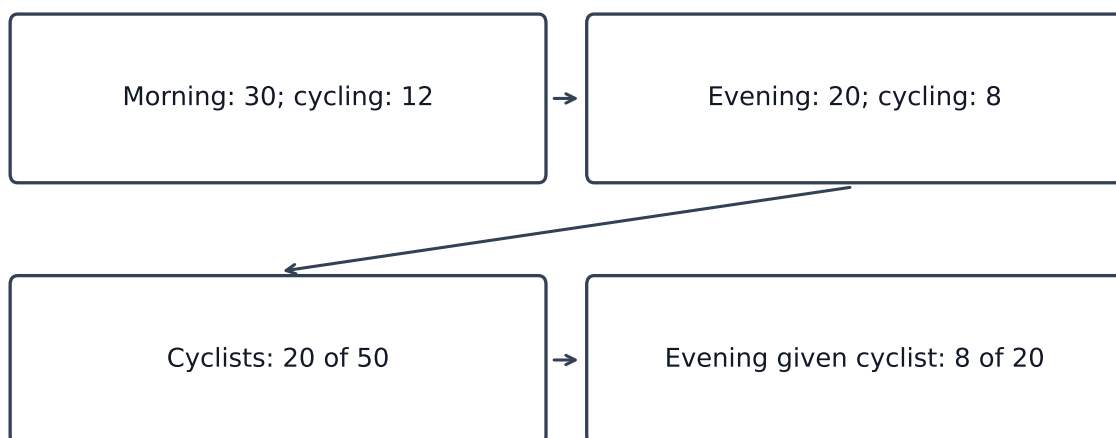
Read whether a problem asks for one answer, all answers or numerical entry. Check units and form before submitting.

For data interpretation, identify the denominator and whether a percentage is conditional on a subgroup.

The on-screen calculator is available for General quantitative sections. Estimate first to catch an entry error.

Worked reasoning

A class has 12 morning and 8 afternoon students. Of them, 3 morning and 4 afternoon students cycle. $P(\text{cycles})=7/20$. $P(\text{afternoon given cycles})=4/7$. The second denominator includes only cyclists.



Condition on cyclists: 8 of the 20 cyclists travelled in the evening

Conditions and common errors

Do not assume a geometric diagram is to scale or replace a conditional denominator with the whole population.

Original application

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.

■ Model and reasoning

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.

Independent transfer

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.

■ **Check after attempting**

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.