The GRE® General Test

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Overview of the Quantitative Reasoning Measure

The Quantitative Reasoning measure of the GRE General Test assesses your:

- basic mathematical skills
- understanding of elementary mathematical concepts

View Sample Questions

Become more familiar with the Quantitative Reasoning measure of the GRE General Test. Review sample questions, answers and explanations.

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Content areas covered

Some of the Quantitative Reasoning questions are posed in real-life settings, while others are posed in purely mathematical settings. Many of the questions are "word problems," which must be translated and modeled mathematically. The skills, concepts and abilities are assessed in the four content areas below.

- Arithmetic topics, including:
  - properties and types of integers, such as divisibility, factorization, prime numbers, remainders and odd and even integers
  - arithmetic operations, exponents and roots
  - concepts such as estimation, percent, ratio, rate, absolute value, the number line, decimal representation and sequences of numbers
- Algebra topics, including:
  - operations with exponents
  - factoring and simplifying algebraic expressions
  - relations, functions, equations and inequalities
  - solving linear and quadratic equations and inequalities
  - solving simultaneous equations and inequalities
  - setting up equations to solve word problems

  - circles
  - triangles, including isosceles, equilateral and 30°-60°-90° triangles
  - quadrilaterals
  - other polygons
  - congruent and similar figures
  - 3-dimensional figures
  - area
  - perimeter
  - volume
  - the Pythagorean theorem
  - angle measurement in degrees

The ability to construct proofs is not tested.

- Data analysis topics, including:
  - basic descriptive statistics, such as mean, median, mode, range, standard deviation, interquartile range, quartiles and percentiles
  - interpretation of data in tables and graphs, such as line graphs, bar graphs, circle graphs, boxplots, scatterplots and frequency distributions
  - elementary probability, such as probabilities of compound events and independent events
  - conditional probability
  - random variables and probability distributions, including normal distributions
  - counting methods, such as combinations, permutations and Venn diagrams

These topics are typically taught in high school algebra courses or introductory statistics courses.

Inferential statistics is not tested.

The content in these areas includes high school mathematics and statistics at a level that is generally no higher than a second course in algebra. It doesn't include trigonometry, calculus or other higher-level mathematics. The Math

Khan Academy® Instructional Videos: Free Preparation for the GRE Quantitative Reasoning Measure

For more explanations about the concepts covered in the Math Review, view free Khan Academy instructional videos.

Learn More

Symbols, terminology, conventions and assumptions

The mathematical symbols, terminology and conventions used in the Quantitative Reasoning measure are standard at the high school level. For example, the positive direction of a number line is to the right, distances are nonnegative and prime numbers are greater than 1. Whenever nonstandard notation is used in a question, it is explicitly introduced in the question.

In addition to conventions, there are some important assumptions about numbers and figures that are listed in the Quantitative Reasoning section directions:

- All numbers used are real numbers.
- All figures are assumed to lie in a plane unless otherwise indicated.
- Geometric figures, such as lines, circles, triangles, and quadrilaterals, **are not necessarily drawn to scale**. Don't assume quantities such as lengths and angle measures are as they appear in a figure. You should assume, however, that:
  - lines shown as straight are actually straight
  - points on a line are in the order shown
  - all geometric objects are in the relative positions shown

and data values by sight or by measurement:

- coordinate systems, such as *xy*-planes and number lines
- graphical data presentations such as bar graphs, circle graphs and line graphs

To learn more about conventions and assumptions, download Mathematical Conventions (PDF).

Question types and Data Interpretation sets

The Quantitative Reasoning measure has four types of questions:

- Quantitative Comparison Questions
- Multiple-choice Questions — Select One Answer Choice
- Multiple-choice Questions — Select One or More Answer Choices
- Numeric Entry Questions

Each question appears either independently as a discrete question or as part of a set of questions called a Data Interpretation set. All questions in a Data Interpretation set are based on the same data presented in tables, graphs or other displays of data.

Quantitative Comparison

Multiple-choice Questions — Select One Answer Choice

Multiple-choice Questions — Select One or More Answer Choices

Numeric Entry

Problem-solving steps

In addition to the tips for answering in the question type sections above, there are also some general problem-solving steps and strategies you can employ. Questions in the Quantitative Reasoning measure ask you to model and solve problems using quantitative, or mathematical, methods. Generally, there are three basic steps in solving a mathematics problem:

- Step 1: Understand the problem
- Step 2: Carry out a strategy for solving the problem
- Step 3: Check your answer

Strategies

There are no set rules — applicable to all mathematics problems — to determine the best strategy. The ability to determine a strategy that will work grows as you solve more and more problems. Download the Sample Questions for a list of 14 useful strategies you can employ, along with one or two sample questions that illustrate how to use each strategy.

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Calculator use

You're provided with a basic on-screen calculator on the Quantitative Reasoning measure. Sometimes the computations you need to do to answer a question in the Quantitative Reasoning measure are somewhat time-consuming, like long division, or they involve square roots. Although the calculator can shorten the time it takes to perform computations, keep in mind that the calculator provides results that supplement, but don't replace, your knowledge of mathematics. You'll need to use your

measure:

- Most of the questions don't require difficult computations, so don't use the calculator just because it's available.
- Use it for calculations that you know are tedious, such as long division, square roots, and addition, subtraction, or multiplication of numbers that have several digits.
- Avoid using it for simple computations that are quicker to do mentally, such as $10 - 490$, $(4)(70)$, $\frac{4,300}{10}$, $\sqrt{25}$, and 30^2.
- Avoid using it to introduce decimals if you're asked to give an answer as a fraction.
- You may be able to answer some questions more quickly by reasoning and estimating than by using the calculator.
- If you use the calculator, estimate the answer beforehand so you can determine whether the calculator's answer is "in the ballpark." This may help you avoid key-entry errors.

For more information, download Guidelines Specific to the On-Screen Calculator (PDF).

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