SAT/ACT STUDY GUIDE

Quantitative Comparison Questions

Quantitative comparison questions are found in the SAT-I, but not in the ACT. In the SAT-I, there are 15 of these questions. These questions ask you to compare two quantities and to determine their relationship. The directions will look like this:

> Each of the following questions consists of two quantities in boxes, one in Column A and one in Column B. You are to compare the two quantities and on the answer sheet fill in oval
>
> A if the quantity in Column A is greater;
>
> B if the quantity in Column B is greater;
>
> C if the two quantities are equal;
>
> D if the relationship cannot be determined from the information given.

Test-Taking Strategies

1. Memorize the directions before you take the SAT, so you won't have to refer to them repeatedly while taking the test and thereby waste time.
2. Learn the format of the quantitative comparison questions. Often, information relating to both columns is centered above the two quantities.
3. Do not mark (E) as an answer choice. Notice that there are only four answer choices (rather than five, as in the multiple-choice questions). If you mark (E), no points will be added or subtracted.
4. One-third of a point will be subtracted for each incorrect answer. Only guess on a question if you can definitely eliminate at least 1 answer choice.
5. When comparing expressions that include variables, make sure you try negative values, fractions, and zero. For example, $7x$ is greater than $6x$ when x is positive; $7x$ is less than $6x$ if x is negative; and $7x$ equals $6x$ if x is zero.
6. Remember that the figures are often not drawn to scale and may lead you to make assumptions which are not valid. Try many ways to illustrate the figures to fit the situations given.

The following are some sample quantitative comparison questions with their solutions.

Sample Question 1

Column A	Column B
$(-9)^{72}$	$(-9)^{83}$

You may be tempted to use your calculator to solve this problem, but it can actually be solved more easily without it.

The quantity in Column A has an even exponent, so the result is a positive number. The quantity in Column B has an odd exponent, so the result is a negative number. Since a positive number is always greater than a negative number, the quantity in Column A is greater. The answer is A.

Sample Question 2

Column A	Column B
$-x$	$\frac{1}{x}$

At first sight, it may look like the quantity in Column A is a negative number and the quantity in Column B is a positive number. But be careful! The value x may be a negative number, making $-x$ a positive number. After trying several different possibilities for x, you can see that there is not enough information to determine the relationship between $-x$ and $\frac{1}{x}$, so the answer is D.

Sample Question 3

Column A	Column B
$\begin{bmatrix} 3 & -4 & 5 \\ -2 & 1 & -3 \\ 6 & -5 & -7 \end{bmatrix}$	
the signed minor of e_{23}	**the signed minor of e_{32}**

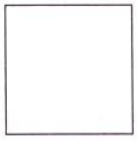
Here you are comparing two signed minors, based on the information given in the matrix above.

(A) signed minor of $e_{23} = -[3(-5) - 6(-4)] = -9$

(B) signed minor of $e_{32} = -[3(-3) - (-2)5] = -1$

Quantity B is greater, so the answer is B.

Sample Question 4

Column A	Column B
The perimeter of the square and rectangle are equal.	
	
area of the square	**area of the rectangle**

Remember, the figures are not always drawn to scale, so use the information given, not the size and shape of the figure. Here, the information given is that the two perimeters are equal.

The perimeter of a square is $4s$ while the perimeter of a rectangle is $2w + 2\ell$. Since $4s = 2w + 2\ell$, $s = \frac{w + \ell}{2}$.

The area of a square is s^2 so $s^2 = \frac{(w + \ell)^2}{4} = \frac{1}{4}(w^2 + 2w\ell + \ell^2)$ which is greater than the area of a rectangle, $w\ell$. So the answer is A.

Now go on to the next page and practice solving some typical questions on an SAT-I: Mathematics Reasoning Test. The answers are on page 23.