

## MATH STANDARDS: SAT VS. ACT

In order to build parallel—fair and equivalent—forms for each administration of their tests, the College Board and ACT must adhere to consistent sets of standards. Parallelism places one constraint on the test makers; academic alignment places another. Neither the ACT nor the SAT “make up” the standards. They work closely with the Common Core standards and with the National Council of Teachers of Mathematics to develop “domains” and “content dimensions and descriptions.”

The SAT has put a strong emphasis on Algebra I and II, with 70% of the test being made up of topics in the Algebra and Advanced Math domains. The remaining 30% of the test is split between Problem Solving and Data Analysis and Geometry and Trigonometry. The College Board considers these content domains as essential building blocks for the mathematics, science, and social science necessary for success in college and careers.

A comparison between the SAT and the ACT demonstrates how content decisions can influence the character of an exam. Even the number of questions on a topic can have a dramatic impact. If there is only one trigonometry question on the SAT, for example, the exam can only test a narrow range of trigonometric ideas. If the material jumped around too much from administration to administration, it would risk the parallelism required of a standardized test. The ACT, on the other hand, may have up to four trigonometry questions on each test. This does not just mean that there may be four times as many trig questions as on the SAT. It means that the ACT has more room to explore different areas of trig—amplitude, inverse functions, unit circles, etc. A student preparing for the SAT should study trigonometry in a different way from a student getting ready for the ACT.

### PREVALENCE OF MATH TOPICS ON THE SAT AND ACT

► The tables below summarize, at a high level, the content differences between the SAT and ACT.

Pre-Algebra and Miscellaneous		
	SAT	ACT
Absolute Value Arithmetic	X	●
Combinations	X	○
Digits	X	○
Exponents and Roots	●	●
Fractions and Decimals	X	●
Imaginary/Complex Numbers	X	●
Logarithms	X	○
Logic	X	○
Number Line	X	●
Number Properties	X	●
Overlapping Sets/Venn Diagrams	X	○
Percents	●	●
Probability	●	●
Scientific Notation	X	○
Sequences and Patterns	X	●

Data Interpretation and Analysis		
	SAT	ACT
Data Graphics	●	○
Data Tables	●	●
Line of Best Fit	●	X
Mean, Median, and Mode	●	●
Other Charts and Graphs	○	○
Rates	●	○
Ratios and Proportions	○	●
Statistical Inference	●	X
Scatter plots	●	○
Two-Way Tables	●	X
Units	●	○
Variance/Dispersion/Range	●	X

Algebra		
	SAT	ACT
Absolute Value Equations and Graphs	○	◐
Direct and Inverse Variation	X	○
Domain and Range	○	◐
Equivalent Expressions/Simplifying	●	●
Exponential Change	●	○
Graphs of Lines and Inequalities	●	◐
Inequalities	●	◐
Linear Equations	●	●
Matrices	X	○
Parabolas	●	○
Parallel and Perpendicular Lines	◐	◐
Polynomial Division	○	○
Quadratic Formula	◐	●
Quadratic Functions	●	◐
Slope	◐	◐
Symbol Functions	X	◐
System of Equations	●	◐
Zeros	●	◐

Trigonometry		
	SAT	ACT
Trigonometry	◐	●

Plane and 3-D Geometry		
	SAT	ACT
Angles	◐	●
Circle Equations	○	○
Circles—Arcs, Chords, Radii	◐	●
Distance Formula	○	◐
Ellipse Equations	X	○
Geometric Visualization	X	◐
Hybrid Figures	○	◐
Line Segments/Midpoints	○	◐
Perimeter and Area	◐	●
Pythagorean Theorem and Right Triangles	◐	●
Rotation, Reflection, and Transformation	X	◐
Similar Triangles	◐	◐
Squares and Rectangles	○	●
Surface Area	○	○
Unit Circle	○	○
Volume	○	◐
xyz-Coordinate System	X	○

Tested frequently on each exam	●
Tested approximately once per exam	◐
Tested infrequently	○
Not included in content standards	X

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