ACT College and Career Readiness Standards—Science

These Standards describe what students who score in specific score ranges on the Science Test of ACT Explore®, ACT Plan®, and the ACT® college readiness assessment are likely to know and be able to do.

Score Range	Interpretation of Data (IOD)
13–15	**IOD 201.** Select one piece of data from a simple data presentation (e.g., a simple food web diagram) **IOD 202.** Identify basic features of a table, graph, or diagram (e.g., units of measurement) **IOD 203.** Find basic information in text that describes a simple data presentation
16–19	**IOD 301.** Select two or more pieces of data from a simple data presentation **IOD 302.** Understand basic scientific terminology **IOD 303.** Find basic information in text that describes a complex data presentation **IOD 304.** Determine how the values of variables change as the value of another variable changes in a simple data presentation
20–23	**IOD 401.** Select data from a complex data presentation (e.g., a phase diagram) **IOD 402.** Compare or combine data from a simple data presentation (e.g., order or sum data from a table) **IOD 403.** Translate information into a table, graph, or diagram **IOD 404.** Perform a simple interpolation or simple extrapolation using data in a table or graph

Students who score in the 1–12 range are most likely beginning to develop the knowledge and skills assessed in the other ranges.

The ACT College Readiness Benchmark for Science is 23. Students who achieve this score on the ACT Science Test have a 50% likelihood of achieving a B or better in a first-year Biology course at a typical college. The knowledge and skills highly likely to be demonstrated by students who meet the Benchmark are shaded.

The corresponding Benchmark for ACT Explore Grade 8 is 18; for Grade 9, it's 19. The Benchmark for ACT Plan is 20. Students who achieve these scores are on track to meet the Benchmark on the ACT.

Score Range	Interpretation of Data (IOD)
24–27	**IOD 501.** Compare or combine data from two or more simple data presentations (e.g., categorize data from a table using a scale from another table) **IOD 502.** Compare or combine data from a complex data presentation **IOD 503.** Determine how the values of variables change as the value of another variable changes in a complex data presentation **IOD 504.** Determine and/or use a simple (e.g., linear) mathematical relationship that exists between data **IOD 505.** Analyze presented information when given new, simple information
28–32	**IOD 601.** Compare or combine data from a simple data presentation with data from a complex data presentation **IOD 602.** Determine and/or use a complex (e.g., nonlinear) mathematical relationship that exists between data **IOD 603.** Perform a complex interpolation or complex extrapolation using data in a table or graph
33–36	**IOD 701.** Compare or combine data from two or more complex data presentations **IOD 702.** Analyze presented information when given new, complex information

Score Range	Scientific Investigation (SIN)
13–15	**SIN 201.** Find basic information in text that describes a simple experiment **SIN 202.** Understand the tools and functions of tools used in a simple experiment
16–19	**SIN 301.** Understand the methods used in a simple experiment **SIN 302.** Understand the tools and functions of tools used in a complex experiment **SIN 303.** Find basic information in text that describes a complex experiment
20–23	**SIN 401.** Understand a simple experimental design **SIN 402.** Understand the methods used in a complex experiment **SIN 403.** Identify a control in an experiment **SIN 404.** Identify similarities and differences between experiments **SIN 405.** Determine which experiments utilized a given tool, method, or aspect of design

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Score Range	Scientific Investigation (SIN)
24–27	**SIN 501.** Understand a complex experimental design **SIN 502.** Predict the results of an additional trial or measurement in an experiment **SIN 503.** Determine the experimental conditions that would produce specified results
28–32	**SIN 601.** Determine the hypothesis for an experiment **SIN 602.** Determine an alternate method for testing a hypothesis
33–36	**SIN 701.** Understand precision and accuracy issues **SIN 702.** Predict the effects of modifying the design or methods of an experiment **SIN 703.** Determine which additional trial or experiment could be performed to enhance or evaluate experimental results

Score Range	Evaluation of Models, Inferences, and Experimental Results (EMI)
13–15	**EMI 201.** Find basic information in a model (conceptual)
16–19	**EMI 301.** Identify implications in a model **EMI 302.** Determine which models present certain basic information
20–23	**EMI 401.** Determine which simple hypothesis, prediction, or conclusion is, or is not, consistent with a data presentation, model, or piece of information in text **EMI 402.** Identify key assumptions in a model **EMI 403.** Determine which models imply certain information **EMI 404.** Identify similarities and differences between models

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Score Range	Evaluation of Models, Inferences, and Experimental Results (EMI)
24–27	**EMI 501.** Determine which simple hypothesis, prediction, or conclusion is, or is not, consistent with two or more data presentations, models, and/or pieces of information in text **EMI 502.** Determine whether presented information, or new information, supports or contradicts a simple hypothesis or conclusion, and why **EMI 503.** Identify the strengths and weaknesses of models **EMI 504.** Determine which models are supported or weakened by new information **EMI 505.** Determine which experimental results or models support or contradict a hypothesis, prediction, or conclusion
28–32	**EMI 601.** Determine which complex hypothesis, prediction, or conclusion is, or is not, consistent with a data presentation, model, or piece of information in text **EMI 602.** Determine whether presented information, or new information, supports or weakens a model, and why **EMI 603.** Use new information to make a prediction based on a model
33–36	**EMI 701.** Determine which complex hypothesis, prediction, or conclusion is, or is not, consistent with two or more data presentations, models, and/or pieces of information in text **EMI 702.** Determine whether presented information, or new information, supports or contradicts a complex hypothesis or conclusion, and why

ACT College and Career Readiness Standards for Science are measured in rich and authentic contexts based on science content that students encounter in science courses. This content includes:

LIFE SCIENCE/BIOLOGY

- Animal behavior
- Animal development and growth
- Body systems
- Cell structure and processes
- Ecology
- Evolution
- Genetics
- Homeostasis
- Life cycles
- Molecular basis of heredity
- Origin of life
- Photosynthesis
- Plant development, growth, structure
- Populations
- Taxonomy

PHYSICAL SCIENCE/CHEMISTRY, PHYSICS

- Atomic structure
- Chemical bonding, equations, nomenclature, reactions
- Electrical circuits
- Elements, compounds, mixtures
- Force and motions
- Gravitation
- Heat and work
- Kinetic and potential energy
- Magnetism
- Momentum
- The periodic table
- Properties of solutions
- Sound and light
- States, classes, and properties of matter
- Waves

EARTH AND SPACE SCIENCE

- Earthquakes and volcanoes
- Earth's atmosphere
- Earth's resources
- Fossils and geological time
- Geochemical cycles
- Groundwater
- Lakes, rivers, oceans
- Mass movements
- Plate tectonics
- Rocks, minerals
- Solar system
- Stars, galaxies, and the universe
- Water cycle
- Weather and climate
- Weathering and erosion