Power Up: Science ACT Prep, Week 6

Teresa Lansford, Keiana Cross
Published by *K20 Center*

Time Frame 35

Essential Question(s)

How can I increase my ACT score?

Summary

In this sixth science ACT prep activity, students learn how to use the information in one figure, table, or graph to answer a question about another table figure or graph. First, students engage in a partner activity in which they match a diagram to its description to practice "reading" diagrams. Students will then work with a partner to practice answering questions that involve synthesizing data from multiple sources, similar to what is expected on the ACT. Finally, they will independently apply the skills they have been learning across the series of activities to an ACT-style passage and question set. This is the sixth activity in a 10-week "Power Up" series for ACT Prep.

Learning Goals

- Analyze diagrams and evaluate the information they convey
- Synthesize information from one table or figure to answer questions about another table or figure

Attachments

- AC-Team Up—Science ACT Prep, Week 6 - Spanish.docx
- AC-Team Up—Science ACT Prep, Week 6 - Spanish.pdf
- AC-Team Up—Science ACT Prep, Week 6.docx
- AC-Team Up—Science ACT Prep, Week 6.pdf
- Activity Slides—Science ACT Prep, Week 6.pdf
- Activity Slides—Science ACT Prep, Week 6.pptx
- Diagram Doubles—Science ACT Prep, Week 6 - Spanish.docx
- Diagram Doubles—Science ACT Prep, Week 6 - Spanish.pdf
- Diagram Doubles—Science ACT Prep, Week 6.docx
- Diagram Doubles—Science ACT Prep, Week 6.pdf
- Train of Thought (Teacher Guide)—Science ACT Prep, Week 6.docx
- Train of Thought (Teacher Guide)—Science ACT Prep, Week 6.pdf
- Train of Thought—Science ACT Prep, Week 6.docx
- Train of Thought—Science ACT Prep, Week 6.pdf

Materials

- Activity Slides (attached)
- Diagram Doubles handout (1 set per class and 1 copy for use as answer key; attached)
- AC-Team Up handout (1 per pair of students; attached)
- Train of Thought practice passage (attached; 1 per student)
- Train of Thought (Teacher Guide) document (attached; for teacher use)
- pencils/pens

5 minutes

Introduction

Teacher's Note: ACT Enhancements

The following resource has been updated to better align with the test changes that began in April 2025 for the online test and in September 2025 for the paper-pencil test. Some outside resources linked are based on the previous version of the ACT. Learn more about enhancements to the ACT in 2025.

Teacher's Note

Determine how many cards you will need from the attached **Diagram Doubles** handout prior to class based on the number of students (Each student needs one card). Discard any unneeded pairs. If you have an uneven number of students, make an extra copy of one card and inform students there will be one group of three. The handout is arranged as the key for matching the pairs, so for the class set, cut and shuffle the cards prior to class, but keep a second copy for yourself so you can check answers if needed.

Use the attached **Activity Slides** to introduce the activity. Use **slides 1-4** to introduce the activity, share the essential question, and establish the learning objectives. Let students know that in addition to science passages, the ACT will often include diagrams. The diagrams provide supplemental information to help the understanding of a concept or to provide additional information about how an experiment was set up.

Pass out one card from the Diagram Doubles handout to each student. Let students know that they have either a diagram or a description of a diagram. Share that they will have 3 minutes to try to find their partner who has a card that matches their own. If they have a diagram they are looking for a partner who has the description. If they have the description they will look for a partner with the diagram being described. Share any reminders as to expectations about movement around the classroom. Ask students to sit with their partner once they have found one another. Display **slide 5** and start the timer. Assist students as needed in finding their partners.

15 minutes

Activity

Let students know their diagram partner will be their partner for the remainder of the activity. Explain that sometimes on the ACT a question will require you to use information from one table, graph, or diagram to answer a question about another table, graph, or diagram. This can seem tricky, but if you pay close attention to what the question asks it can help you to zoom in on the exact information you need. Show **slide 6** as an example. The slide displays a table and a sample question about the magnitude of earthquakes and the resulting damage. Ask students, based on the question, what table they should look at first and how to know they are looking in the right place. Move to **slide 7**. This slide shows Table 2. Point out that even though the part of the question describing the damage comes last, it is the table they will need first. Ask which part of this table they need to look at and why. Display **slide 8** which shows Table 2 but zoomed in to only the part they need, along with a Table 1, and the same sample question. Now ask which part of Table 1 they need to zoom in on and how they know they have found the correct part of the table. Show **slide 9** which has only the parts of each table they need to answer the question. Ask students for the correct answer.

Sample Student Response

It is Prague because its magnitude would mean slight building damage, but the population is higher there than in Pawnee.

Point out how we used one table to answer a question about another table. Emphasize once again that reading the passage is not as important as being able to understand how to read the question and tables, which are common in Science ACT questions. Inform students that they will now answer additional questions based on a new, more complex passage with their partners. Pass out the attached **AC-Team Up** handout. Give pairs time to find the correct answers. Answer questions as needed while students work. Display **slide 10** to let students check their work and ask questions as time allows.

15 minutes

Wrap-Up

Let students know that for the last 10 minutes of class they will be working independently to practice the skills they have been learning for the Science section of the ACT. Give them time to return to their desks. Explain that they will have 10 minutes to answer 7 questions. The purpose of practicing is to build testing stamina and keep a pace similar to what they will have on the test. Share that you will give a two minute warning. At that time they should first fill in a guess on any unanswered questions, and then return to those questions and try to find the answers if they have time. Explain this is a good ACT strategy for when they hear the five minute warning because the ACT does not lower your score for incorrect answers. That means it is always better to guess than leave a question blank. Provide each student with the attached **Train of Thought** handout. Show **slide 11** and start the 10 minute timer. Watch the timer and give a verbal two minute warning. At the end of the time, collect the papers as a formative assessment. Use the attached **Train of Thought (Teacher Guide)** document, as needed. Display **slide 12** to celebrate unlocking another achievement.

Next Step

Next week's activity, "Power Up: ACT Science Prep, Week 7," will cover the steps of the scientific process.

Research Rationale

Standardized testing in high schools has long been used as a metric for assessing college readiness and school accountability (McMann, 1994). While there has been debate surrounding the accuracy of such metrics, as well as concerns regarding equity, many institutions of higher education continue to make these scores part of the admissions process (Allensworth & Clark, 2020; Black et al., 2016; Buckley et al., 2020). In addition to admissions, it is important to keep in mind that standardized test scores can also provide students with scholarship opportunities they would not otherwise have (Klasik, 2013). Although the topic of standardized testing continues to be debated, effective test preparation can ensure that our students are set up for success.

With several benefits to doing well on college admissions tests, it is important to consider how best to prepare students for this type of high-stakes test. Students from groups that may historically struggle to find success, such as those in poverty or first-generation college students, especially stand to benefit from effective test preparation (Moore & San Pedro, 2021). The American College Test (ACT) is one option students have for college admissions testing that is provided both at national centers and school sites. Taking the time to understand this test, including the timing, question types, rigor, and strategies for approaching specific questions, can help prepare students to do their best work on test day and ensure their score is a more accurate representation of what they know (Bishop & Davis-Becker, 2016).

Resources

- Allensworth, E. M., & Clark, K. (2020). High school GPAs and ACT scores as predictors of college completion: Examining assumptions about consistency across high schools. Educational Researcher, 49(3), 198-211.
- Bishop, N.S. & Davis-Becker, S. (2016). Preparing examinees for test taking: Guidelines for test developers and test users. 2nd edition. Crocker, L. (Ed). In Handbook of test development (pp. 129-142). Routledge.
- Black, S. E., Cortes, K. E., & Lincove, J. A. (2016). Efficacy Versus Equity: What Happens When States Tinker With College Admissions in a Race-Blind Era? Educational Evaluation and Policy Analysis, 38(2), 336–363. http://www.jstor.org/stable/44984542
- Buckley, J., Baker, D., & Rosinger, K. (2020). Should State Universities Downplay the SAT?. Education Next, 20(3).
- McMann, P. K. (1994). The effects of teaching practice review items and test-taking strategies on the ACT mathematics scores of second-year algebra students. Wayne State University. https://www.monroeccc.edu/sites/default/files/upward-bound/McMannP.-the-effects-of-teaching-practice-review-items-ACT-mathematics-second-year-algebra.pdf
- Klasik, D. (2013). The ACT of Enrollment: The College Enrollment Effects of State-Required College Entrance Exam Testing. Educational Researcher, 42(3), 151–160. http://www.jstor.org/stable/23462378
- Moore, R., & San Pedro, S. Z. (2021). Understanding the Test Preparation Practices of Underserved Learners. ACT Research & Policy. Issue Brief. ACT, Inc. https://files.eric.ed.gov/fulltext/ED616526.pdf