Power Up: Math ACT Prep, Week 3

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Published by *K20 Center*

Time Frame 35 minutes

Essential Question(s)

How can I increase my ACT score?

Summary

In this activity, students will recall perimeter and area and apply their knowledge to ACT-style problems. These problems will require students to think in a way that is expected for college and career readiness. This includes both recalling essential skills and applying knowledge to solve area and perimeter questions in unique ways. This is the third activity in a 10-week "Power Up" series for ACT Prep.

Learning Goals

- Compute the area and perimeter of a rectangle.
- Apply the understanding of area and perimeter to solve problems.

Attachments

- Activity Slides—Math ACT Prep, Week 3.pdf
- Activity Slides—Math ACT Prep, Week 3.pptx
- Exit Ticket—Math ACT Prep, Week 3.docx
- Exit Ticket—Math ACT Prep, Week 3.pdf
- It's-a-Me, the Rectangle—Math ACT Prep, Week 3.docx
- It's-a-Me, the Rectangle—Math ACT Prep, Week 3.pdf

Materials

- Activity Slides (attached)
- It's-a-Me, the Rectangle handout (attached; one per student; printed front only)
- Exit Ticket handout (attached; one-half per student; printed front only)
- Pencil
- Paper
- Calculators
- Graph paper
- Coloring utensils

10 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.

Introduce the activity using the attached **Activity Slides**. Share the essential question on **slide 3** and the learning objectives from **slide 4**.

Display **slide 5** and have each student get out a piece of notebook paper. Introduce the Collective Brain Dump strategy, then have students work in pairs to create a list of ways to describe the term perimeter. Give students approximately one minute to complete this task.

Next, facilitate a whole class discussion and have volunteers share different ways of representing perimeter. Create a comprehensive list on the board, then discuss with the class the efficiency of the different representations. Remind students that the opinion of which is more efficient can differ for different students and that speed is important on the ACT. Encourage students to pick a representation for themselves to commit to memory.

Repeat these steps for area using **slide 6**.

Sample Student Responses:

Perimeter:

- The distance around a rectangle.
- Add up the lengths of all of the sides.
- $P = 2 \cdot (b + h)$
- Add the length and width, then multiply by 2.

Area:

- $A = b \cdot h$
- $A = l \cdot w$
- Area is the space that a region takes up.

Students could also draw pictures or represent perimeter or area differently than the list above.

20 minutes

Activity

Teacher's Note: Calculator Usage

As you and your students progress through this ACT Prep series, please continue to have students use the same calculator from week to week so that students become familiar with one calculator.

Have students get their calculator. Follow regular classroom procedures for this.

Show **slide 7** and give each student a copy of the attached **It's-a-Me, the Rectangle** handout. Have students fold their paper in half along the line, such that they can still read the questions. Direct students' attention to the Part A portion of the handout, and tell them to not yet look at the other half: Part B. Give five minutes for pairs to work through questions 1-2.

Alternative

The purpose of students folding their handout is to prevent them from working ahead. Instead of students folding their handout in half, consider cutting the handout in half and give students the top half (Part A) now then the bottom half (Part B) later.

Display **slide 8** and remind students that on the ACT, they need to be able to efficiently answer questions. Ask the class who thinks they solved the problems most efficiently.

Transition to **slide 9** and ask for volunteers to share approaches for question 1. As a class, try to come to a consensus about the most efficient approach. Remember, there are many different correct ways to approach this problem. Accordingly, there is also more than one way to approach it efficiently. Breaking the region into two rectangles is one such efficient approach, and that can be done in more than one way.

Repeat these steps for question 2 using **slide 11**. Spend approximately five minutes going over questions 1-2. Use the hidden **slides 10** and **12** for sample student responses.

Show **slide 13** and remind students that on the ACT, they should plan to spend one minute per question. Direct their attention to Part B of their handout and tell them that they have two minutes to independently answer questions 3-4. Then start the "2-Minute Timer" on the slide.

When the timer expires, move to **slide 14** and ask the class who thinks they solve question 3 most efficiently. Facilitate a discussion of how to solve the problem, and be sure to let students know that the width is 16.9 cm. Use the hidden **slide 15** for a sample response.

Repeat this for question 4 using **slide 16** and hidden **slide 17**. Spend approximately five minutes reviewing questions 3-4.

Teacher's Note: Guiding the Activity

Consider using this time to let students know that the shapes and illustrations on the ACT are usually drawn to scale. The test will likely include a disclaimer stating that the figures are not necessarily drawn to scale. This is because they are nearly exact, but not perfect—for instance, a computer-generated image of a right angle might have a degree measure of 89.7° and be marked as a 90° angle. Encourage students to rely on the figure being drawn to scale to help make an educated guess when they are stuck on a question or to check the reasonability of their answer.

Optional Addition

If time allows, consider giving students question 5 by unhiding **slide 18**. This question directly relates area to the Algebra 2 topic: parabolas. Students could show their work on the back of their handout. This question could also be used as bellwork for another class period. Use the hidden **slides 19-20** as a sample student response.

If you choose to use this example, you can also give students the tip that if they are ever asked to maximize a space, the answer is often the most perfectly, regular shape, like a square or circle. Squares and circles maximize the area while minimizing the perimeter.

5 minutes

Wrap-Up

Display **slide 21** and use the Exit Ticket strategy to individually assess what students have learned. Explain to students that they will have two minutes to answer two questions. Give each student a copy of the **Exit Ticket** handout and have students keep the paper face down until you start the timer. Once everyone has a copy of the handout, tell them to turn their paper over. Start the timer on the slide.

If time allows, unhide **slide 22** and review the answers with the class. Use the hidden **slides 23-24** for sample student responses.

Remind the class that if they answered one of the two questions correctly that they did great. Remind them that they do not need to answer every question correctly on the ACT to do well.

Collect the Exit Ticket handout to use as a formative assessment.

Before you dismiss, show **slide 25**: *You Powered Up!* and remind students to practice the action they selected on their Goal Setting handout from week 1.

Research Rationale

Standardized testing in high schools has long stood 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 fairness, 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). Aside from admissions, it is also important to keep in mind that standardized test scores can also provide students with scholarship opportunities they wouldn't otherwise have (Klasik, 2013). Though the topic of standardized testing continues to be debated, effective test prep 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. Those 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 time to understand this test including the timing, question types, rigor, and strategies for approaching specific questions can help to 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.
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- 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
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- K20 Center. (2021, September 21). K20 Center 2 minute timer. [Video]. YouTube. https://youtu.be/HcEEAnwOt2c
- 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
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