**AIA K-12 Lesson Guides**

<https://www.aia.org/pages/6319595-k-12-problem-based-lesson-guides>

**Activity Sheet**

[Energy Expertise Activity Sheet >](http://content.aia.org/sites/default/files/2020-09/Activity-sheets_Middle-High_energy-expertise_0.pdf)

**Background**

You work for a window company and need to collaborate with an architect on the correct window-to-wall ratio for a new building. You will demonstrate your understanding of energy design by presenting the window-to-wall calculations and explaining how you created the most energy efficient building possible.

**Problem**

You are an employee at Wendell's Window Company. The contract you are currently working on is with a new business coming to town that will be constructing a brand new building. The client would like you to collaborate with their architect on the correct number and type of windows they need to ensure that the building is an energy efficiency structure.



INTERDISCIPLINARY SCIENCE AND ENGINEERING COMPLEX (LEARN MORE ABOUT THIS PROJECT IN THE LEARNING RESOURCES TAB)

**Learning Resources**

* [Designing for Energy >](https://www.aia.org/showcases/6076709-designing-for-energy)
* [Interdisciplinary Science and Engineering Complex >](https://www.aia.org/showcases/6129237-interdisciplinary-science-and-engineering-)

**Hunker**

* [How to Calculate a Wall-to-Window Ratio >](https://www.hunker.com/13412499/how-to-calculate-a-wall-to-window-ratio)

**US Department of Energy**

* [Window-to-Wall Ratio >](https://help.buildingenergyscore.com/support/solutions/articles/8000026042-window-to-wall-ratio)

**Scholastic**

* [Ratio Design Challenge >](http://www.scholastic.com/unexpectedmath/ratio-challenge/teachers-guide.htm)

**PBS**

* [NOVA Labs: Energy Lab Guide >](https://www.pbs.org/wgbh/nova/labs/about-energy-lab/educator-guide/)

**Hands-On**

* [Exploring Energy >](https://www.teachengineering.org/curricularunits/view/ucd_energy_unit)
* [School Building Survey >](https://www.eia.gov/kids/for-teachers/lesson-plans/pdfs/SchoolBuildingSurveyIntermediate.pdf)
* [Sun Versus Shade Experiment >](https://www.startwithabook.org/blog/sun-versus-shade-experiment)
* [Charting the Sun's Location >](https://www.permaculturenews.org/2015/10/23/charting-the-suns-motion-in-relation-to-your-home-and-permaculture-site/)
* [Insulation Activity >](https://research.engr.utexas.edu/igertsustainablegrids/images/stories/docs/group%20project%20lesson%20plan%20final.pdf)
* [Peak Lab - Insulation >](http://sites.tufts.edu/stompactivitydatabase/files/formidable/Unit-5-Insulation-Teacher-Lab-Pages-FINAL.pdf)

**Video Resources**

* [AIA Film Challenge >](https://aiafilmchallenge.org/)