

Mathematics & Science Cross-Curricular Extension Activity Suggestions

for THE BRIDGE HOME by Padma Venkatraman

Chapters 1-7

Explore time around the globe. With high school students, you may wish to explore mathematics problems that involve time differences - such as, for example, taking a hypothetical flight to India and looking at what time you'd arrive in India if you left at the beginning versus the end of your school day. With middle grade students you might try simpler problems, such as just looking at the time difference and trying to guess what time it might be right now, in Chennai, India. With upper elementary students, you might just introduce the concept that time is different around the globe and try to have them guess whether Viji would be asleep or awake if she were in India, show them the international date line, and explain how time changes with longitude.

Chapters 8-15

Kolams are intricate mathematical patterns. With high school students, you may wish to explore the connections between Fibonacci (or Hemachandra) numbers and Kolam patterns. With middle grade students, you may just want to speak about different types of symmetry shown in different kolam patterns. With upper elementary students, you may just want to draw symmetrical Kolams using different numbered grids. Here is a link to Dr. S. Naranan's papers on Kolams and Fibonacci numbers: <http://vindhiya.com/Naranan/Fibonacci-Kolams/>. Papers that can be downloaded as pdfs are listed on the site and at the end of each paper there are traditional and non-traditional Kolam patterns that you can copy to use with your students. Photographic resources that I've shared also contain Kolams.

Chapters 16-22

Viji speaks about saving money, which could be an excellent way to introduce mathematical concepts such as compound interest, simple interest and inflation with high school students. Middle graders/middle schoolers should be able to understand the concept of interest and may be introduced to the idea that money stored in the bank may accumulate interest. With upper elementary students, try simple arithmetic problems relating to the buying and selling of Rukku's bead necklaces.

Chapters 23-30

The changing seasons and the impending rains herald trouble for Viji, Rukku, Muthu and Arul. With high school students, this might be a lead in to discussing climate and weather patterns around the globe. With middle school-middle grade students as well as upper elementary students, this might instead lead to a discussion on weather and climate locally and nationally and globally, including features of tropical versus temperate zones and how climate influences vegetation and so on.

Chapter 31-37

Illness and the spread of disease is a scientific topic that can be tackled at different levels. For high schoolers, one might speak about vectors such as mosquitoes, and discuss the use of insecticides such as DDT, as well as current pesticides and chemicals in the environment, as well as medication and an exploration of how some pharmaceuticals work, biochemically. With younger readers, discuss health issues in an age-appropriate fashion, scaled down as needed.

Chapters 38-44

Building bridges is an overarching - :) - science tie-in. Investigate how to build bridges, actually, physically, in an engineering sense, with experiment designed according to student age.

Explore topics related to recycling - how are products actually recycled? What happens if plastics are burned?

Encourage students to learn about protecting the environment, using sustainable resources, and cutting down on waste - looking at these issues with a scientific angle.