Re-Zoom

Purpose:

This is an activity based on the picture book ***Re-Zoom***

Achievement Objectives:

GM4-8: Use the invariant properties of figures and objects under transformations (reflection, rotation, translation, or enlargement).
AO elaboration and other teaching resources

Specific Learning Outcomes:

1. Students will be able to express the enlargement relationship between two figures in multiplicative terms.
2. Students will be able to transform an existing image to a specified enlargement.

Description of mathematics:

1. The enlargement of figures is expressed as a multiplicative relationship

Required Resource Materials:

Re-Zoom by Istvan Banyai
Laminated coloured photocopies of the book pages
Rulers
Grid paper
Old magazines or photos

Activity:

Zoom in! Zoom out!
This activity is based on the picture book ***Re-Zoom***

Author: Istvan Banyai
Illustrator: Istvan Banyai
Publisher: Puffin (1995)
ISBN: 0-14-055694-X

Summary:
This is a wordless book that takes the reader on a journey of ever enlarging (or shrinking if you read it backwards!) landscapes. As the pictures feed from one new context to the next the reader has to adjust their perspective and identify the common element between snapshots trying to build a narrative thread to connect the pages of the book.

Lesson Sequence:

1. Prior to reading, set the context for the book by discussing the students' experiences with technology, tools, and devices associated with enlargement and magnification. You can have some photocopies of an image that has been enlarged on the photocopier several times over (take an A4 image, enlarge by 50%, print, then take that 2nd image and do the same and repeat until you have a 4 or 5 images that show a sequence of "zooming-in and zooming out".
2. Share the book with your students moving through the book from front to back. Then share the book moving from the back to the front. Discuss the enlargement as being a whole number factor (getting larger) moving one way and a fractional factor (getting smaller) moving the other.
3. Next, hand out laminated coloured copies of the book's pages and ask students to work together to put them in order as to the sequence of enlargement. Spread the sequence out in a line on the floor or across the whiteboard. Discuss what the factor of enlargement might be between various pictures.
   How could we figure this out exactly?
4. Support students to select and measure an element of one figure within the picture that also appears in the next picture and then compare the measurements.

By what factor has the artist enlarged this element?
Does the same enlargement relationship hold for other elements in the two pictures (has the artist been consistent)?
Have students measure and compare elements in several pictures.

5. Next, or in a new session, ask students to select a simple image from a magazine or other image resource and create their own Zoom-In Zoom-Out page. Challenge them to include a details in the zoomed image that change the context of the picture but making sure the mathematics stays true to the enlargement. That is, if a bridge is enlarged ×10 or ×1/10 then all other elements common to the two drawings must also be enlarged by the same factor. Demonstrate how this can be done with creating gridlines across the original and then mapping the image onto a new set of gridlines that enlarge it or by using the DLO "Measuring" in L4 Geometry.