Supertall Skyscrapers

A scale drawing is an enlarged or reduced drawing that is similar to an actual object or place. Blueprints and maps are examples of scale drawings. The ratio of a distance in the drawing to the actual distance is the scale of the drawing.

Problem 1 – Verifying that a drawing is to scale

On page 1.4, you will see a model of the Sears Tower. Measure the height of the tower from the ground to the roof and from the ground to the tip of the antennae. To do this, drag the white points on the line segments to the top of the tower and measure the length of the segments.

- What is the model tip height?

- What is the model roof height?

- Write and solve a proportion to verify that the heights are proportional.

- Is the drawing to scale?

  ☐ yes   ☐ no

- What is the scale of the Sears Tower drawing?

  1 cm = _____ m

Use the height of the Sears Tower to measure the Taipei 101 and Empire State Building. On page 1.8, find the height of the Taipei 101 model by dragging the white dot. Then use page 1.9 to substitute values into the proportion and solve by cross multiplying.

- Write and solve the proportion to find the actual height of Taipei 101. What is the actual height?

On page 1.10, find the height of the Empire State Building model.

- What is the model height of the Empire State Building?

- Write and solve a proportion to find the actual height of the Empire State Building. What is the actual height?

Problem 2 – Changing the scale

Go back to page 1.4. Choose **Show Scale** from the View menu. Modify the scale to match the scale you calculated.

- What do you notice about the new model heights and the actual heights?

Repeat this process for Taipei 101 and the Empire State Building.

Problem 3 – Are you to scale?

Next, you will create a scale drawing of yourself.

- What is your height?

- Use the *Scratchpad* to convert your height into meters. (1 m = 3.281 ft)

On page 3.4, you will see the scale drawing of a lighthouse and a stick figure. Drag the white point on the left side of the lighthouse to find the height of the lighthouse.

- Write and solve a proportion to find your model height. Change your model height on page 3.4 to reflect this calculation.