Objective
Students will predict dimensions on an enlarged scale drawing of an image and then create the scale drawing.

Grouping
individual students (suggested)

Materials
• 1 frame from a comic strip per student
  (approximately 1 to 2 inches square in size)
• 1 centimeter ruler per student
• 1 sheet of graph paper per student (4 squares per inch)

Teacher Preparation
Be sure that students have the required materials. Students may bring a comic strip from home or use a frame from the comic strip provided.

Key Concepts
Students will:
• choose a scale for a scale drawing of an image
• predict measurements in a scale drawing before drawing it
• make a scale drawing of an image
• compare predicted measurements in a scale drawing to the actual measurements in the completed drawing

Encourage students to use an equation or a proportion to help them predict measurements on the scale drawing to be sure they are interpreting the scale ratio correctly.

INSTRUCTIONS
Choose a single frame from the comic strip below or from another comic strip of your own. The comic strip below has three frames.

Carefully draw a 1 cm grid on the comic, starting at the bottom left corner of the frame.

Choose a scale that will enlarge the comic, but will allow the drawing to fit on an 8½ in. × 11 in. sheet of quarter-inch graph paper. An example of a scale is 1 cm:1.25 in. Record the scale below.

Scale ________________________________ Answers will vary. Check students' answers.

<table>
<thead>
<tr>
<th>Visual Element</th>
<th>Original Measurement</th>
<th>Predicted Measurement</th>
<th>Scale Drawing Measurement</th>
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</table>

Measure four visual elements of your original comic and record the measurements in the table in Step 3.

Use your scale to predict corresponding measurements for the four visual elements on the scale drawing. Record the predicted measurements in the table.

WARM-UP EXERCISES
A scale drawing of the first floor of a house has a scale of 3 cm:2 m. Find the length and width in the actual house of a rectangular region on the scale drawing with the given dimensions.

1. length = 6.75 centimeters; width = 4.5 centimeters
   actual length = 4.5 m; width = 3 m

2. length = 6 centimeters; width = 2.25 centimeters
   actual length = 4 m; width = 1.5 m

3. length = 7.5 centimeters; width = 5.4 centimeters
   actual length = 5 m; width = 3.6 m
STEP 6: Use your chosen scale and the grid lines to help you draw the scaled-up comic square by square on an 8 ½ in. x 11 in. sheet of quarter-inch graph paper. Depending on the size of your comic, the scale you use, and the shape of the comic, the scaled-up comic may not fill the page.

STEP 7: Measure corresponding lengths on the scaled-up drawing for the visual elements previously measured. Record the measurements in the last column of the table.

STEP 8: Compare your predicted measurements to the scale drawing measurements.

TEACHER NOTES
• Discussion Ask students what length on the original comic corresponds to one quarter-inch grid square on the scale drawing if the scale is 1 cm:1.25 in. Discuss the possible advantages of using such a scale. Sample answer: At this scale, 2 mm on the original comic corresponds to one grid square on the scale drawing. This makes it easier to produce an accurate drawing.
• Extension Have students exchange their scale drawings and draw new scale drawings from each other’s drawings at a reduced scale.
• Whole Class Variation Use the given comic. Pass one or two sheets of graph paper around the class and have each student complete just one grid square at a scale you provide.

Instructions
STEP 1: Students choose a single frame from the comic strip shown in Step 2 or from another comic strip of their own choosing.

STEP 2: Students carefully draw a 1 cm grid on the comic, starting at the bottom left corner of the frame. A sample is given on the student page.

STEP 3: Students choose and record a scale that will enlarge the comic, but will allow the drawing to fit on an 8 ½ in. x 11 in. sheet of quarter-inch graph paper. An example of a scale is 1 cm:1.25 in.

STEP 4: Students measure four visual elements of their original comic and record the measurements in the table in Step 3.

STEP 5: Students use their scales to predict corresponding measurements for the four visual elements on the scale drawing. Students record the predicted measurements in the table.

STEP 6: Students use their chosen scale and the grid lines to help them draw the scaled-up comic square by square on an 8 ½ in. x 11 in. sheet of quarter-inch graph paper. Depending on the size of their comic, the scale they use, and the shape of their comic, students’ scaled-up comics may not fill the page.

STEP 7: Students measure corresponding lengths on the scaled-up drawing for the visual elements previously measured and record the measurements in the last column of the table.

STEP 8: Students compare their predicted measurements to the scale drawing measurements.
Activity

Scale a Comic

INSTRUCTIONS

**STEP 1**
Choose a single frame from the comic strip below or from another comic strip of your own. The comic strip below has three frames.

**STEP 2**
Carefully draw a 1 cm grid on the comic, starting at the bottom left corner of the frame.

**STEP 3**
Choose a scale that will enlarge the comic, but will allow the drawing to fit on an 8 1/2 in. × 11 in. sheet of quarter-inch graph paper. An example of a scale is 1 cm : 1.25 in. Record the scale below.

Scale ________________

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**STEP 4**
Measure four visual elements of your original comic and record the measurements in the table in Step 3.

**STEP 5**
Use your scale to predict corresponding measurements for the four visual elements on the scale drawing. Record the predicted measurements in the table.
STEP 6  Use your chosen scale and the grid lines to help you draw the scaled-up comic *square by square* on an 8.5 in. x 11 in. sheet of quarter-inch graph paper. Depending on the size of your comic, the scale you use, and the shape of the comic, the scaled-up comic may not fill the page.

![Comic drawing](image)

STEP 7  Measure corresponding lengths on the scaled-up drawing for the visual elements previously measured. Record the measurements in the last column of the table.

STEP 8  Compare your predicted measurements to the scale drawing measurements.