In problems that scale up or scale down using tables, we will use models to find the actual dimensions. Standard and Mathematical Practice

**Real Life Application**

<table>
<thead>
<tr>
<th>Scale Factor: 6 ft</th>
<th>10 in</th>
</tr>
</thead>
<tbody>
<tr>
<td>18</td>
<td>15</td>
</tr>
<tr>
<td>12</td>
<td>9</td>
</tr>
<tr>
<td>16</td>
<td>3</td>
</tr>
</tbody>
</table>

**Blueprints (ft)**

- Draw the garden with dimensions 12 by 18 ft.
- Label the sides appropriately.
- Use the actual garden as a reference to find the dimensions.
- Use the scale factor to calculate the actual sizes.

**Drawing of Garden Bed**

- Draw a rectangle to represent the garden bed.
- Label the length and width accordingly.
- Scale drawing:
  - **Length**: 12 in
  - **Width**: 18 in

**Ratio and Proportions**

- \( \frac{12}{18} = \frac{2}{3} \)
- \( \frac{12}{15} = \frac{4}{5} \)
- \( \frac{18}{27} = \frac{2}{3} \)

- \( \frac{3}{4} \) vs. \( \frac{4}{6} \)
- \( \frac{1}{2} \) vs. \( \frac{2}{4} \)
- \( \frac{2}{3} \) vs. \( \frac{3}{4} \)

- **Relationships**
  - \( \frac{2}{3} \) to \( \frac{3}{4} \)
  - \( \frac{1}{2} \) to \( \frac{2}{4} \)
  - \( \frac{2}{3} \) to \( \frac{3}{4} \)

- **Formulas**
  - \( \text{Area} = \text{length} \times \text{width} \)
  - \( \text{Volume} = \text{length} \times \text{width} \times \text{height} \)

- **Notes**
  - \( \text{Area} = \text{length} \times \text{width} \)
  - \( \text{Volume} = \text{length} \times \text{width} \times \text{height} \)

- **Scales**
  - \( \frac{1}{4} \) in = 1 ft
  - \( \frac{1}{2} \) in = 1 ft
  - \( \frac{1}{8} \) in = 1 ft

- **Remember**
  - Always check units and scales.
  - Use appropriate formulas for area and volume.

- **Math Vocabulary**
  - **Geometry**
  - **Operations**
  - **Proportions**
  - **Formulas**
  - **Scales**
Unit 4: Geometry

CCSSM:
7.G.1 - Scale drawings
7.G.2 - Draw geometric shapes with conditions
7.G.3 - 3D figures from cross sections of 3D figures
7.G.4 - Find unknown angles

Math Practices being emphasized:
MP.4 Modeling
MP.5 Using Tools
MP.2 Reasoning

Essential Questions
How can you use scale drawings to solve problems?
How can you draw shapes that satisfy given conditions?
How can you identify cross sections of 3D figures?
How can you use angle relationships to solve problems?

Pre and Post Assessments
Metacognition Boxes
GeoMath Are You Ready? Lesson Quiz Final Unit Test

Key Concepts
Scale factors
Scaling up/down
Drawing triangles from conditions
Describe 2-D figures from 3-D figure cross sections
Solve for unknown angles in figures

Visual Models of Concepts

Algorithm/Diagrams

Connections (Real World Applications)
Engineers
Architects
Construction
Map Makers
Raccoon Designers
Game Animation
Language Functions/Structures

Objectives

Explain

The scale factor tells us __________.

Compare

Angles tell _______ about triangles, but side lengths tell _______.

Describe

This 3-D figure has a _______ in this cross-section.

Scale (Drawing)  angles
ratio
proportions
similar
dimensions

Vocabulary

angles
rectangle
unique triangle
congruent (angles)
oval
radius
face

MC

Vertigo

Aim4s3

Focus and Motivation

Video/Animation

Brainpop
Similar Figures
Transformations
Scale Drawings

StudyJams

Congruent Figures

Literature

Pythagoras and the Ratios
by Julie Ellis

What's Your Angle
by Julie Ellis

Sicumference and the
Dragon of Pi
by Cindy Neuschwander

Cut Down to Size at High Noon
by Scott Sundby

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