



## Topic C:

## Scale Drawings

## 7.RP.A.2b, 7.G.A.1

|                            |                                                                    |                                                                                                                                                                                                                                  |
|----------------------------|--------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Focus Standard:</b>     | 7.RP.A.2                                                           | Recognize and represent proportional relationships between quantities.<br>b. Identify the constant of proportionality (unit rate) in tables, graphs, equations, diagrams, and verbal descriptions of proportional relationships. |
|                            | 7.G.A.1                                                            | Solve problems involving scale drawings of geometric figures, including computing actual lengths and areas from a scale drawing and reproducing a scale drawing at a different scale.                                            |
| <b>Instructional Days:</b> | 4                                                                  |                                                                                                                                                                                                                                  |
| <b>Lesson 12:</b>          | The Scale Factor as a Percent for a Scale Drawing (P) <sup>1</sup> |                                                                                                                                                                                                                                  |
| <b>Lesson 13:</b>          | Changing Scales (S)                                                |                                                                                                                                                                                                                                  |
| <b>Lesson 14:</b>          | Computing Actual Lengths from a Scale Drawing (P)                  |                                                                                                                                                                                                                                  |
| <b>Lesson 15:</b>          | Solving Area Problems Using Scale Drawings (P)                     |                                                                                                                                                                                                                                  |

In Lesson 12, students extend their understanding of scale factor from Module 1 to include scale factors represented as percents. Students know the scale factor to be the constant of proportionality, and they create scale drawings when given horizontal and vertical scale factors in the form of percents (**7.G.A.1**, **7.RP.A.2b**). In Lesson 13, students recognize that if Drawing B is a scale drawing of Drawing A, then one could also view Drawing A as being a scale drawing of Drawing B; they compute the scale factor from Drawing B to Drawing A and express it as a percentage. Also in this lesson, students are presented with three similar drawings—an original drawing, a reduction, and an enlargement—and, given the scale factor for the reduction (as a percentage of the original) and the scale factor for the enlargement (as a percentage of the original), students compute the scale factor between the reduced image and the enlarged image, and vice-versa, expressing each scale factor as a percentage. In Lesson 14, students compute the actual dimensions when given a scale drawing and the scale factor as a percent. To solve area problems related to scale drawings, in Lesson 15, students use the fact that an area,  $A'$ , of a scale drawing is  $k^2$  times the corresponding

<sup>1</sup> Lesson Structure Key: **P**-Problem Set Lesson, **M**-Modeling Cycle Lesson, **E**-Exploration Lesson, **S**-Socratic Lesson

area,  $A$ , in the original picture (where  $k$  is the scale factor). For instance, given a scale factor of 25%, students convert to its fractional representation of  $\frac{1}{4}$  and know that the area of the scale drawing will be  $\left(\frac{1}{4}\right)^2$  or  $\frac{1}{16}$  the area of the original picture and use that fact to problem solve.