LESSON 6

Scale Drawings

MATH CONTENT TOPICS: Q.3.b, Q.3.c
MATH PRACTICES: MP.1.a, MP.1.b, MP.4.b

1 Learn the Skill

When corresponding angles and corresponding sides of two figures are equal, the figures are exactly the same shape and size. These are known as **congruent figures**. When corresponding angles of two figures are equal but the lengths of their corresponding sides are proportional, the figures have the same shape but not the same size. These are known as **similar figures**.

Scale drawings, such as those involving maps and blueprints, are similar figures. A **scale factor** is the ratio of a dimension in a scale drawing to the corresponding dimension in an actual drawing or in reality. Ratios can be used to determine the scale factor of a drawing. Proportions can be used to determine an unknown dimension in an actual or scale drawing, given the scale factor and the corresponding dimension.

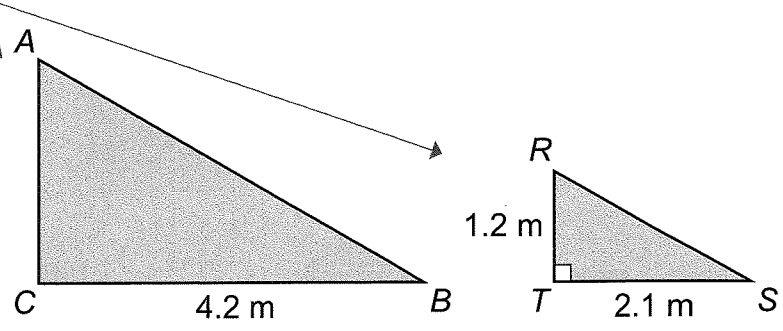
2 Practice the Skill

By practicing the skill of proportional reasoning, you will improve your study and test-taking abilities, especially as they relate to the GED® Mathematical Reasoning Test. Study the information and figures below. Then answer the question that follows.

a When angles or line segments of two figures correspond, they are in the same position. Angle C of $\triangle ABC$ corresponds to $\angle T$ of $\triangle RST$. Angle B corresponds to $\angle S$. Similarly, $\overline{AC}$ corresponds to $\overline{RT}$, and $\overline{BC}$ corresponds to $\overline{ST}$.

b The symbol $\cong$ means "is congruent to." The symbol $\sim$ means "is similar to." When saying that two figures are congruent or similar, name corresponding parts in the same order. For example, $\triangle BCA \sim \triangle STR$.

Triangles ABC and RST are similar.



1. What is the length of $\overline{AC}$?

   A. 1.2 m
   B. 2.1 m
   C. 2.4 m
   D. 3.2 m

TEST-TAKING TIPS

In question 1, we are told that the triangles are similar. A proportion can be written to solve for the missing length. A sample proportion for the figures is: $\frac{x}{1.2} = \frac{4.2}{2.1}$.

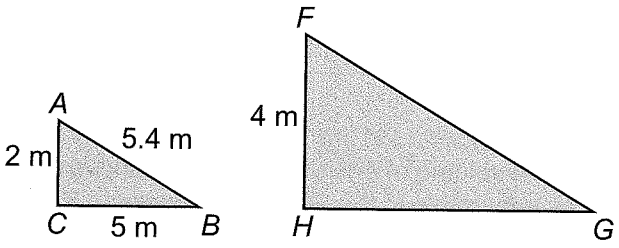
UNIT 4

3 Apply the Skill

Spotlighted Item: FILL-IN-THE-BLANK

DIRECTIONS: Study the figures, read each question, and fill in the answer in the box.

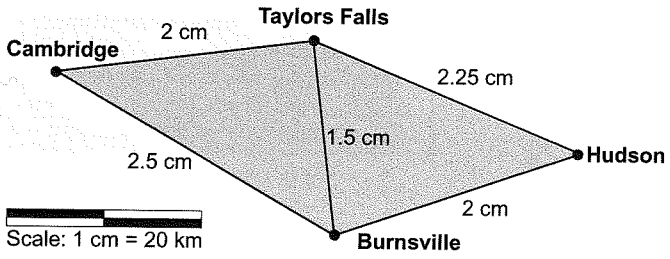
Triangle *ABC* and triangle *FGH* are similar figures.



2. What is the length of $\overline{FG}$?

3. What is the perimeter of ΔFGH?

DIRECTIONS: Study the figure, read the question, and choose the **best** answer.



4. Jack drove from Cambridge to Burnsville. Pedro drove from Hudson to Burnsville. How much farther did Jack drive than Pedro?

A. 0.5 km
B. 10 km
C. 40 km
D. 50 km

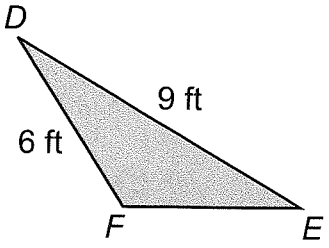
DIRECTIONS: Read each question, and choose the **best** answer.

5. Erika drove from Plymouth to Manchester and back again. On a map, these two cities are 2.5 cm apart. If the map scale is 1 cm:6 km, how many kilometers did she drive?

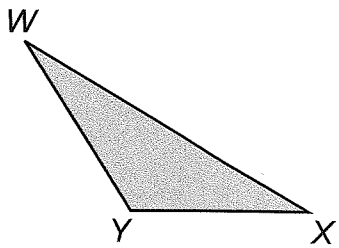
A. 2.4
B. 8.5
C. 15
D. 30

DIRECTIONS: Study the figures, read the question, and choose the **best** answer.

Triangles 1 and 2 shown below are congruent. The lengths of two sides of Triangle 1 are given.



Triangle 1



Triangle 2

6. If the perimeter of Triangle 1 is 19 ft, what is the length of $\overline{XY}$?

A. 4 ft
B. 6 ft
C. 9 ft
D. 19 ft

7. A furniture maker made a model of a table design. The model of the table is 12 inches long and 4 inches wide. The actual table will be 60 inches long. What is the scale factor of the actual table?

A. 5
B. 6
C. 15
D. 16

UNIT 4