Biographical Note

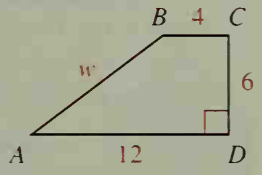
R. Buckminster Fuller

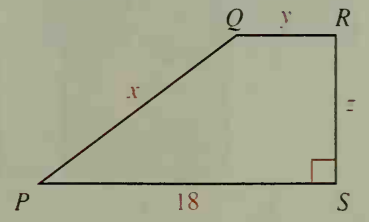
The early curiosity shown by R. Buckminster Fuller (1895–1983) about the world around him led to a life of invention and philosophy. As a mathematician he made many contributions to the fields of engineering, architecture, and cartography. His ultimate goal was always "to do more with less." Thus his discoveries often had economic and ecological implications.

Fuller's inventions include the geodesic dome (see pages 505 and 506), the 3-wheeled Dymaxion car, and the Dymaxion Air-ocean World Map on which he was able to project the spherical earth as a flat surface without any visible distortions. He also designed other structures that were based upon triangles and circles instead of the usual rectangular surfaces.

Mixed Review Exercises

Trapezoid *ABCD* is similar to trapezoid *PQRS*.





1. Find the scale factor of the trapezoids.
2. Draw an altitude from point *B* and use the Pythagorean Theorem to find the value of *w*.
3. Find the values of *x*, *y*, and *z*.
4. **a.** Find the perimeter of each trapezoid.
   b. Find the ratio of the perimeters.
   c. Compare the ratio of the perimeters to the scale factor you found in Exercise 1.
5. **a.** Find the area of each trapezoid.
   b. Find the ratio of the areas.
   c. Compare the ratio of the areas to the scale factor you found in Exercise 1.
6. For each of the following, complete the statement: All $\_\_?\_\_$ are similar. Classify the statement as true or false.
   a. squares
   b. rectangles
   c. circles
   d. rhombuses
   e. right triangles
   f. equilateral triangles
   g. regular pentagons
   h. isosceles trapezoids