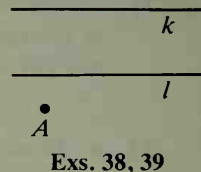


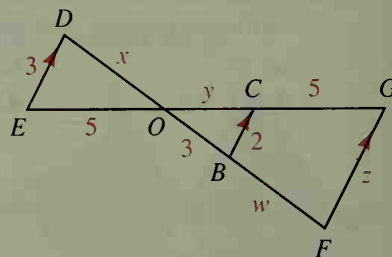
- C 38.** Given: Parallel lines l and k and point A .
- Construct an equilateral $\triangle ABC$ with B on k and C on l using the following method.
Step 1. Rotate l through 60° about A and let B be the point on k where the image of l intersects k . (The diagram for Exercise 35 may be helpful in rotating l .)
Step 2. Let point C on l be the preimage of B .
 - Explain why $\triangle ABC$ is equilateral.
 - Are there other equilateral triangles with vertices at A and on l and k ?
- 39.** Given the figure for Exercise 38, construct a square $AXYZ$ with X on k and Z on l .



Mixed Review Exercises

Given $\overline{ED} \parallel \overline{BC} \parallel \overline{FG}$. Complete the statements.

- $\triangle OBC$ is similar to $\triangle \underline{\hspace{1cm}}$ and $\triangle \underline{\hspace{1cm}}$.
- The scale factor of $\triangle OBC$ to $\triangle ODE$ is $\underline{\hspace{1cm}}$.
- Find the values of x , y , z , and w .
- The scale factor of $\triangle ODE$ to $\triangle OFG$ is $\underline{\hspace{1cm}}$.
- The ratio of the areas of $\triangle OBC$ and $\triangle ODE$ is $\underline{\hspace{1cm}}$.
- The ratio of the areas of $\triangle ODE$ and $\triangle OFG$ is $\underline{\hspace{1cm}}$.
- The ratio of the areas of $\triangle OBC$ and $\triangle OFG$ is $\underline{\hspace{1cm}}$.



14-5 Dilations

Reflections, translations, glide reflections, and rotations are isometries, or *congruence* mappings. In this section we consider a transformation related to *similarity* rather than congruence. It is called a **dilation**. The dilation $D_{O,k}$ has center O and nonzero scale factor k . $D_{O,k}$ maps any point P to a point P' determined as follows:

- If $k > 0$, P' lies on \overrightarrow{OP} and $OP' = k \cdot OP$.
- If $k < 0$, P' lies on the ray opposite \overrightarrow{OP} and $OP' = |k| \cdot OP$.
- The center O is its own image.

If $|k| > 1$, the dilation is called an **expansion**.
 If $|k| < 1$, the dilation is called a **contraction**.

A developing leaf undergoes an expansion, keeping approximately the same shape as it grows in size.

