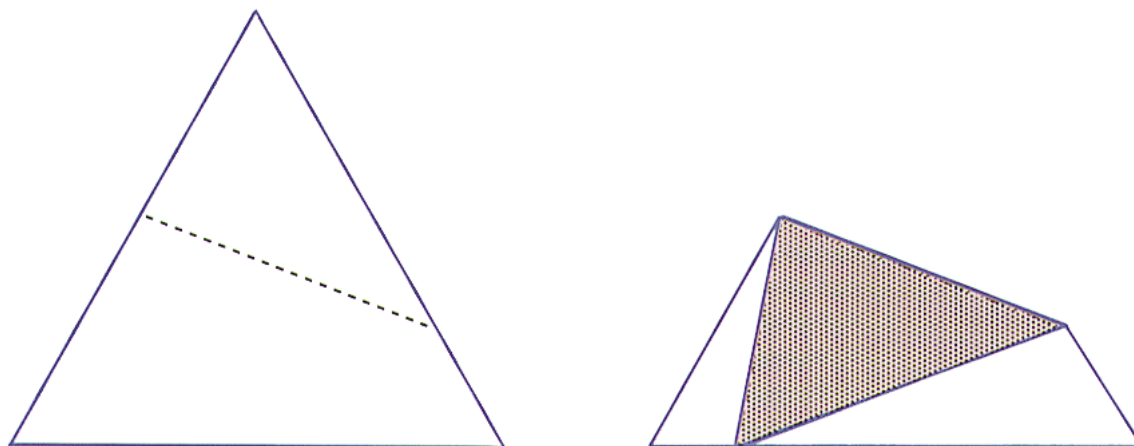


## The Folded Triangle

## Problem-of-the-Week

### The Problem

An equilateral triangle with sides of 15 units is folded as shown. The top vertex touches a point 3 units to the right of the left vertex. Find the length of the crease in the folded triangle.



### Strategies and Hints

1. Trace the right figure. Extend the left and right line segments to reconstruct the original equilateral triangle.
2. Label the top side of the shaded triangle  $a$ , the right side  $b$ , and the left side  $c$ .
3. Each side of the equilateral triangle is divided into two parts. Label these six lengths with either a number or with an algebraic expression that contains  $a$ ,  $b$ , or  $c$ .
4. The cosine of  $60^\circ$  is  $\frac{1}{2}$ . You will need to use the Law of Cosines three times to solve the problem.