



## Problem of the Week

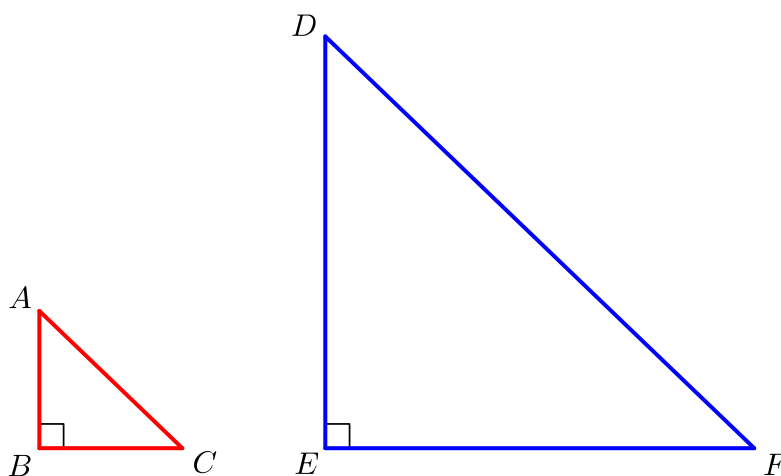
### Problem C

### Scaling Up

A student constructs a right-angled triangle,  $\triangle ABC$ , with an area of  $6 \text{ cm}^2$ .

She constructs a second triangle,  $\triangle DEF$ , whose side lengths are exactly three times the lengths of the sides of her original triangle. That is,  $DE = 3AB$ ,  $EF = 3BC$  and  $DF = 3AC$ .

Given this information, determine the area of  $\triangle DEF$ .



It may be helpful to notice that  $\triangle ABC$  and  $\triangle DEF$  are *similar*. The symbol for similarity is “ $\sim$ ”.

Two triangles are similar if their corresponding side lengths are in the same ratio. That is,

$$\text{If } \frac{AB}{DE} = \frac{BC}{EF} = \frac{AC}{DF}, \text{ then } \triangle ABC \sim \triangle DEF$$

When two triangles are similar, it is also true that corresponding angles are equal. That is,

$$\begin{aligned} \text{If } \triangle ABC \sim \triangle DEF, \text{ then } \angle ABC &= \angle DEF, \\ \angle BCA &= \angle EFD, \text{ and} \\ \angle CAB &= \angle FDE. \end{aligned}$$

**STRANDS** GEOMETRY AND SPATIAL SENSE, MEASUREMENT

