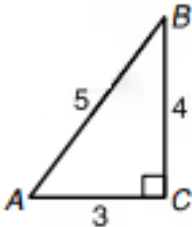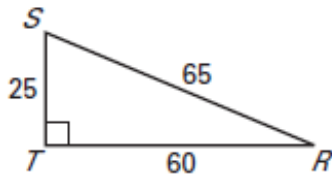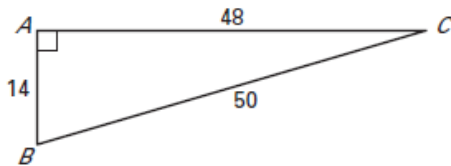| **Tangent Ratio**	
Let $\triangle ABC$ be a right triangle with acute $\angle A$, then the tangent of $\angle A$ (abbreviated tan$A$) is defined as: $$\tan A = \frac{length\ of\ leg\ opposite\ \angle A}{length\ of\ leg\ adjacent\ to\ \angle A}$$	(right triangle with vertices A, B, C; right angle at C; side $AB = 5$, side $BC = 4$, side $AC = 3$)

Example 1 :

Find tan S and tan R. Write each answer as a fraction and as a decimal rounded to four places.

(right triangle with vertices S, T, R; right angle at T; $ST = 25$, $SR = 65$, $TR = 60$)

Example 2 :

Find tan B and tan C. Write each answer as a fraction and as a decimal rounded to four places.

(right triangle with vertices A, B, C; right angle at A; $AC = 48$, $AB = 14$, $BC = 50$)

When given an acute angle in a right triangle along with the length of one leg, we can use the tangent ratio to find the length of a missing leg ☺
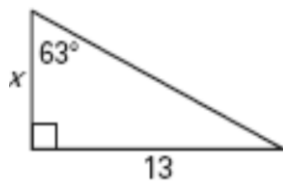
Example 3: Find a leg length
Find the value of x.
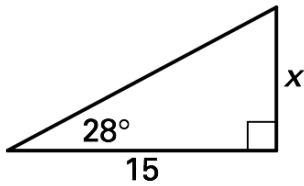
Example 4 : Find the perimeter and area
Find the perimeter and area of the triangle. Round to the nearest tenth.

Example 5 : Estimate height using tangent
Find the height h of the lighthouse to the nearest foot.