# CONNECTING AND COMMUNICATING WHAT WE KNOW ABOUT: **RELATED RATES**

## **VERBAL SITUATION**

A ladder 25 feet long is leaning against the outside wall of a house. The base/bottom of the ladder is pulled away from the wall at a rate of 2 feet per second.

## **DRAWING**

Make a sketch of the situation, labeling all variables and/or relevant quantities

## **EQUATIONS**

(a) Write an equation that relates the relevant variables of the problem situation:

(b) Write the general calculus equation that relates the rates of change of these variables.

## **TABLE**

Fill in the table showing how fast the top of the ladder moves down the wall, when its base is x feet from the wall.

Distance of base of ladder from the wall	Rate at which ladder moves down the wall
Х	
7	
15	
24	

#### **ANALYSIS**

(a) Consider the triangle formed by the side of the house, the ladder and the ground. Find the rate at which the area of the triangle is changing when the base of the ladder is seven feet from the wall.

(b) Find the rate at which the angle between the ladder and the wall of the house is changing when the base of the ladder is 7 feet from the wall.