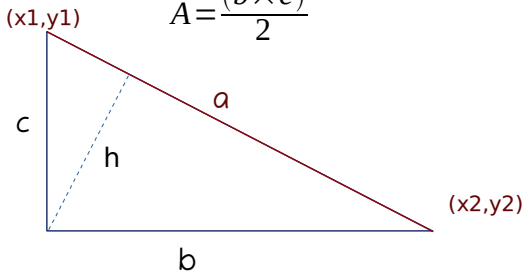
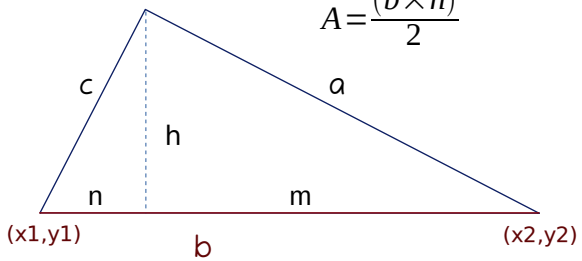
Mathematics-logic Model

$$Area = \left(\frac{base}{2}\right) \times height$$



$$A = \frac{(b \times c)}{2}$$

$$b = base = |x_2 - x_1|$$
$$c = height = |y_2 - y_1|$$



$$A = \frac{(b \times h)}{2}$$

$$If\ y_1 = y_2 \rightarrow b = base = |x_2 - x_1|$$

$$If\ x_1 = x_2 \rightarrow c = base = |y_2 - y_1|$$

$$h = height\ ; 0 < h \leq \frac{b}{2}$$ (See Height Theorem)

Height Theorem

$$h^2 = n \times m\ ; 0 < h \leq h_{max}$$
$$h = \sqrt{n \times m}$$

$$b = n + m$$

$$if\ n = m \Rightarrow \begin{cases} h = h_{max} \\ n = \frac{b}{2} \\ m = \frac{b}{2} \end{cases}$$

$$h_{max} = \sqrt{\frac{b^2}{4}}$$

$$h_{max} = \frac{b}{2}$$

$$b > 0 \wedge c > 0 \Rightarrow \begin{cases} area = \frac{b}{2} \times c \\ h = 0 \end{cases}$$

$$b > 0 \wedge c = 0 \Rightarrow \begin{cases} area = \frac{b}{2} \times h \\ 0 < h \leq \frac{b}{2} \end{cases}$$

$$b = 0 \wedge c > 0 \Rightarrow \begin{cases} area = \frac{c}{2} \times h \\ 0 < h \leq \frac{c}{2} \end{cases}$$

$$b = 0 \wedge c = 0 \Rightarrow \begin{cases} area = 0 \\ h = 0 \\ \text{It is a point} \end{cases}$$