We have a right angle triangle with length of hypotinos being 15 and the perimeter being 36. The two short sides are not equal length. How do I figure out the formula.

Pythagorean theorem:

$$a^2 + b^2 = c^2$$

where c represents the length of the hypotenuse, and a and b represent the lengths of the other two sides.

In our case $c = 15$, therefore:

$$a^2 + b^2 = 15^2$$

Perimeter by definition equals:

$$P = a + b + c$$

In our case, $P = 36, c = 15$

$$a + b + 15 = 36 \implies a + b = 21$$

And two short sides are not of equal length: $a \neq b$

So, we have system of equations:

$$\begin{cases} a^2 + b^2 = 15^2 \\ a + b = 21 \end{cases}$$

From second: $(a + b)^2 = a^2 + 2ab + b^2 = 21^2$

Therefore: $ab = \frac{21^2 - 15^2}{2} = 108$

$$\begin{cases} ab = 108 \\ a + b = 21 \end{cases}$$

From first: $a = \frac{108}{b}$

Substitute to the second:

$$\frac{108}{b} + b = 21$$

Or:

$$b^2 - 21b + 108 = 0$$

Solving this equation:

$$b = 9, 12 \implies a = 12, 9$$

Therefore, short sides equal 9 and 12.