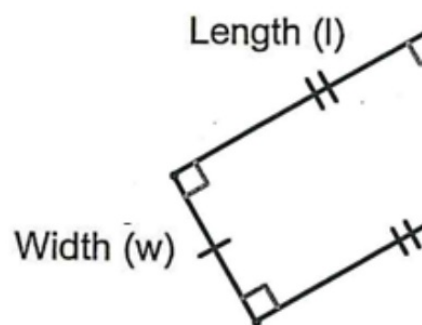**2.16.16**

$w = \frac{1}{3} \ell$

The width of a rectangle is one-third its length. If its perimeter is 24 cm, what is its area?

1. What are my formulas for perimeter and area?

$P = 2\ell + 2w \qquad A = \ell \cdot w$

2. width = $\frac{1}{3}\ell = \frac{1}{3}(9) = 3cm$

Length (l)

3. length = $\ell = 9cm$

Width (w)

4. Perimeter = $24cm$

$24 = 2(\ell) + 2(\frac{1}{3}\ell) \qquad 24 = 2\ell + \frac{2}{3}\ell$

$\frac{(24)}{\frac{3}{8}} = \left(\frac{8}{3}\ell\right)\frac{3}{8} \qquad \boxed{9 = \ell \\ cm}$

$2\frac{2}{3} = \frac{8}{3}$

5. Area =

$A = \ell \cdot w$

$A = 9 \cdot 3 \qquad \boxed{A = 27cm^2}$