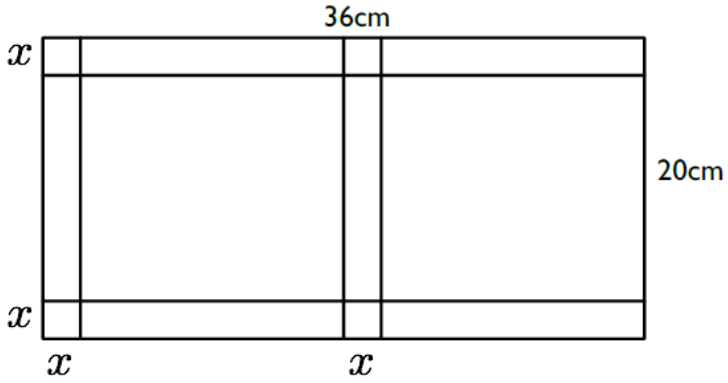
Name: _____ Date: _____

Learning Goal 3.3	Solving equations algebraically and graphically.

1. The specifications for a cardboard box state that the width must be 5 cm less that the lenth, and hte height must be double the length of the box.
   a. Write an equation for the volume of the box.
   b. What is the degree of the polynomial?
   c. What are the leading coefficient and the constant of this function?
   d. Describe the end behaviour of the graph of this function.
   e. What are the restrictions on the domain of this function? Explain how you determined those restrictions.
   f. What do the $x-$ intercept(s) of the graph represent in this context?
   g. What are the dimensions of a box with a volume of $384\ \text{cm}^3$?

2. Boxes for candies are to be constructed from cardboard measures 36 cm by 20 cm. Each box is formed by folding a sheet along the dotted lines as shown.



   a. Write an equation for the volume of the box.
   b. What is the degree of the polynomial?
   c. What are the leading coefficient and the constant of this function?
   d. Describe the end behaviour of the graph of this function/ What are the restrictions on the doamin of this funciton? Explain how you determined the restrictions.
   e. What the possible whole number dimensions of the box if the volume is 512 cubic centimetres?

3. The length of a pool is 4 feet more than twice the width. The depth of the pool is two thirds the width.
   a. Write an equation for the volume.
   b. The volume of the pool is $1188\ \text{ft}^3$. What are the dimensions?
   c. If we wanted to increase all dimensions by the same amount, but the maximum volume at $2700\ \text{ft}^3$, what is the maximum size of the pool?