Name:

1. **[4 points]** A school wishes to build a rectangular playground enclosed by a fence. The playground will be located along the side of the building, so that only 3 sides of the playground need fencing; these sides are shown in bold in the figure below. The school has 240 meters of fencing available. What is the largest possible area for the school's playground?

School Building		
	Playground	

 $\mathbf{OVER} \rightarrow$

- 2. [3 parts, 1 point each] Use the exponentiation rules and logarithm rules to simplify the following.
 - (a) $(9^{3/2} 16^{1/4})^{-1/2}$

(b) $e^{3\ln 3 - 2\ln 5}$

(c)
$$\ln\left(\frac{x^2y^{4/5}(z+2y)}{\sqrt{x^2+y^2+z^2}}\right)$$

 $OVER \rightarrow$

3. [1 point] Solve for x, simplifying as much as possible without using a calculator. Your final answer may involve e and/or logarithms.

$$2 = e^{5x} + \frac{3}{2}$$

4. [2 points] How quickly will money double if it is invested at an annual interest rate of 5% compounded continuously? Simplify as much as possible without using a calculator; your final answer may involve *e* and/or logarithms.