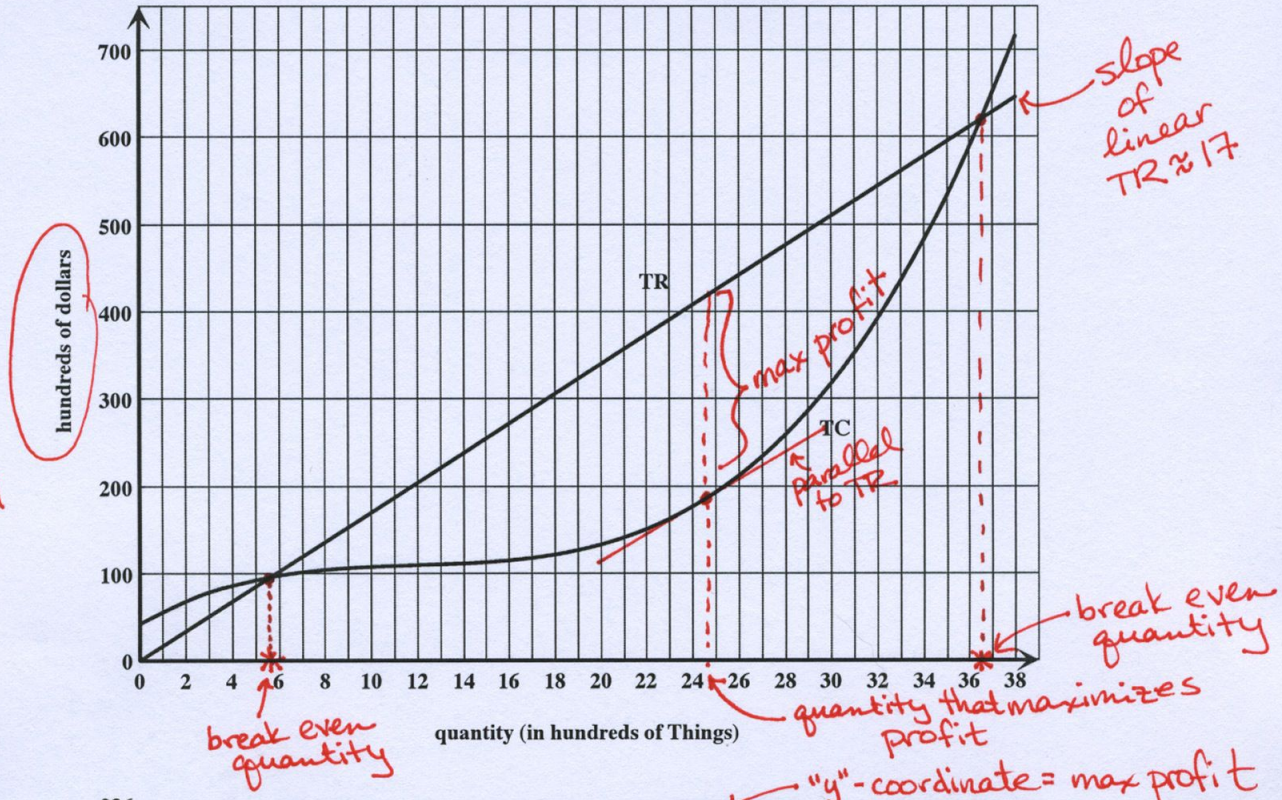
Name: _____ Section: _____

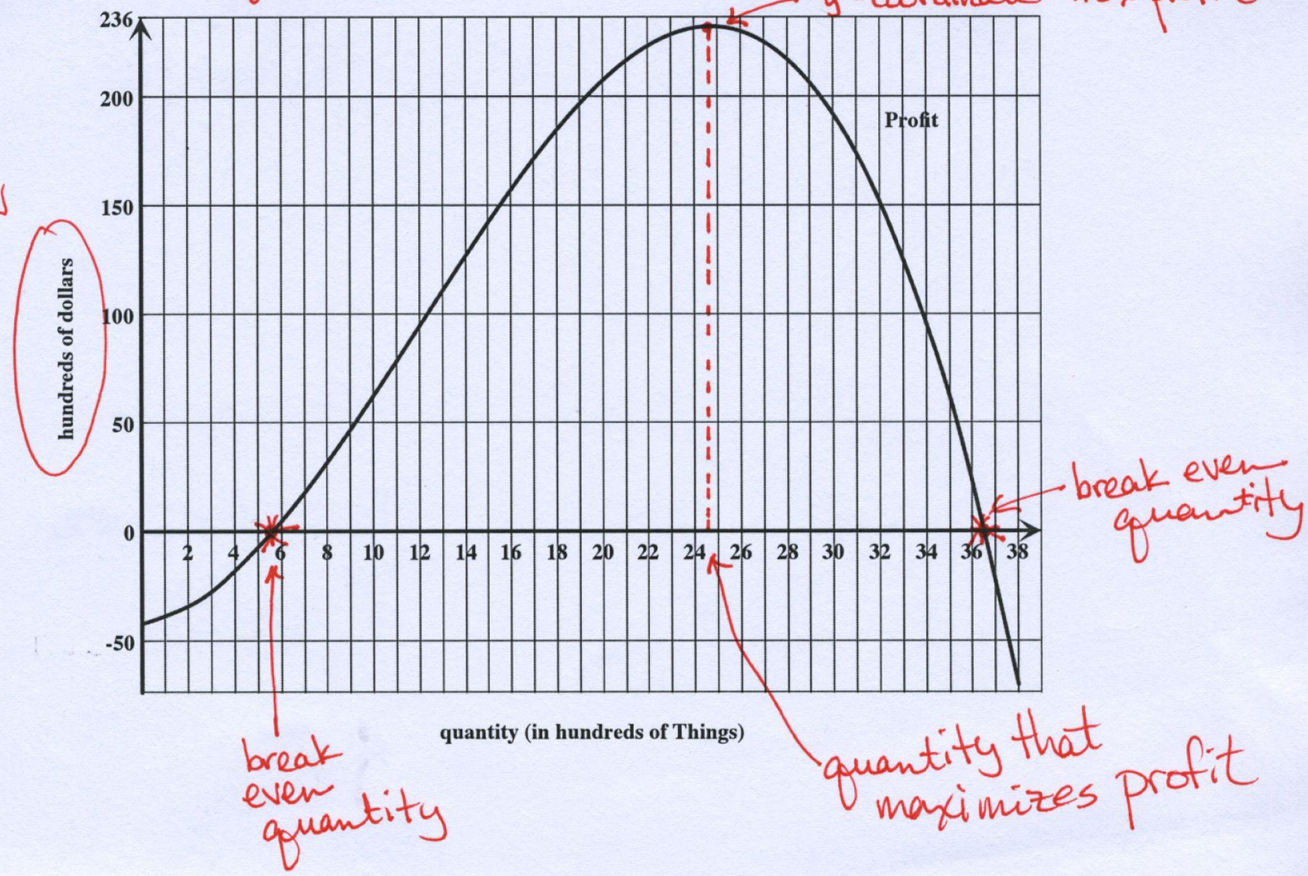
# Math 111

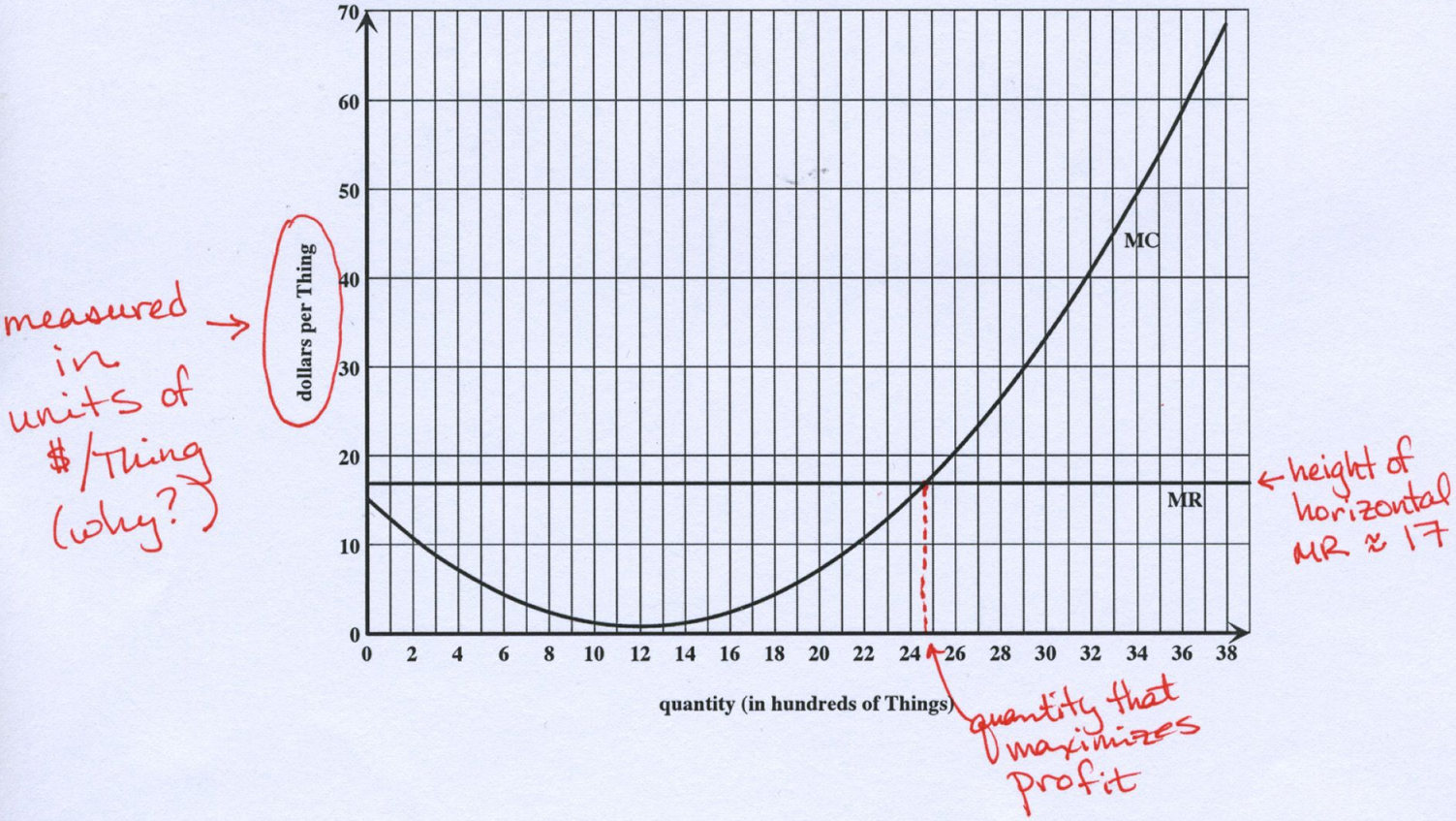
Group Activity: Revenue, Cost, and Profit

**Objectives:** Below are the graphs of total revenue and total cost, profit, and marginal revenue and marginal cost for producing and selling Things. This activity is designed to clarify how these concepts are related and to consolidate a lot of what you've already learned.




same units






NOTE: TR and TC are farthest apart at the quantity where profit is highest which is the same as the quantity at which the MR and MC graphs cross!

**Instructions:** The first column of this table gives values for you to find. Find each value and write it in the "Answer" column, including units. You should be able to find most of the values using more than one of the given graphs. In the remaining columns, describe where you see the value(s) on the indicated graph(s). For some of the cells in the table, you may write "unable to determine" if you cannot find the answer from the indicated graph. The first row is completed as an example.

| Find... | Answer (include units) | Using graphs of TR & TC | Using graph of Profit | Using graphs of MR & MC |
|---|---|---|---|---|
| fixed cost | ~40 hundred dollars or $4000 | the "$y$"-intercept of the $TC$ graph | the absolute value of the "$y$"-intercept of the profit graph | unable to determine |
| marginal revenue at any quantity | ~17 dollars per Thing | the slope of the linear TR graph | unable to determine | the height of the horizontal MR graph |
| marginal cost at $q = 20$ | ~7.50 dollars per Thing | the slope of the secant line through TC at $q=20$ and $q=20.01$ (or the slope of the line tangent to TC at $q=20$) | unable to determine | the height of the MC graph at $q=20$ |
| profit at $q = 10$ | ~60 hundred dollars or $6000 | the vertical distance between TR and TC at $q=10$ | the height of the profit graph at $q=10$ | unable to determine |
| quantities at which you break even | $q \approx 5.5$ and 36.5 hundred Things | the quantities at which the TR and TC graphs intersect | the quantities at which the profit graph crosses the $q$-axis | unable to determine |
| quantities at which $TR > TC$ | from $q \approx 5.5$ to $q \approx 36.5$ hundred Things | the quantities at which the TR graph is above the TC graph | the quantities at which the profit graph is above the $q$-axis | unable to determine |
| quantities at which $MR > MC$ | from $q=0$ to $q \approx 24.75$ hundred Things | the quantities at which the TR graph is steeper than the TC graph | the quantities at which the profit graph is increasing | the quantities at which the graph of MR is above the graph of MC |
| quantities at which profit is increasing | same as the previous row → | | | |
| quantity at which profit is maximized | $q \approx 24.75$ hundred Things | the quantity at which the gap between TR and TC is largest OR at which the TR and TC graphs have the same steepness | the quantity at which the profit graph is highest | the quantity at which the graphs of MR and MC intersect |
| quantity at which $MR = MC$ | same as the previous row → | | | |
| maximum profit | ~230 hundred dollars OR $23,000 | the largest vertical gap between TR and TC | the "y"-coordinate of the highest point on the profit graph | unable to determine |