Exercise 1: Graphical Method

A grocery store sells Q boxes of drinking water per week. The selling price for each box is \$15. Write the total revenue equation and graph this equation. The capacity per week is 100 boxes.

$TR = SP \times Q = 15 \times Q = 15Q$

The total revenue equation is $TR = 15Q$.

Step 1 Draw the two axes. Label the **horizontal axis** as Q (number of units) and the **vertical axis** as TR (total revenue in dirhams).

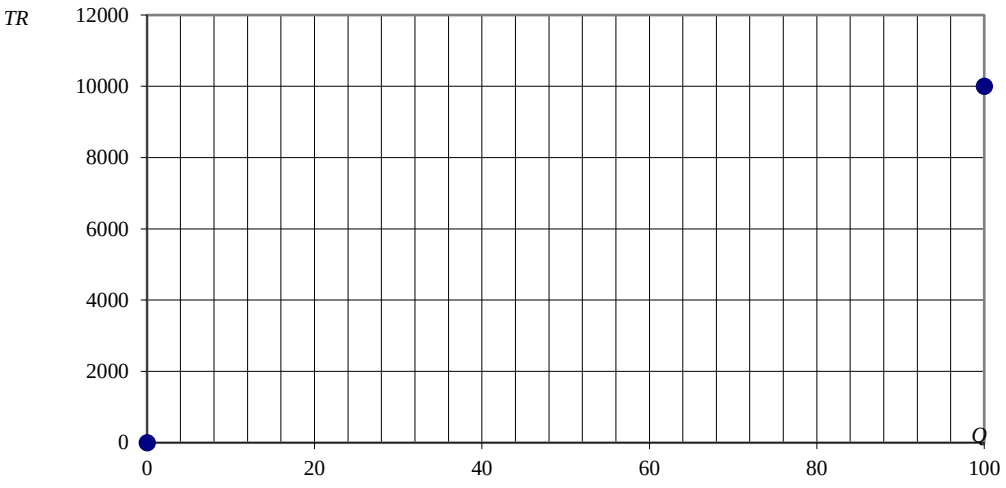
For the points choose two Q-values

- $Q = 0$
- $Q = 100$

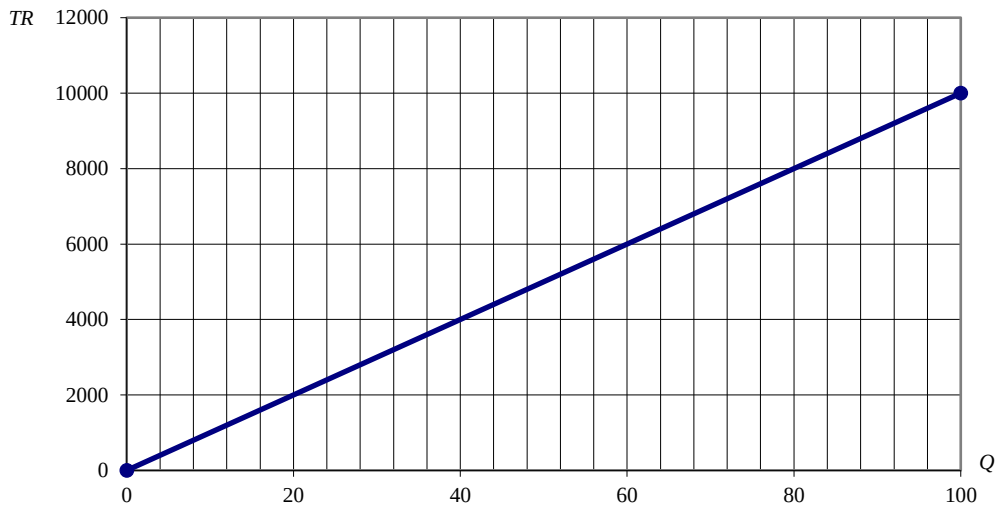
Calculate the total revenue when Q has the capacity value.

Q	TR	
0	$15 \times 0 = 0$	$\Rightarrow$ (0, 0)
100	$15 \times 100 = 1500$	$\Rightarrow$ (100, 1500)

Step 2 Plot the two points on the graph.



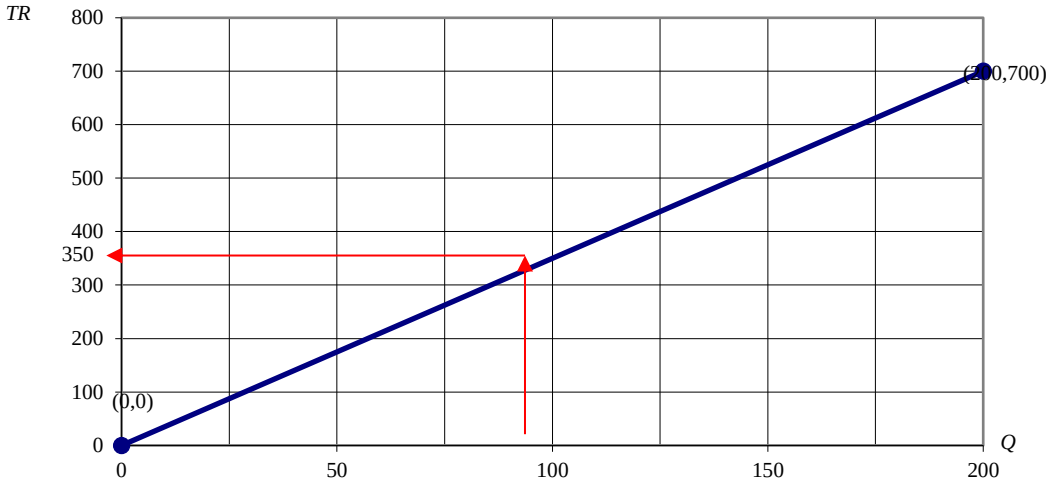
Step 3 Draw a straight line through the two plotted points for the **total revenue graph**.



This is the graph of the total revenue equation.

Exercise 2

The graph below is a total revenue graph. The capacity per period is 200. *TR* is in dollars.



(a) The slope of the total revenue line gives the selling price per unit.

The two points on the line are (0, 0) and (200, 700).

$$a = \frac{y_2 - y_1}{x_2 - x_1} = \frac{700 - 0}{200 - 0} = \frac{700}{200} = 3.5$$

The selling price per unit is \$3.50.

Or,

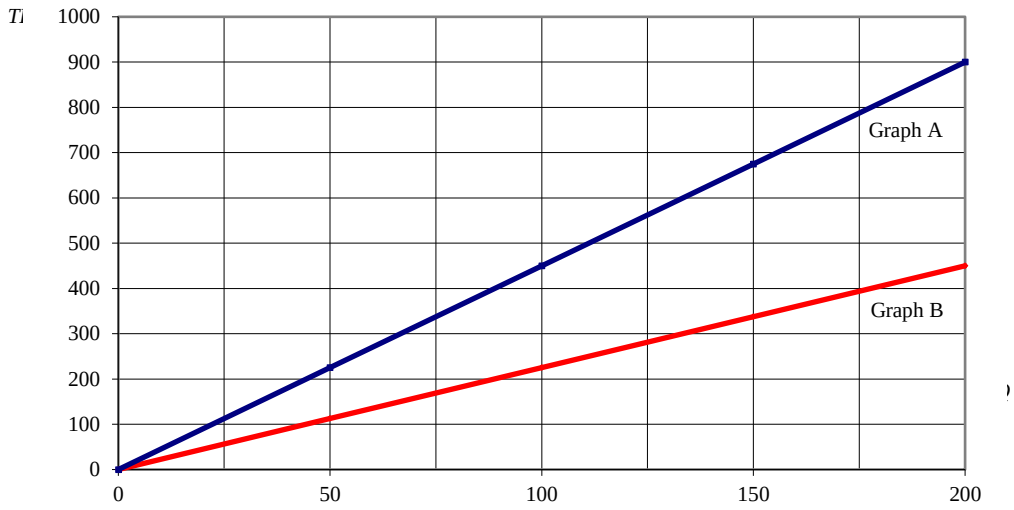
Simply divide the *TR* value of 700 by the quantity 200 to get the selling price of 3.50. We may also use the point (100, 350). Divide 350 by 100 to get the same selling price of \$3.50. Any other point located on the line will produce the same selling price 3.50.

(b) The total revenue equation is $TR = 3.5Q$.

(c) From the graph we can easily see that the total revenue for 100 units is \$350.

Exercise 3

Two total revenue graphs, Graph A and Graph B, are shown below. In each case, the capacity for the period is 200 units.



(a) Graph A has a steeper slope than Graph B. This indicates a greater selling price.

We know that the slope of the total revenue line gives the selling price per unit.

Graph A: $a = \dfrac{y_2 - y_1}{x_2 - x_1} = \dfrac{900 - 0}{200 - 0} = \dfrac{900}{200} = 4.5$

The selling price per unit for Graph A is \$4.50.

Graph B: $a = \dfrac{y_2 - y_1}{x_2 - x_1} = \dfrac{450 - 0}{200 - 0} = \dfrac{450}{200} = 2.25$

The selling price per unit for Graph B is \$2.50.

(b) The total revenue equation for Graph A: $TR = 4.5Q$.

The total revenue equation for Graph B: $TR = 2.25Q$.