

**Example 2: Linear Application with Equation Given**

Ahmed starts the week with \$165 and spends \$8.50 per day. This situation is modelled by the following equation:

$$L = 165 - 8.5d \quad \Rightarrow \quad y = 165 - 8.5x$$

where  $d$  is the number of days that have passed and  $L$  is the amount of money he has left.

- a) Sketch the graph.

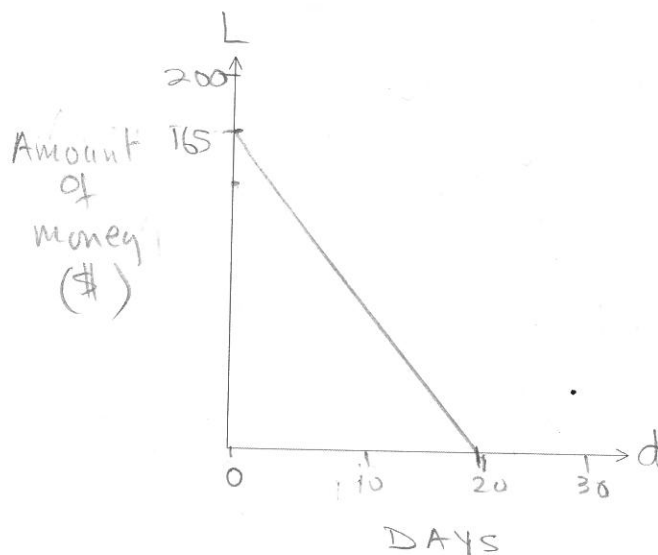
Window

$$x\text{-min} = 0$$

$$x\text{max} = 30$$

$$y\text{min} = 0$$

$$y\text{max} = 200$$



- b) State the domain and range of this situation.

$$\text{Domain: } [0, 19.4]$$

$$\text{Range } [0, 165]$$

- c) How much money does Ahmed have after 5 days have passed?

`END` `TRACE` `ENTER` `x=5` `y=122.5` ← amount of money

Ahmed has \$122.50 after 5 days

- d) How much money does Ahmed have after 30 days have passed?

Ahmed has no money. After 20 days, he had already spend \$165.

- e) When will Ahmed have \$100 left? This is the same as asking you to find the  $x$  value when you know the  $y$  value. In this case, you will be finding the  $d$ -value when you know the  $L$ -value. This is the same process that you used to find the  $x$ -intercepts of functions. You will enter an equation into the  $y =$  screen ( $Y_2 = 100$ ) and then use 2<sup>nd</sup> CALC: 5: intersect to solve for the  $d$ -value. Your teacher will guide you through the process.

`Y2=100` `2nd` `TRACE` `5-intersect` `ENTER` ← Press 3 times

`x=7.64` `y=100`

↑  
day

After 7 days, Ahmed will have \$100 left