

# Graphing

Graph a function and change window dimensions in order to see the graph.

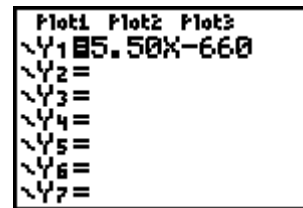
We will use the rule  $P(a) = 5.50a - 660$ .

Keystrokes

Screen

Enter the function into the equation editor:

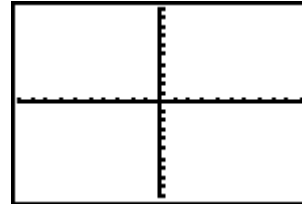
`Y =` 5.50 `X,T,θ,n` `-` 660



```
Plot1 Plot2 Plot3
Y1=5.50X-660
Y2=
Y3=
Y4=
Y5=
Y6=
Y7=
```

Take an initial look at the graph:

`GRAPH`

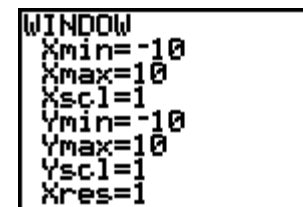


Note: your screen may appear different; press **ZOOM** and then select **6:ZStandard** to get the same screen as shown here.

The current display only shows the coordinate axes; the window is set to show horizontal and vertical values only between -10 and 10 with tick marks spaced every 1 unit. For the current function, no input/output values fall within these bounds, so we must change the WINDOW. For this example, assume that we would like to look at input values ranging from -20 to 120 with tick marks spaced every 20 units and output values ranging from -700 to 100 with tick marks spaced every 50 units.

Look at the WINDOW dimensions:

`WINDOW`

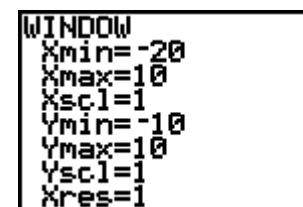


```
WINDOW
Xmin=-10
Xmax=10
Xscl=1
Ymin=-10
Ymax=10
Yscl=1
Xres=1
```

Note: the Window is currently set up for the Standard Window dimensions.

Xmin is the smallest (furthest to the left) input value shown on the horizontal axis. For this example, change the Xmin to -20:

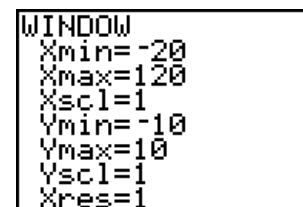
`(-)` `2` `0` `ENTER`



```
WINDOW
Xmin=-20
Xmax=10
Xscl=1
Ymin=-10
Ymax=10
Yscl=1
Xres=1
```

Xmax is the largest (furthest to the right) input value shown on the horizontal axis. For this example, change the Xmax to 120

`1` `2` `0` `ENTER`



```
WINDOW
Xmin=-20
Xmax=120
Xscl=1
Ymin=-10
Ymax=10
Yscl=1
Xres=1
```

Note: Xmin must be strictly less than Xmax in order to graph.

More questions? Contact the **Metropolitan State University Math Center** at  
651-793-1460, 651-793-1463 (Fax) or [math.center@metrostate.edu](mailto:math.center@metrostate.edu).

Persons with a disability who need reasonable accommodations may call Disability Services at 651-793-1540 or 651-772-7687 (TTY).

## Keystrokes

## Screen

Xscl, or X-scale, defines the distance between tick marks on the horizontal axis. For this example, change the Xscl to 20:

`2` `0` `ENTER`

*Note: you can turn off the tick marks by setting Xscl to 0.*

Ymin is the smallest (furthest down) output value shown on the vertical axis. For this example, change the Ymin to -700:

`(-)` `7` `0` `0` `ENTER`

Ymax is the largest (furthest up) output value shown on the vertical axis. For this example, change the Ymax to 100:

`1` `0` `0` `ENTER`

*Note: Ymin must be strictly less than Ymax in order to graph.*

Yscl, or Y-scale, defines the distance between tick marks on the vertical axis. For this example, change the Yscl to 50:

`5` `0` `ENTER`

*Note: to turn off tick marks, set Yscl to 0.*

Look at the GRAPH:

`GRAPH`

*Note: you can see more of the graph, especially where it crosses the x-axis and the y-axis.*

*Note: choosing appropriate WINDOW dimensions can be a sophisticated process, depending on the function being used. See the WINDOW handout for some hints and tricks that can be helpful.*

```

WINDOW
Xmin=-20
Xmax=120
Xscl=20
Ymin=-10
Ymax=10
Yscl=1
Xres=1
  
```

```

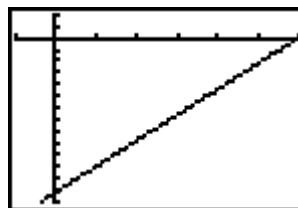
WINDOW
Xmin=-20
Xmax=120
Xscl=20
Ymin=-700
Ymax=10
Yscl=1
Xres=1
  
```

```

WINDOW
Xmin=-20
Xmax=120
Xscl=20
Ymin=-700
Ymax=100
Yscl=1
Xres=1
  
```

```

WINDOW
Xmin=-20
Xmax=120
Xscl=20
Ymin=-700
Ymax=100
Yscl=50
Xres=1
  
```



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