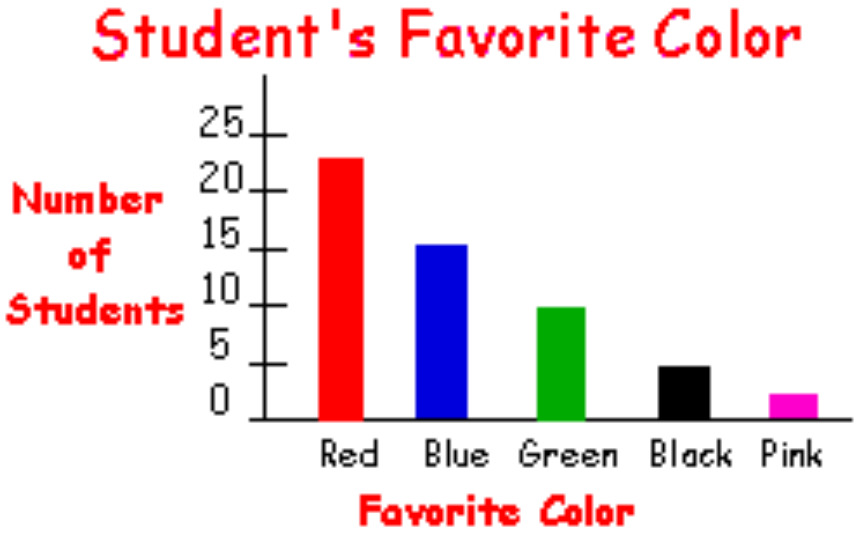
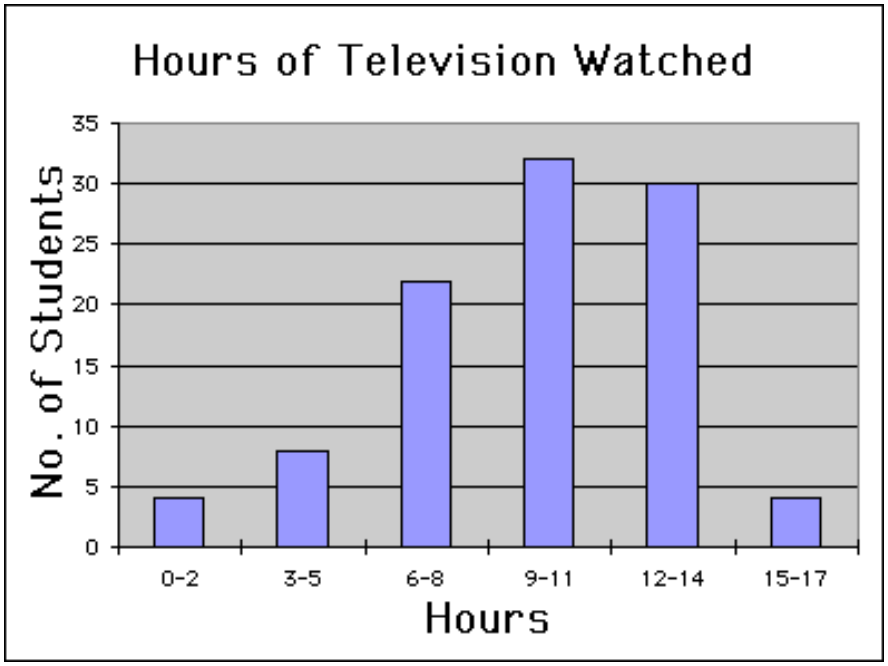
Graphing in Science

Types of Graphs

Bar Graph

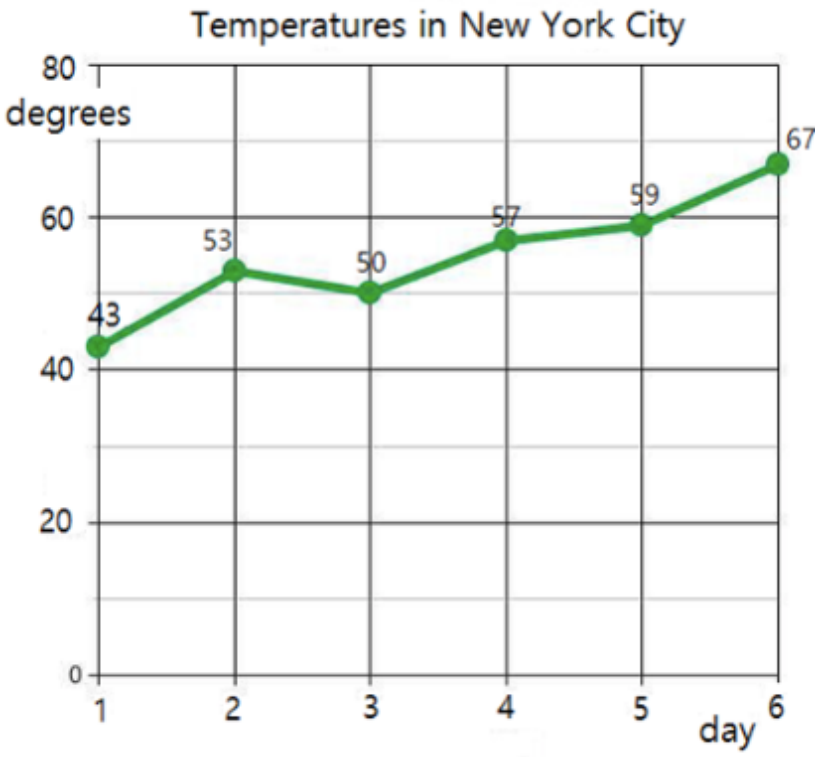
- For **comparing** data between different groups

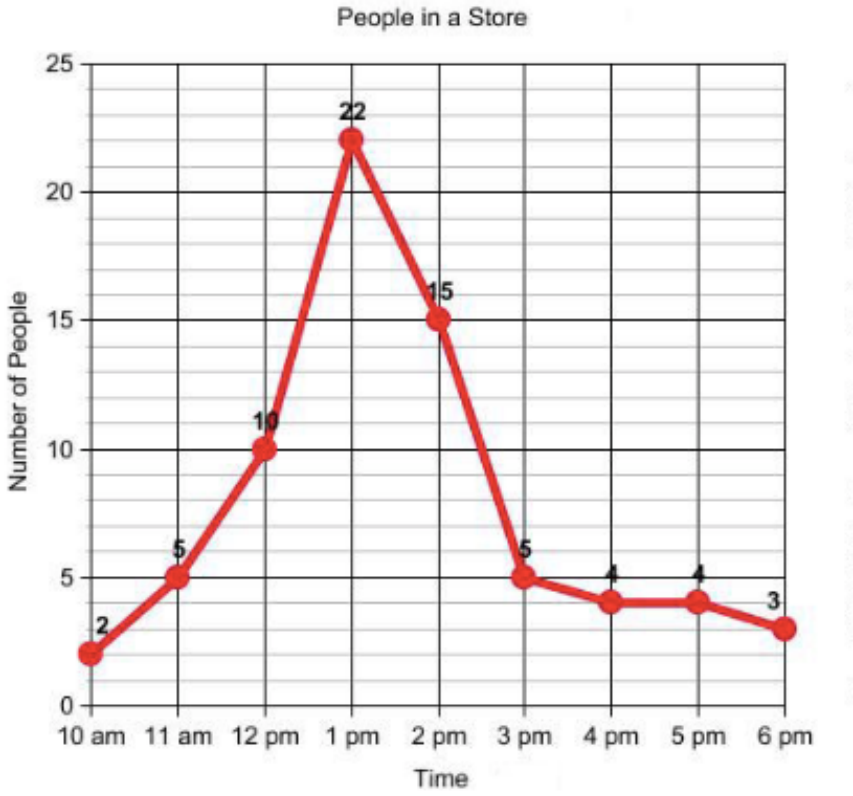




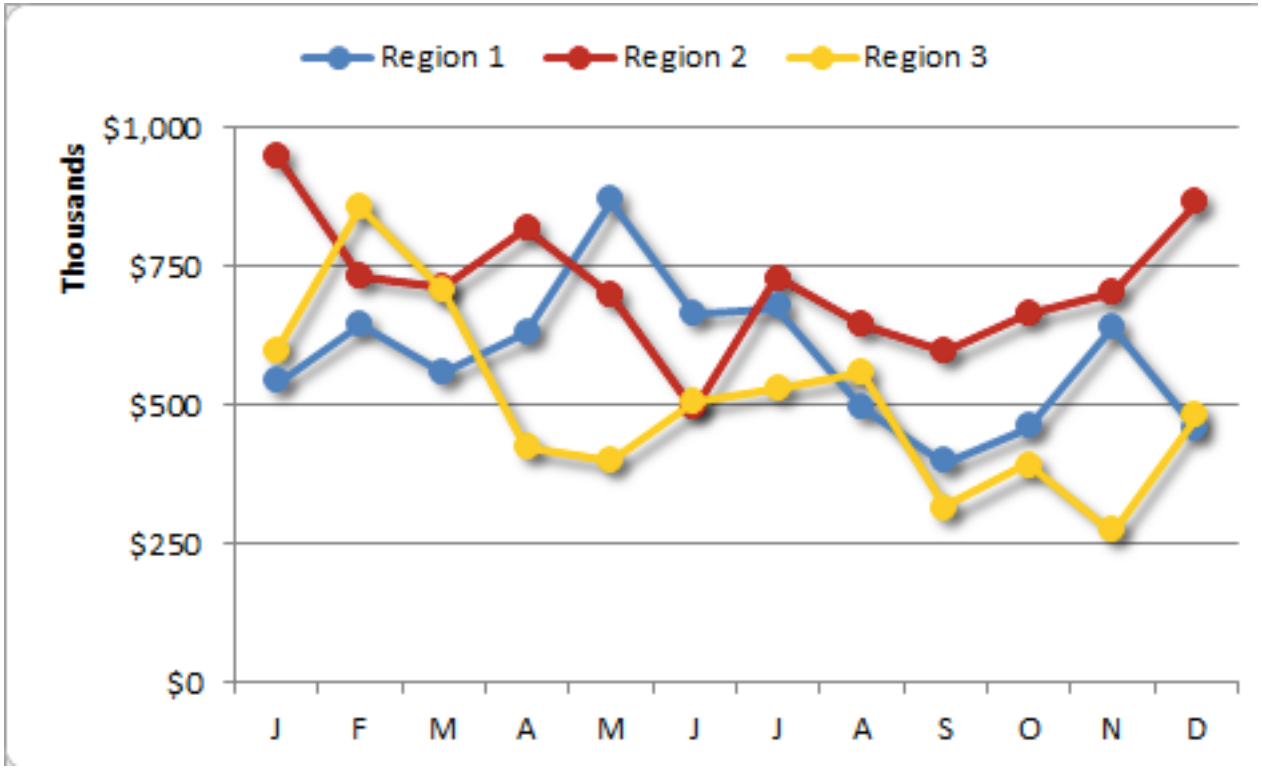
Line Graphs

- Good for showing changes over time.





Can also compare changes over time for multiple groups.



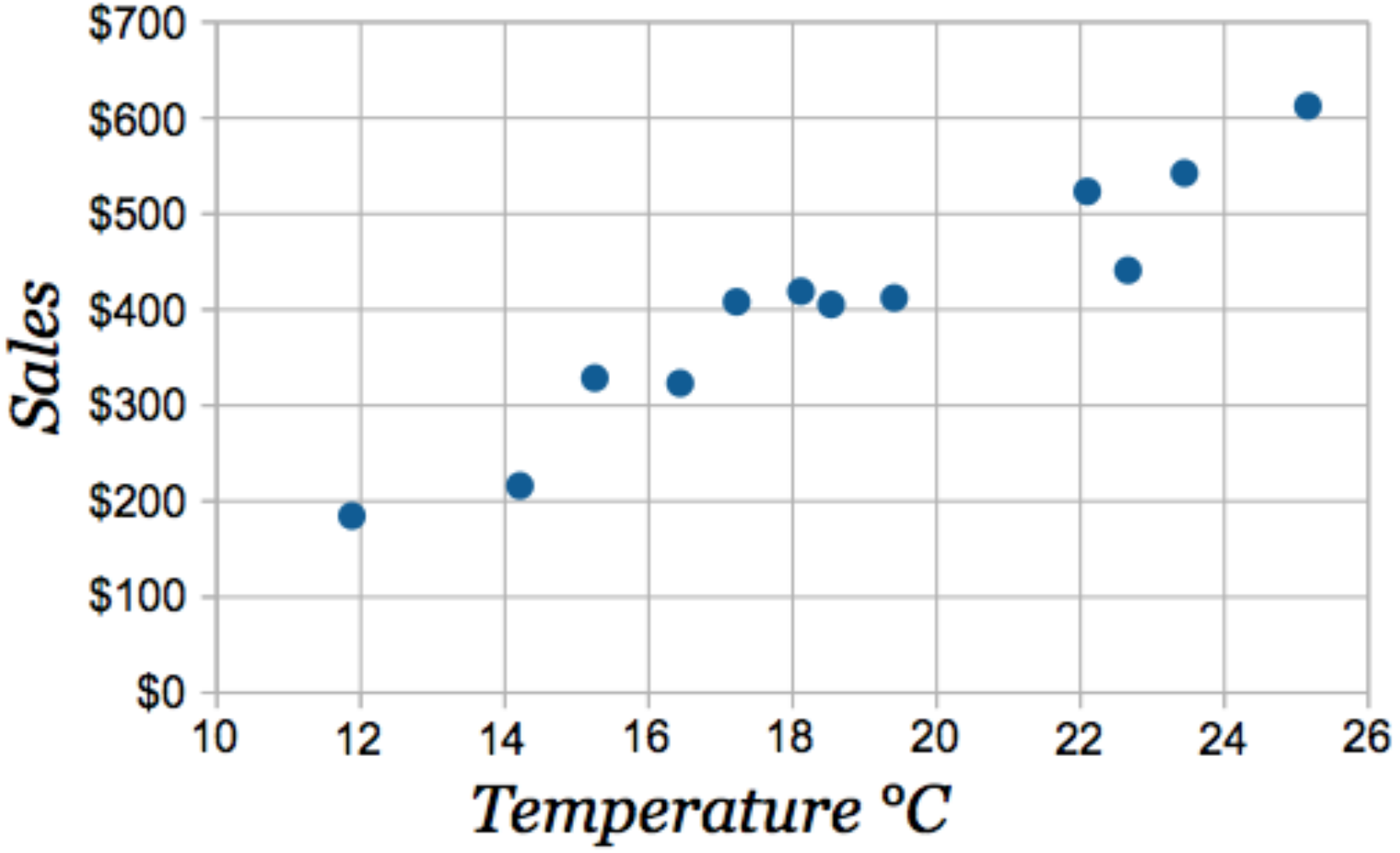
Scatter Plot

used to determine relationships between two different things.

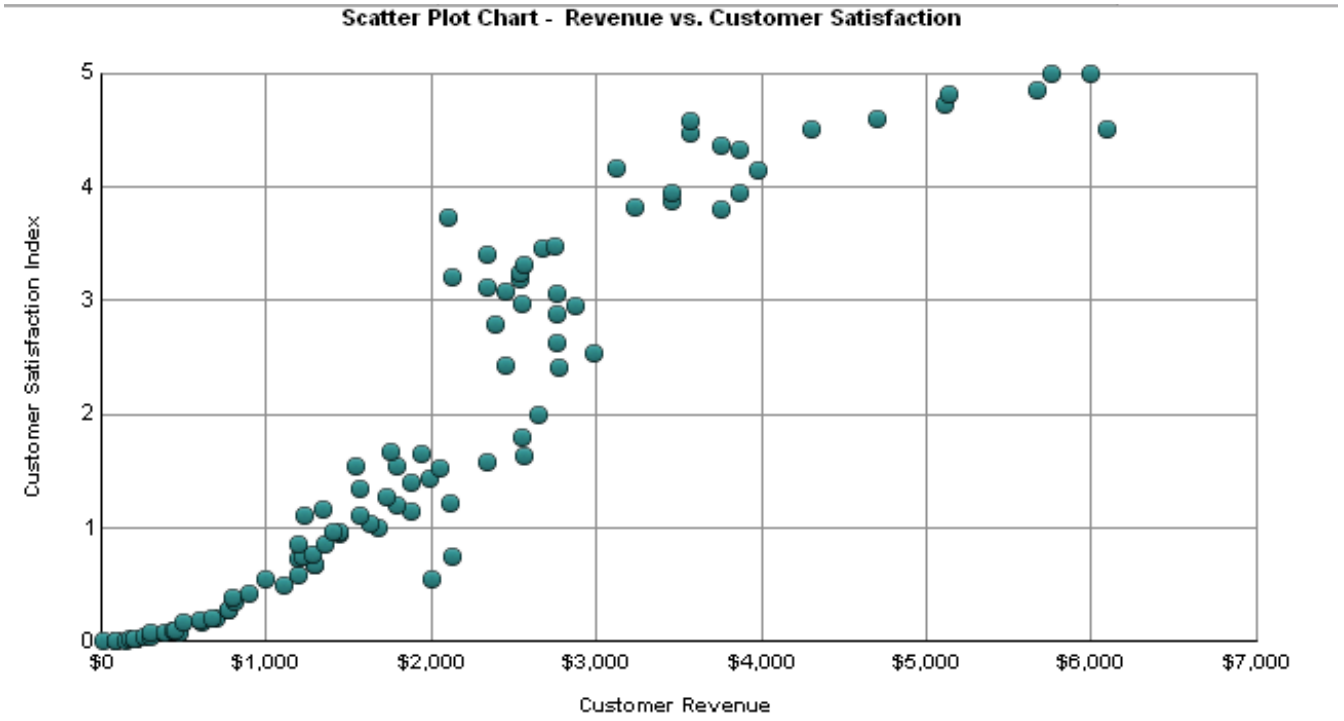
The x-axis is used to measure one event (or variable) and the y-axis is used to measure the other.

Trend Line or Line of Best Fit-
A straight line that best represents the data on a scatter plot.

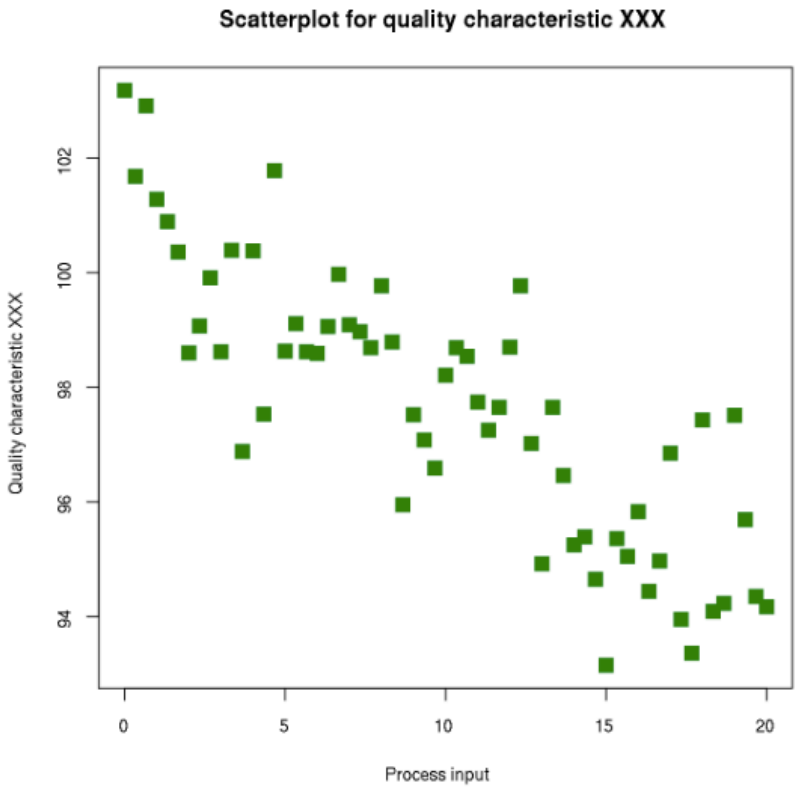
This line may pass through some of the points, none of the points, or all of the points.


$700
$600
$500
$400
$300
$200
$100
$0
Sales
10
12
14
16
18
20
22
24
26
Temperature °C

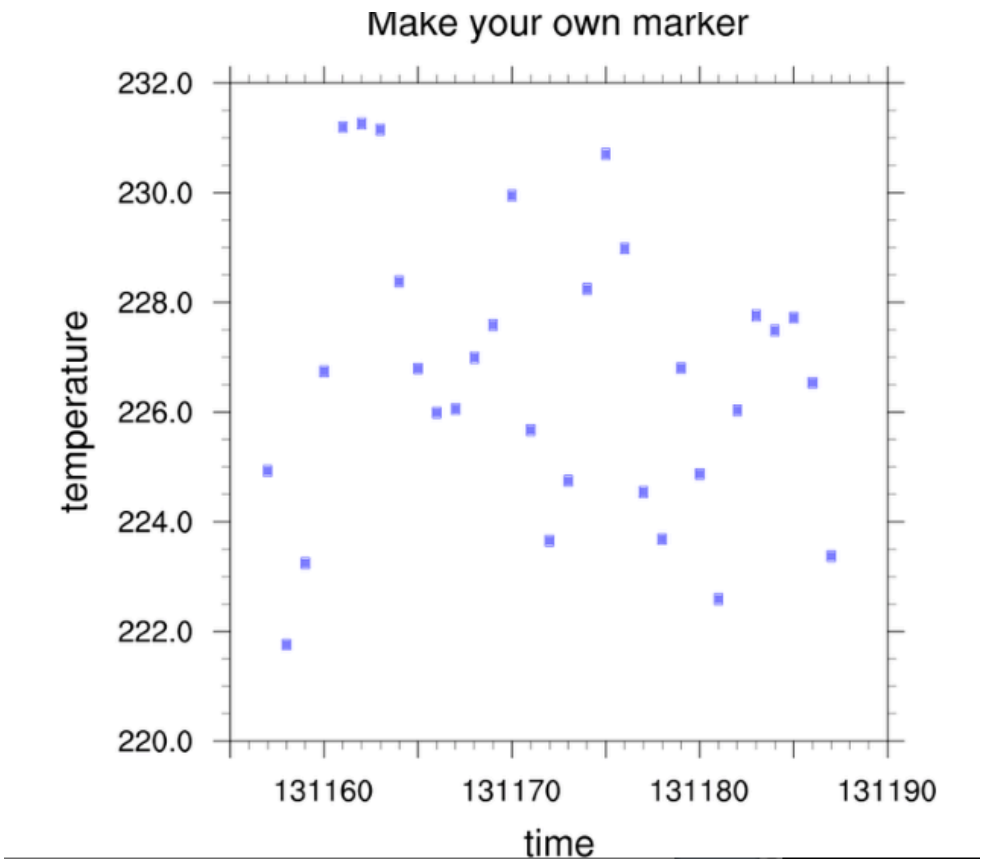
If both variables increase at the same time, they have a **positive** relationship.

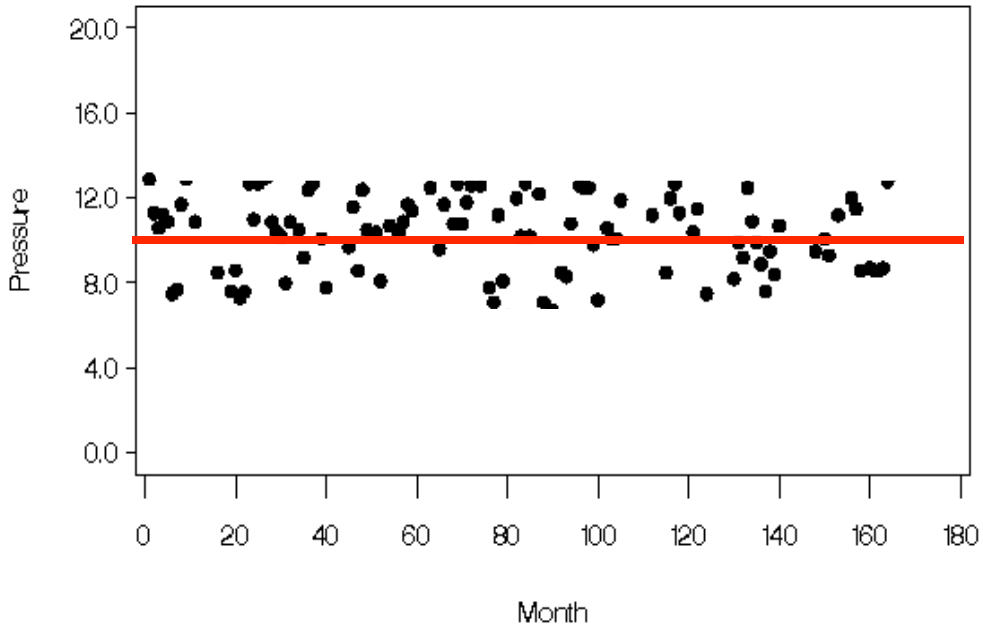


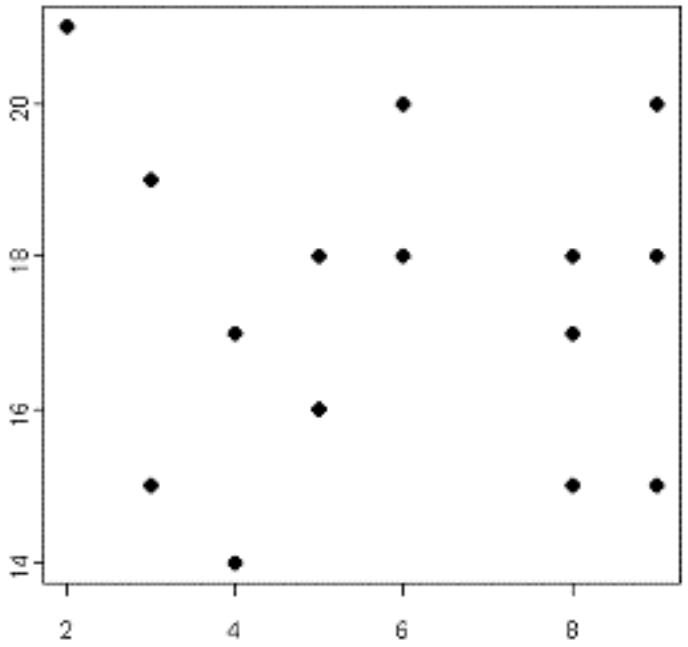
If one variable decreases while the other increases, they have a **negative** relationship.

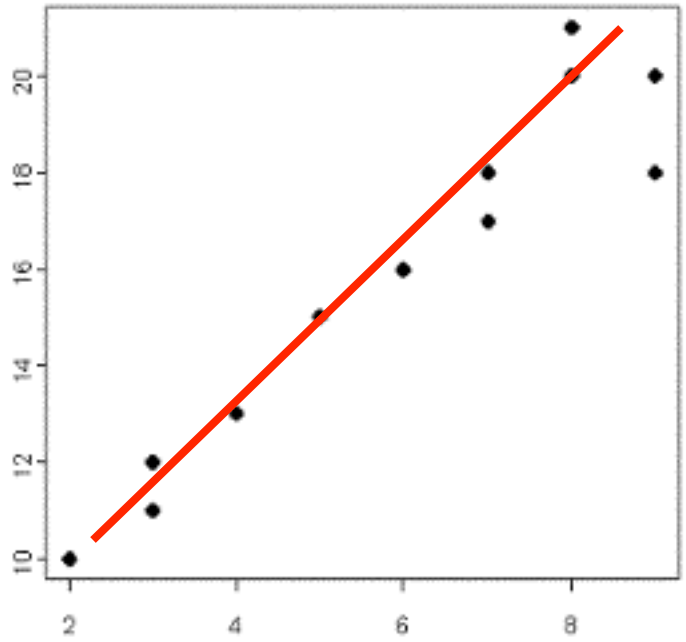


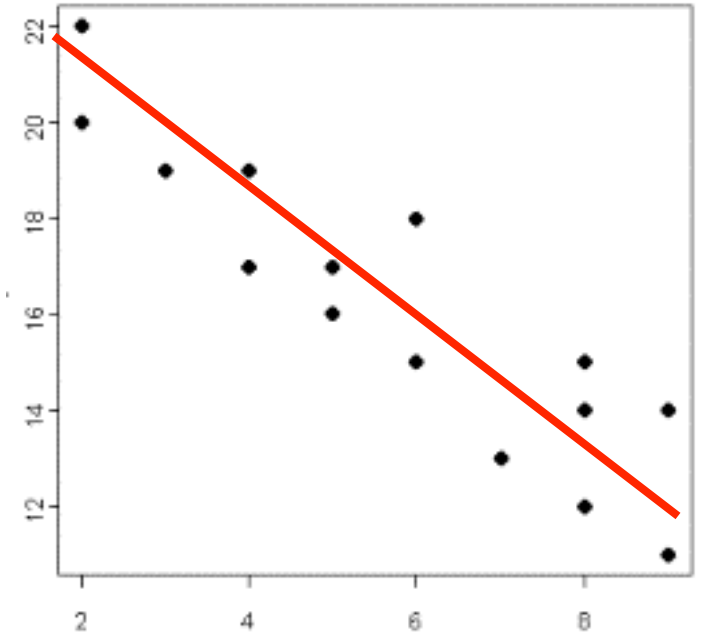
Sometimes the variables don't follow any pattern and have **no** relationship.




Pressure
20.0
16.0
12.0
8.0
4.0
0.0
0
20
40
60
80
100
120
140
160
180
Month


20
18
16
14
2
4
6
8


20
18
16
14
12
10
2
4
6
8


22
20
18
16
14
12
2
4
6
8

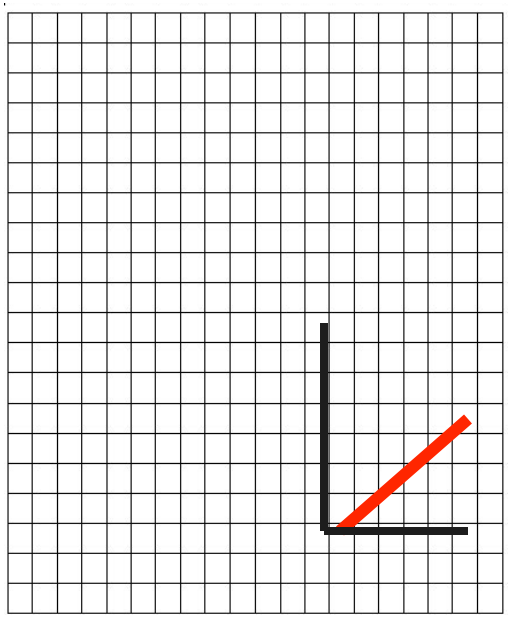
D-TAILS

D-TAILS is an acronym to help you remember everything you need to create a good graph.

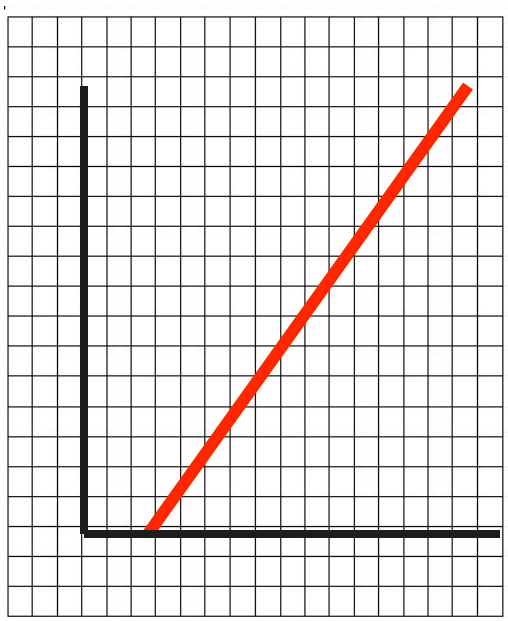
D-TAILS

Data covers the entire graph area and is centered.

NO!!!



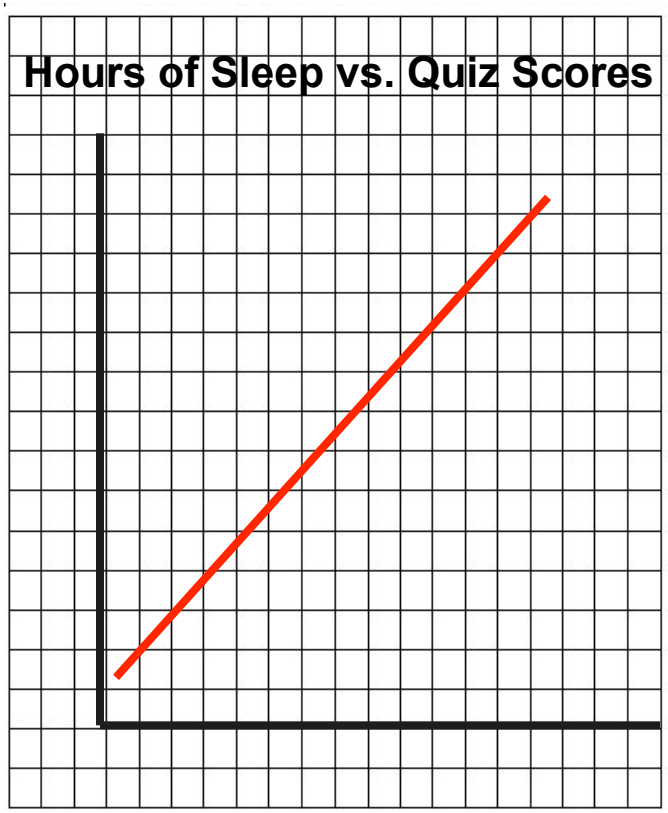
YES!!!



D-TAILS

Title

Includes what the graph is about and both the independent and dependent variables.

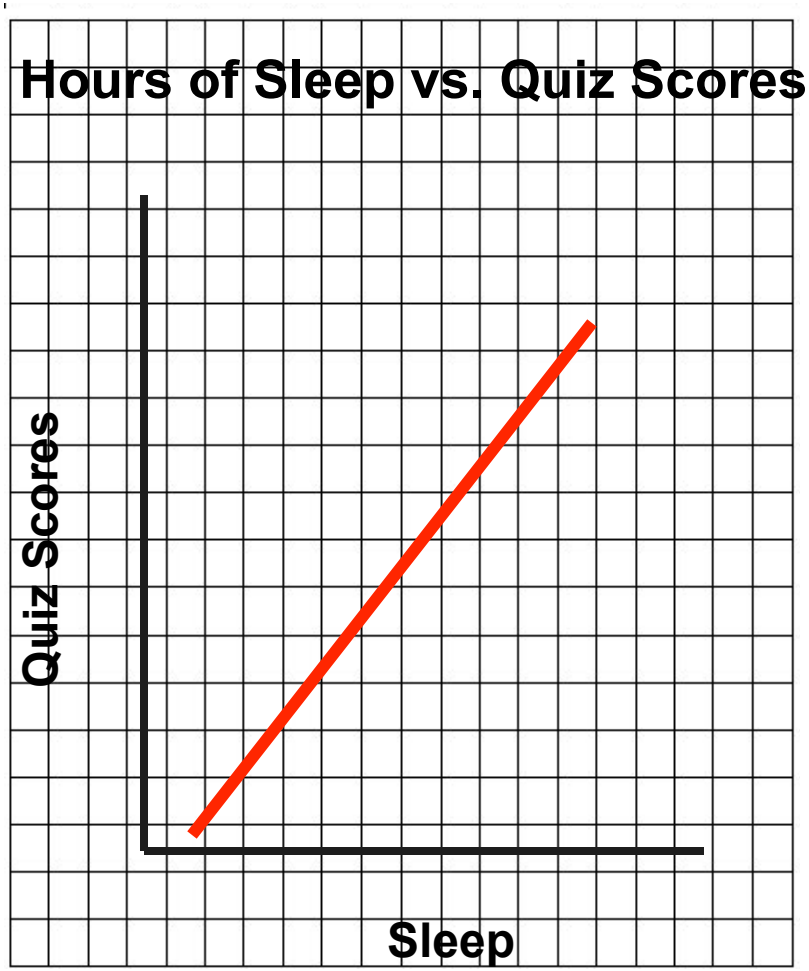


D-TAILS

Axis Labels

Independent variable
is on the **x-axis**

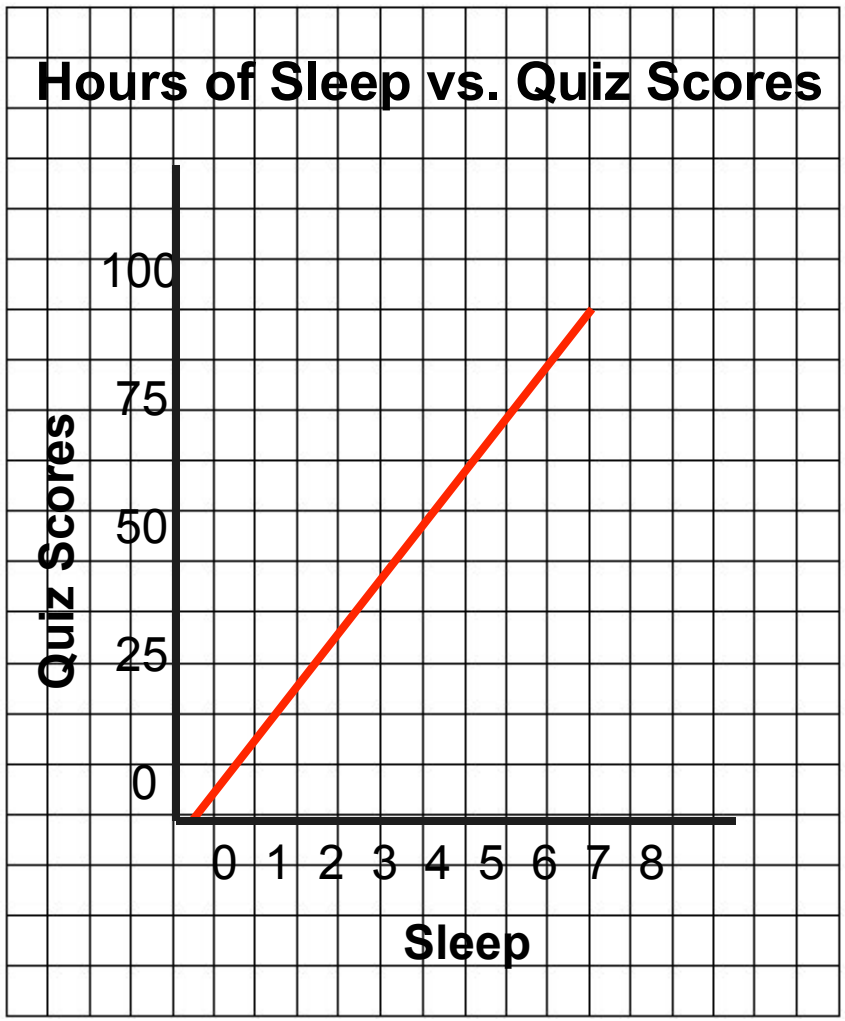
Dependent variable
is on the **y-axis**



D-TAILS

Interval Marks

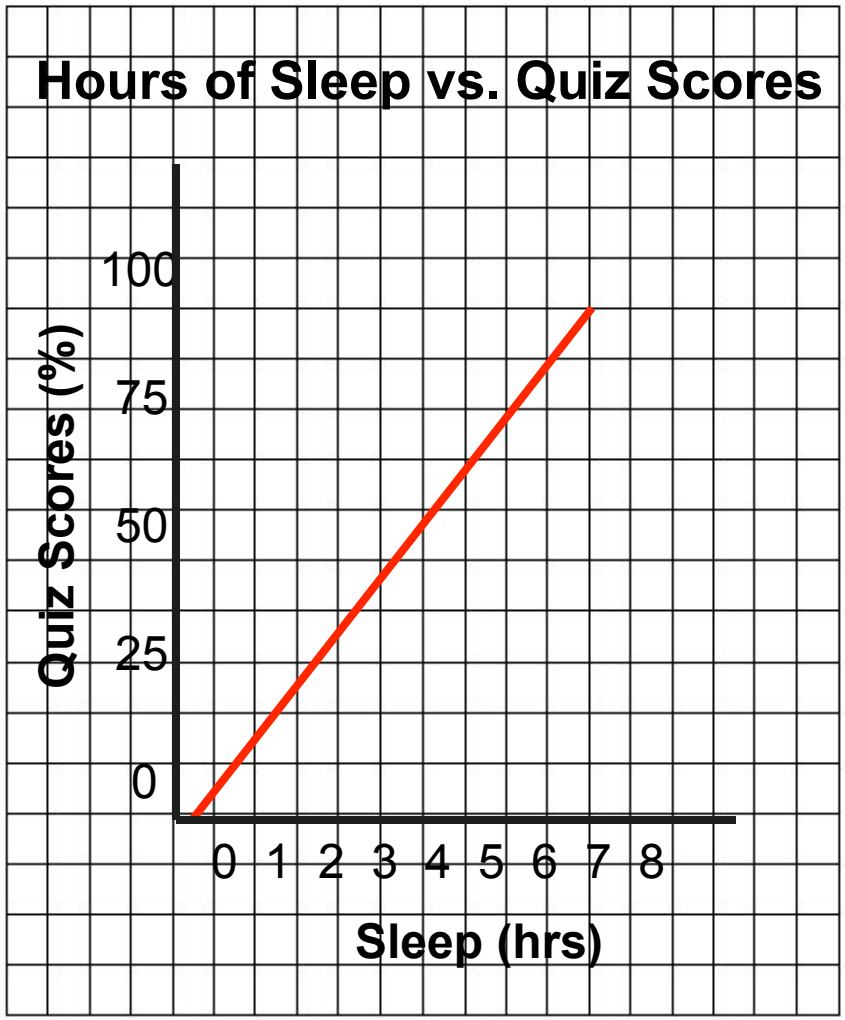
Consistent spacing and always start at zero!



D-TAILS

Label Units

In ( ) after the axis label, include the proper units



D-TAILS

Scale

use an equal scale

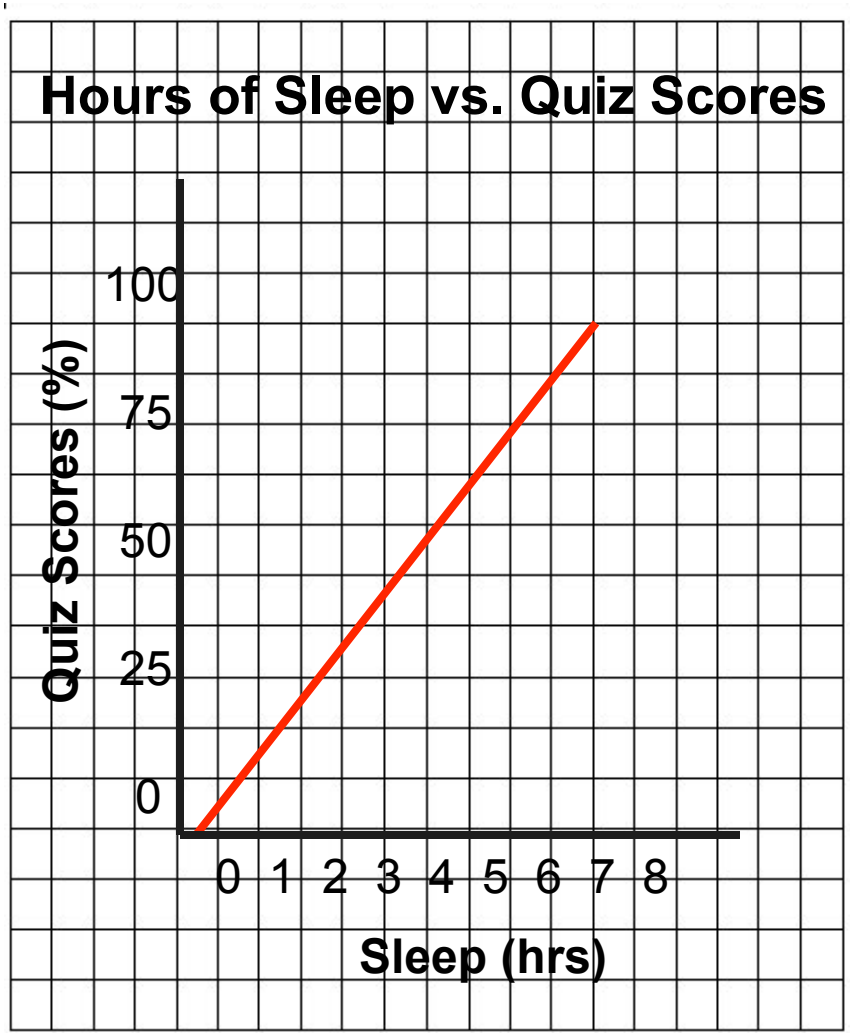
(think count by's)

Ex: 1,2,3,4 or 2, 4, 6, 8

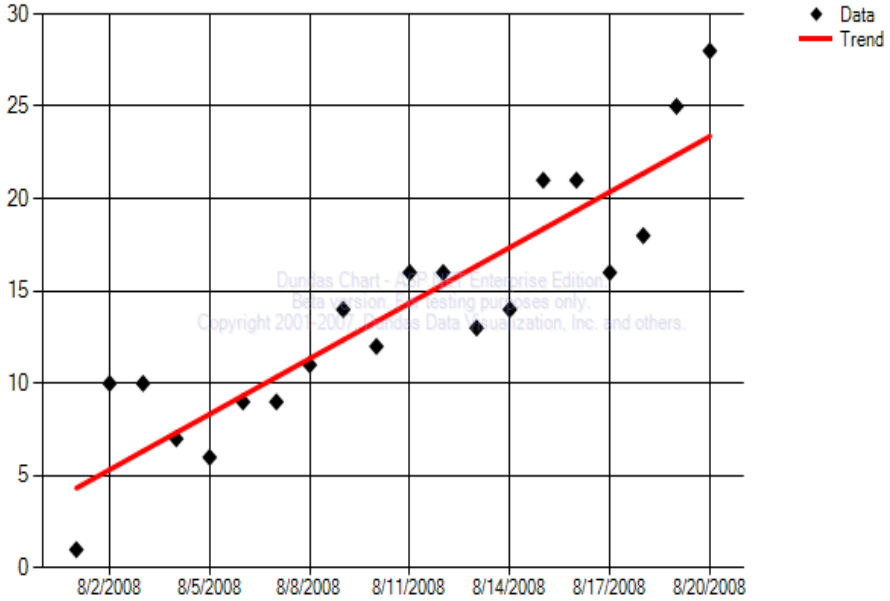
or 5, 10, 15, 20

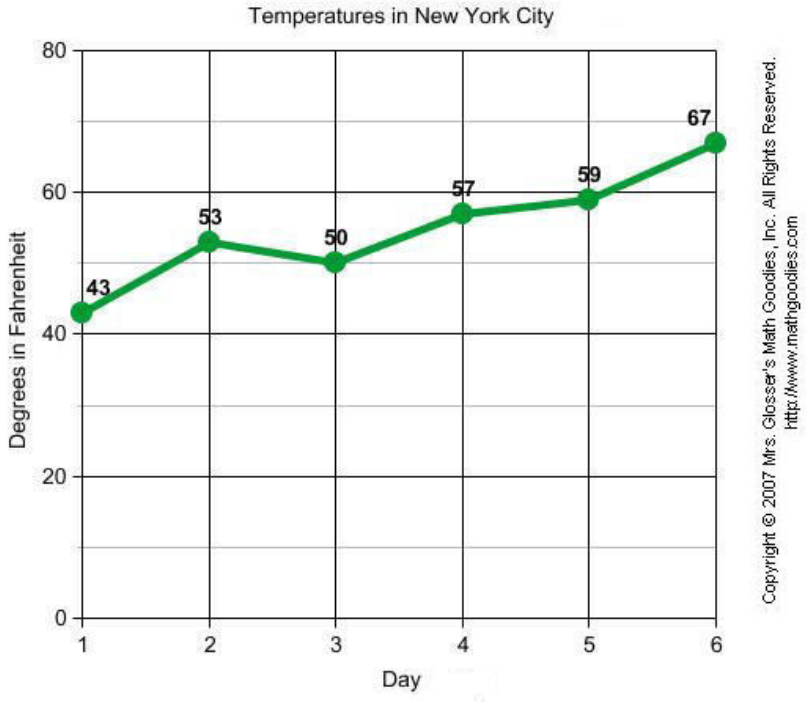
NOT

1, 2, 4, 7, 10, 21, 35



Usually you will draw a trend line (NOT connect the dots) to show the relationship.

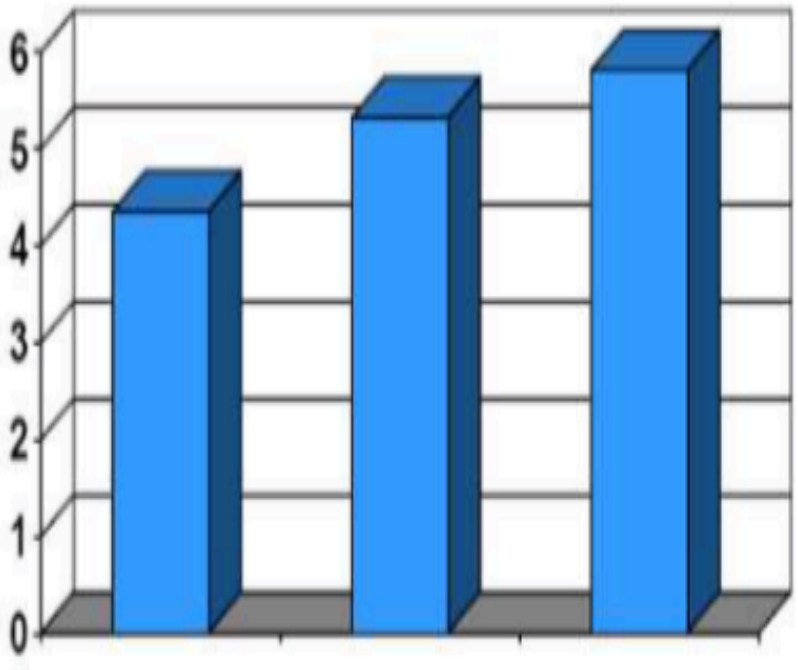


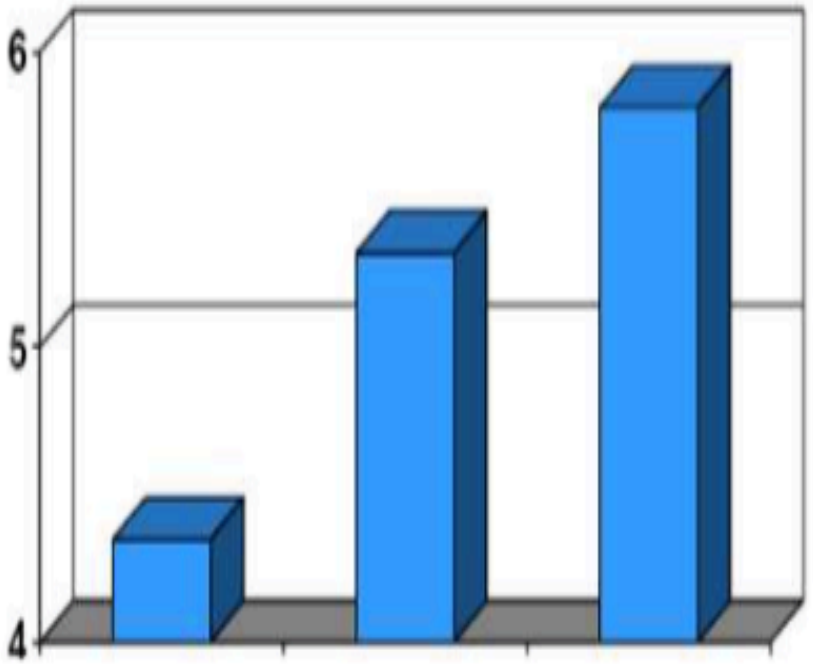


YES! ☺

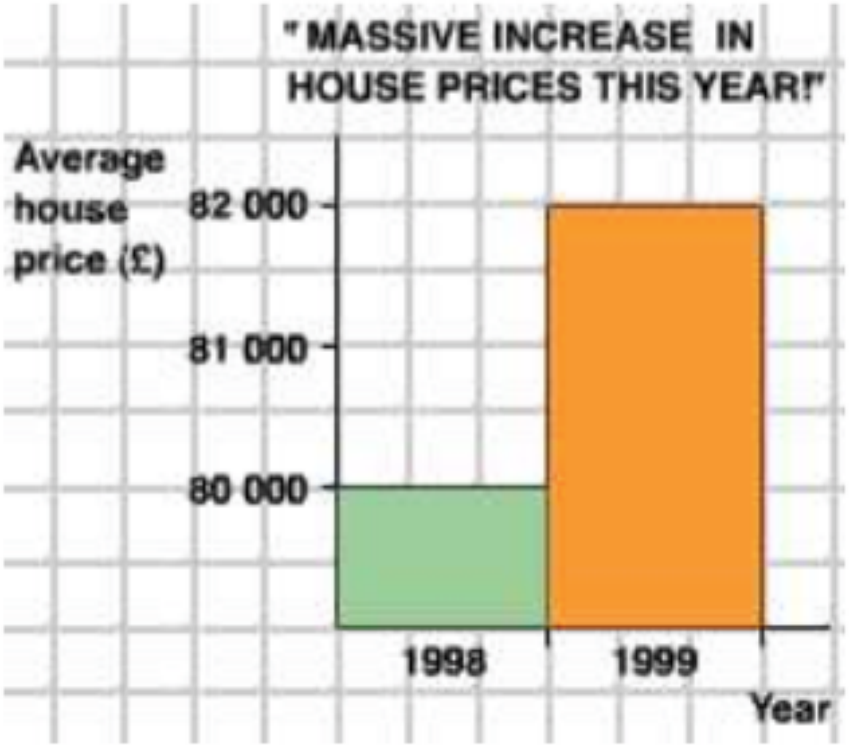
NO!! ☹

Changing the y-axis makes these two graphs seem different, but they show the same data.

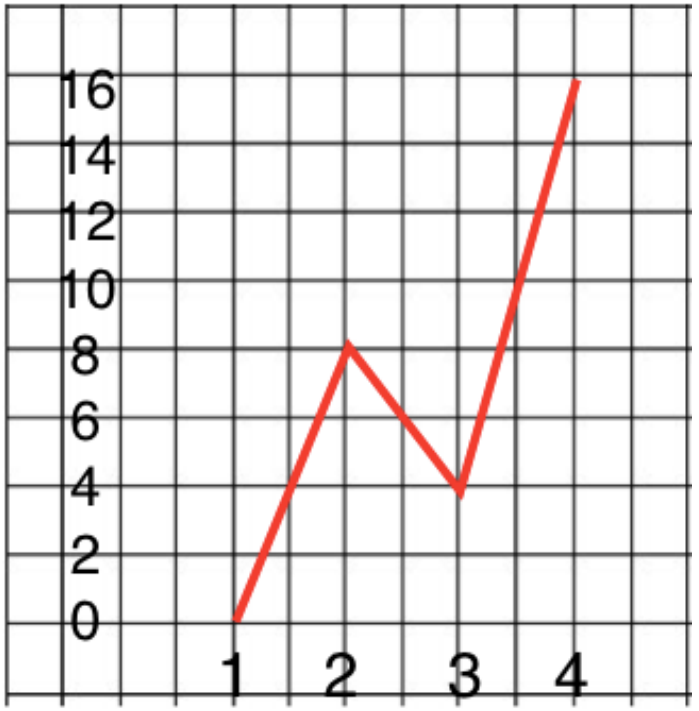




Graphs need to start at zero or they can make changes seem larger than they are.



Graphs need to have a **consistent scale** to accurately show information.



Make a line graph

Time (minutes)	Temperature (°C)
0	16
1	23
2	32
3	43
4	54
5	60
6	68