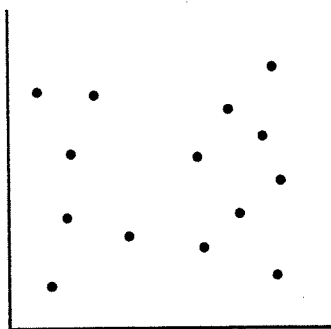


## Scatter Plots and Correlation

A **scatter plot** shows a **correlation**, or relationship, between two sets of data. A scatter plot has the same kind of grid as a line graph, with a horizontal scale ( $x$ -axis) and a vertical scale ( $y$ -axis). Also, the data points are plotted as in a line graph. Each data point marked on the scatter plot indicates *two* numbers: a quantity from one data set on the horizontal axis, and a corresponding quantity from the other data set on the vertical axis. In a scatter plot, however, the data are represented by *unconnected* points. (That is, on a scatter plot, unlike a line graph, line segments are *not* drawn between data points.)

On a scatter plot, the pattern of the data points shows the correlation, if any, between the two data sets. If the points plotted are scattered at random, the data sets are *not* related. A **random scattering** is shown below.




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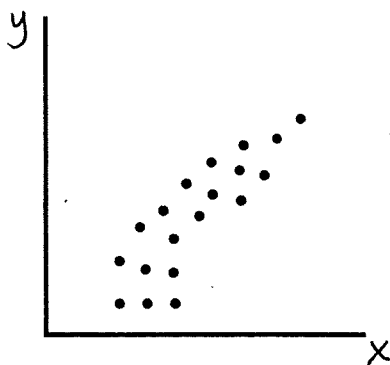


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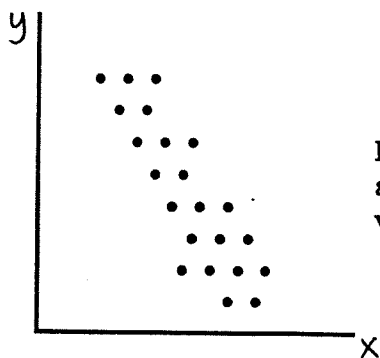
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By contrast, if most of the data points are clustered together along an imaginary line, the two data sets are **correlated**.



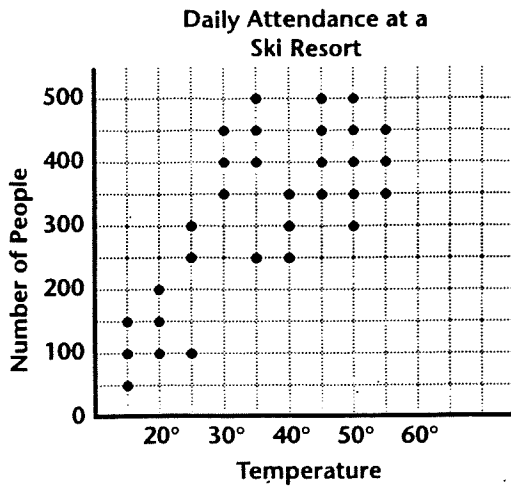
**Upward:** If the data goes up from left to right, the two data sets are **positively correlated**. As values in one set increase, the values in the other set also increase.

as  $x$      ,  $y$      



**Downward:** If the data goes down from left to right, the data sets are **negatively correlated**. As values in one set increase, the values in the other set *decrease*.

as  $x$      ,  $y$



Describe the correlation between the number of ski resort visitors and the temperature.

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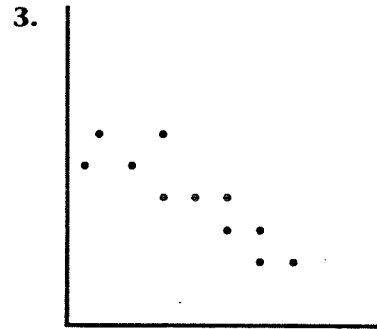
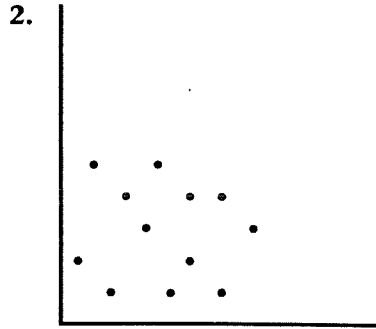
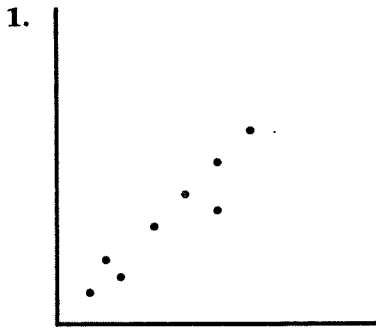


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Tell whether the correlation for the scatter plot is positive, negative, or neither.




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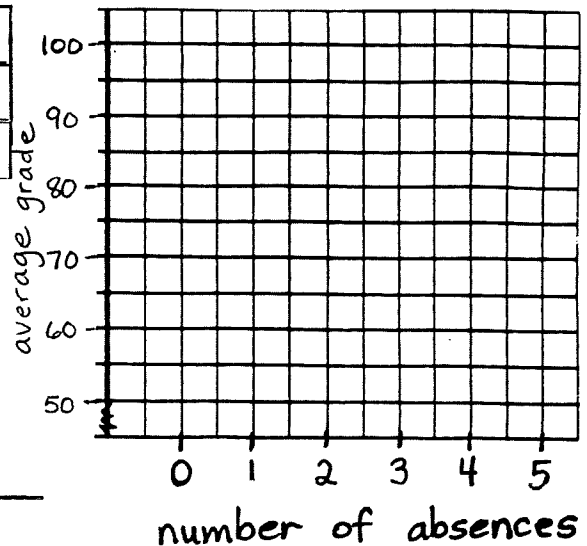
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**Model Problem Constructing a Scatter Plot**

Make a scatter plot for these data and determine whether there is no correlation, a negative correlation, or a positive correlation between the two sets.

Student	Ali	Ben	Bry	Cal	Dina	Erin	Gil	Hari
Absences	0	2	3	1	4	2	0	3
Average grade	99	79	76	84	65	80	94	77

Student	Lon	Mei	Paolo	Pete	Rae	Suki	Tess
Absences	0	2	1	2	1	0	5
Average grade	95	78	86	88	78	85	56




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