

Definitions		
RUN	SHIFT	TRENDS
A sequence of consecutive points which all lie on the same side of the mean/median line.	SIX or more points above or below the line	FIVE or more consecutively increasing or decreasing points

Step 1

Look for runs. Mean or median can be used depending upon the data. If the data is symmetrical, use **mean**; otherwise **median** is a better choice. A run can be a single point if both the previous and subsequent points are on the opposite side of the mean/median line. Ignore points that lie exactly on the line. Simply count the number of runs. Having more or fewer runs than expected indicates that there is non-random variation in the process (i.e., special cause).

Step 2

Next look for shifts. This is an indication that special cause variation exists in the process. After shifts, look for trends.

There are **four** run chart rules that can be used to analyze data on a run chart:

Rule 1

A shift is indicated by six or more consecutive points above or below the median. This is a signal that something nonrandom has occurred in the process.

SHIFT



Rule 2

A trend is indicated by five or more consecutive points all increasing or decreasing. This is another signal that special cause variation exists.

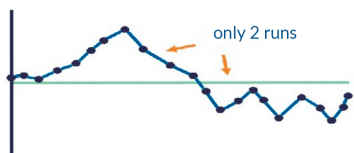
TREND



Rule 3

Too many or too few runs is calculated with a mathematical equation. Data should predictably bounce above and below the median. A table can be used to determine how often is normal that utilizes statistics and calculates the upper and lower limits for number of runs.

TOO MANY OR TOO FEW RUNS



Rule 4

An astronomical data point is indicated by a data point that appears far away. It is an indication that some recognizable event occurred to which the data point can be attributed, like a surge on patient population, natural disaster, etc.

ASTRONOMICAL DATA POINT

