

[learn by doing](#)

## Measures of Center

### Readability of Cancer Pamphlets

#### Background

A study was done in order to find out whether pamphlets containing information for cancer patients are written at a level that the cancer patients can understand. Tests were administered to measure the reading levels of 63 cancer patients, and the readability levels of 30 cancer pamphlets were evaluated based on such factors as the lengths of the sentences and the number of polysyllabic words. Both the reading and readability levels correspond to grade levels, but patients' reading levels of less than grade 3 and above grade 12 cannot be determined exactly. (**Source:** Short, Moriarty, and Cooley. (1995). "Readability of Educational Materials for Cancer Patients." *Journal of Statistics Education*, v.3, n.2)

The following tables indicate the number of patients at each reading level and the number of pamphlets at each readability level.

Patients' Reading Level	<3	3	4	5	6	7	8	9	10	11	12	>12
Count	6	4	4	3	3	2	6	5	4	7	2	17

Pamphlets' Readability Level	6	7	8	9	10	11	12	13	14	15	16
Count	3	3	8	4	1	1	4	2	1	2	1

#### Comment

Note that the data are presented in a grouped form; the actual readability data, for example, are: 6 6 6 7 7 7 8 8 8 8 8 8 8 8 9 9 9, etc.

Answer the following questions:

Explain why you cannot calculate the mean (average) reading level of patients given the above data.

Submit and Compare

Hint

Now find the median reading level of the patients:  
Note that the data are already ordered—that's good!

We have  $n =$   observations of the reading level of cancer patients.

Since  $n$  is , the median reading level will be the  in the ordered data, which in this case is the  ranked observation.

The median reading level is therefore .

Find the median readability level of the pamphlets.

Submit and Compare

Can you conclude that the pamphlets are well matched to the patients' reading levels? Look carefully at the data.

Submit and Compare



[Open Learning Initiative](#)  
Unless otherwise noted this work is licensed under a [Creative Commons Attribution-NonCommercial-ShareAlike 3.0 Unported License](#).