QUARTILE DETERMINATION (FROM EVEN SERIES)

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Quartiles are values that divide a given data series into four equal parts. There are 3 quartiles:

•First Quartile/Lower Quartile- Q1

•Second/Middle Quartile/Median- Q2

•Third/Upper Quartile- Q3

Quartile determination from the series given below:

31, 35, 27, 29, 32, 43, 37, 41, 34, 28, 36, 44, 45, 42

SI No.	Data Series
1	27
2	28
3	29
4	31
5	32
6	34
7	35
8	36
9	37
10	41
11	42
12	43
13	44
14	45

• Step 1: Arrange the data into ascending (small to large) order

Total no. of observations (\mathbf{n})= 14 i.e. there are total 14 numbers in the given data series

Quartile Rank	Sl No.	Data Series	Quartile Value
	1	27	
	2	28	
3.75	3	29	Q1
	4	31	
	5	32	
	6	34	
7.5	7	35	Q2
	8	36	
	9	37	
	10	41	
11.25	11	42	Q3
	12	43	
	13	44	
	14	45	

Table No. 1

• <u>Step 2: Write down the formulae for determining the Quartile values and</u> <u>find out the values</u>

Rank of Q1= (n+1)/4th observation

 $=(14+1)/4^{\text{th}}$ observation

= $15/4^{\text{th}}$ observation=3.75th observation

<u>3.75th observation is found between 3rd observation and 4th observation</u> (see table no.1)

3rd observation has value <u>29</u> and 4th observation has value <u>31</u>

Q1 value should lie between 29 and 31

Therefore, Q1 value has to be determined using simple interpolation

3.75-3	= <u>Q1-29</u>
4-3	31-29
0.75 =	Q1-29
1	2

0.	.7	5	*	2=	1*((\mathbf{Q})	1-	29)	

1.5= Q1-29

1.5+29 = Q1

30.5= Q1

<u>Q1 Value</u>= 30.5

<u>Rank of Q2</u>= $2(n+1)/4^{\text{th}}$ observation= $(n+1)/2^{\text{th}}$ observation

 $=(14+1)/2^{\text{th}}$ observation

=15/2th observation=7.5th observation

7.5th observation is found between 7th observation and 8th observation (see table no.1)

7th observation has value <u>35</u> and 8th observation has value <u>36</u>

Q2 value should lie between 35 and 36

Therefore, Q2 value has to be determined using simple interpolation

7.5-7	= Q2-35
8-7	36-35
0.5 =	Q2-35
1	1
0.5 *	1= 1*(Q2- 35)
0.5=0	Q2-35
0.5+3	35 = Q2
35.5=	= Q2

<mark>Q2 Value</mark>= 35.5

Rank of Q3= 3(n+1)/4th observation

- $= 3(14+1)/4^{\text{th}}$ observation
- = $3*15/4^{\text{th}}$ observation=11.25th observation

 $\underline{11.25^{th}}$ observation is found between 11^{th} observation and 12^{th} observation (see table no.1)

11th observation has value <u>42</u> and 12th observation has value <u>43</u>

Q3 value should lie between 42 and 43

Therefore, Q3 value has to be determined using simple interpolation

<u>Q3 Value</u>= 42.25