

Answer on Question #74982-Math-Statistics and Probability

For the following frequency table obtain the relative frequencies and the cumulative frequencies of the 'more than' type.

Distribution of 250 lamp bulbs by life (in hours)

Life hours Frequency

499.5 - 649.5 5

649.5 - 799.5 20

799.5 - 949.5 40

949.5 - 1099.5 81

1099.5 - 1249.5 57

1249.5 - 1399.5 34

1399.5 - 1549.5 13

Total 250

Also determine the number of bulbs having a life of 1249.5 hours or less.

Solution

1)

Life hours	Frequency	Relative frequency
499.5 - 649.5	5	$\frac{5}{250} = 0.02$
649.5 - 799.5	20	$\frac{20}{250} = 0.08$
799.5 - 949.5	40	$\frac{40}{250} = 0.16$
949.5 - 1099.5	81	$\frac{81}{250} = 0.324$
1099.5 - 1249.5	57	$\frac{57}{250} = 0.228$
1249.5 - 1399.5	34	$\frac{34}{250} = 0.136$
1399.5 - 1549.5	13	$\frac{13}{250} = 0.052$
Total	250	

2) The cumulative frequencies of the 'more than' type

Life hours	Frequency	Relative frequency	Cumulative frequency
499.5 - 649.5	5	$\frac{5}{250} = 0.02$	$0.98 + 0.02 = 1$
649.5 - 799.5	20	$\frac{20}{250} = 0.08$	$0.9 + 0.08 = 0.98$
799.5 - 949.5	40	$\frac{40}{250} = 0.16$	$0.74 + 0.16 = 0.9$
949.5 - 1099.5	81	$\frac{81}{250} = 0.324$	$0.416 + 0.324 = 0.74$
1099.5 - 1249.5	57	$\frac{57}{250} = 0.228$	$0.188 + 0.228 = 0.416$
1249.5 - 1399.5	34	$\frac{34}{250} = 0.136$	$0.136 + 0.052 = 0.188$
1399.5 - 1549.5	13	$\frac{13}{250} = 0.052$	0.052
Total	250		

3) The number of bulbs having a life of 1249.5 hours or less

$$250(1 - 0.188) = 203.$$

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