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Module: Probability and Statistics (PST)
2nd Year EM, GM

Worksheet : N°4

Exercise 1:

The number of matches contained in 20 boxes was recorded, and the results are as follows: 40, 42, 32, 38, 40, 48, 30, 38,36, 40, 34, 40, 34, 38, 40, 42, 44, 36, 42, 40.

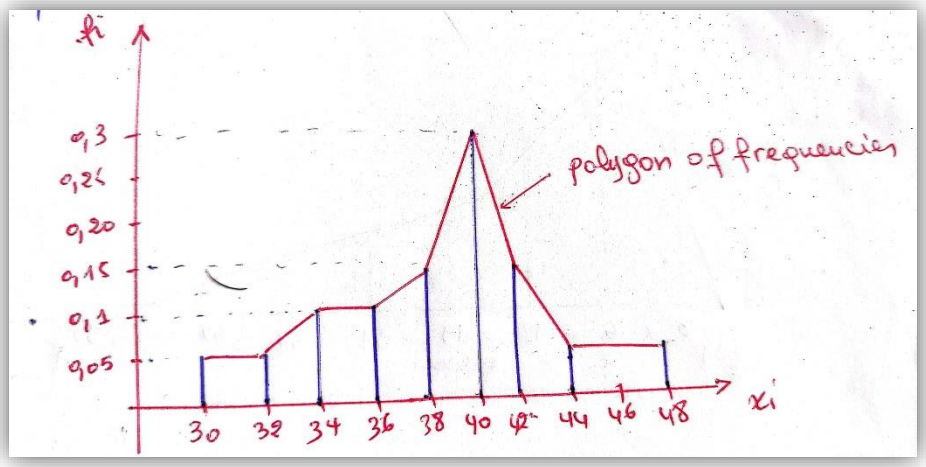
1. Give the statistical table.
2. Can we represent this variable with a histogram?
3. Graph this variable using frequencies and plot the polygon of frequencies.

Solution:

1. the statistical table:

Xi	**30**	**32**	**34**	**36**	**38**	**40**	**42**	**44**	**48**	**Total**
ni	1	1	2	2	3	6	3	1	1	20
fi	0.05	0.05	0.1	0.1	0.15	0.3	0.15	0.05	0.05	1

2. No, we can't because it's a discrete variable
3. Graphical representation:



Bar chart shown the number of matches contained in 20 boxes

Exercise 2:

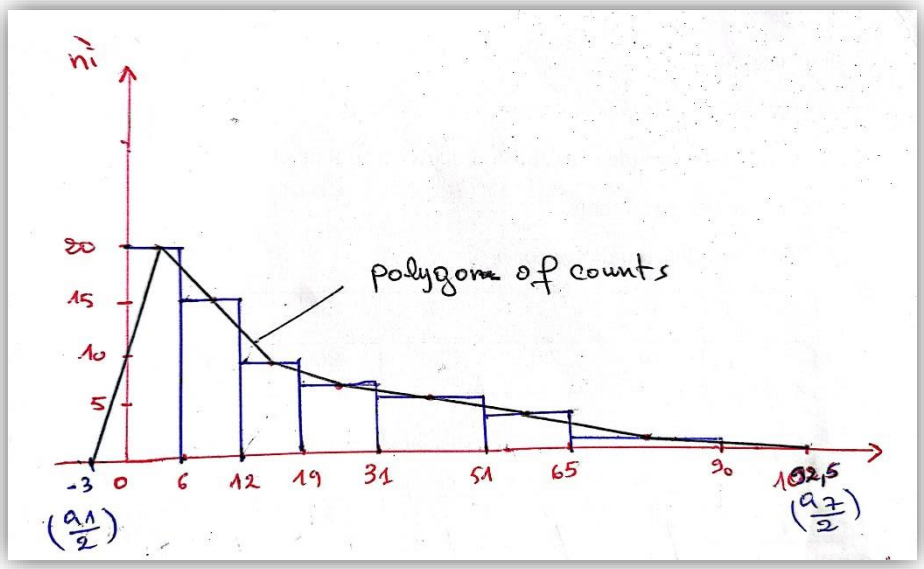
The age distribution of the population of a city is as follows:

4. Give the statistical table.
5. Make a graphical representation of this distribution, and draw the polygon of counts.

Classes	[0-6[	[6-12[	[12-19[	[19-31[	[31-51[	[51-65[	[65-90]
Count x10^3	20	15	10	13	17	8	4

Solution :

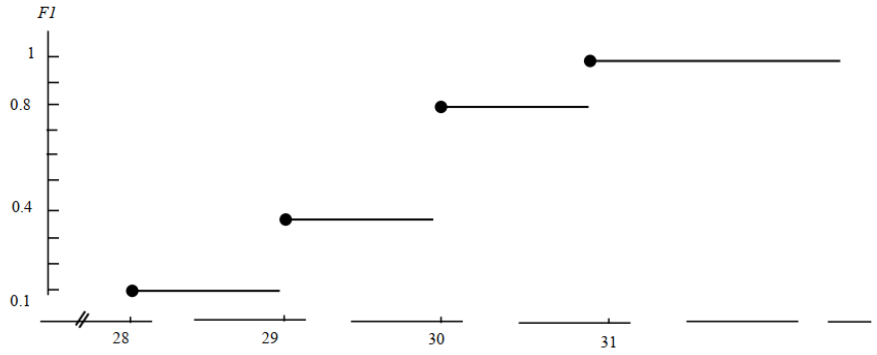
Classes	[0-6[	[6-12[	[12-19[	[19-31[	[31-51[	[51-65[	[65-90]	Total
ni	20	15	10	13	17	8	4	87
ai	6	6	7	12	20	14	25	
Ci	3	9	15.5	25	41	58	77.5	
ni'	20	15	8.6	6.5	5.1	3.4	0.96	



Histogram represents the age distribution of a population.

Exercise 3:

- Give the distribution of partial frequencies and counts corresponding to the graph of the following distribution of 200 tubes.



Solution :

xi	**28**	**29**	**30**	**31**	**Total**
ni	20	60	80	40	200
fi	0.1	0.3	0.4	0.2	1
Fi=∑fi	0.1	0.4	0.8	1	

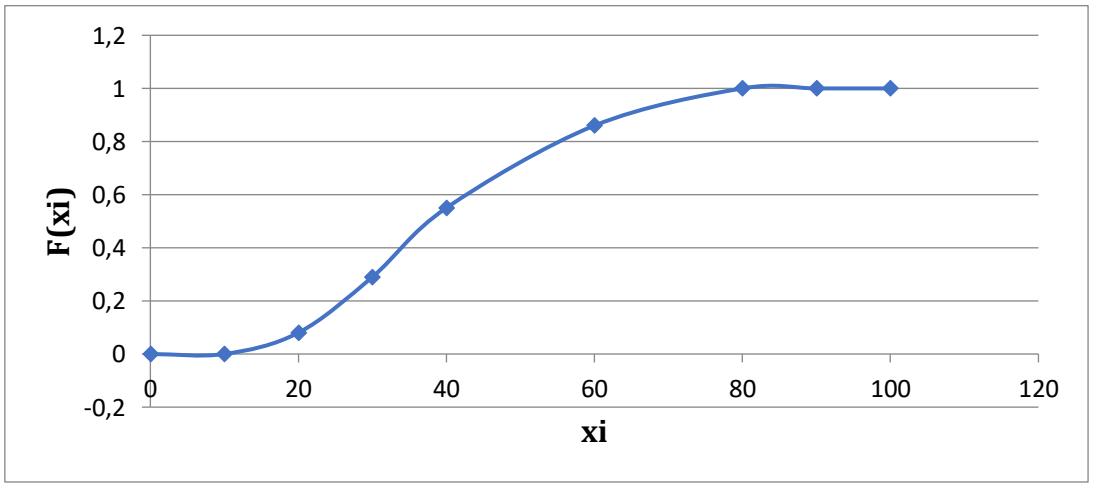
Exercise 4:

1. Complete the following statistical table
2. Plot the increasing cumulative curve.

Classes	**[10-20[**	**[20-30[**	**[30-40[**	**[40-60[**	**[60-80[**	**Total**
Ci						
fi	0.08	0.21				
Fi			0.55	0.86		

Solution :

Classes	**[10-20[**	**[20-30[**	**[30-40[**	**[40-60[**	**[60-80[**	**Total**
Ci	**15**	**25**	**35**	**50**	**70**	
fi	0.08	0.21	**0.26**	**0.31**	**0.14**	**1**
Fi	**0.08**	**0.29**	0.55	0.86	**1**	
F(x) **0**	**0.08**	**0.29**	0.55	0.86	**1**	



Increasing cumulative curve

Exercise 5:

The following table was obtained:

1/ Calculate the frequencies and cumulative frequencies.

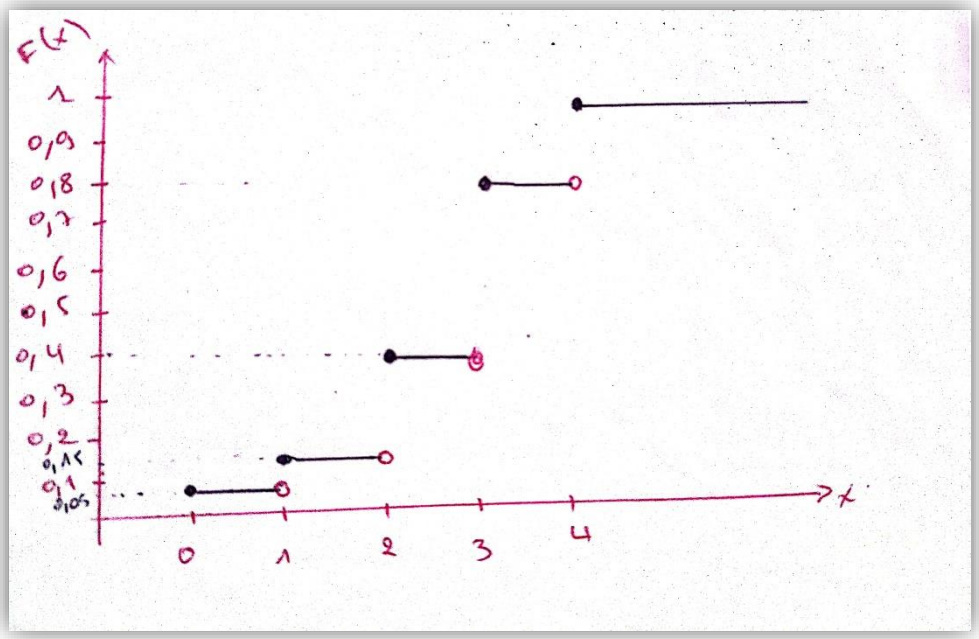
2/ Give the statistical table.

3/ Represent the cumulative curve.

xi	0	1	2	3	4
ni	10	20	50	80	40

Solution:

xi	0	1	2	3	4	Total
ni	10	20	50	80	40	200
fi	**0.05**	**0.1**	**0.25**	**0.4**	**0.2**	**1**
Fi	**0.05**	**0.15**	**0.4**	**0.8**	**1**	



Increasing cumulative curve