Worksheet 2015-11ℰK-00003(1)

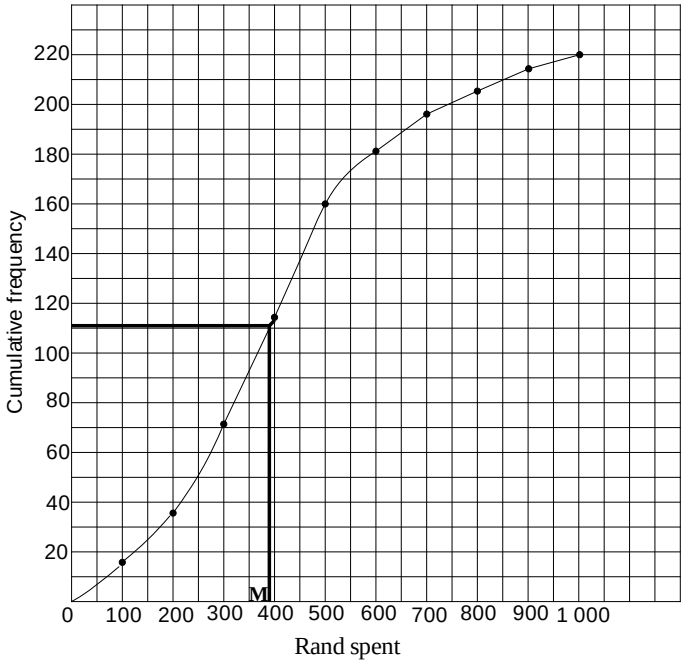
Statistics – Ogive MEMO

(1) In a survey among 220 households, the amount (in rand) spent on domestic cleaning agents per month, is indicated as in the table:

Rand (x) spent on domestic cleaning agents	Frequency	Cumulative frequency	Points to plot
$0 < x \leq 100$	16	16	(100 ; 16)
$100 < x \leq 200$	20	36	(200 ; 36)
$200 < x \leq 300$	35	71	(300 ; 71)
$300 < x \leq 400$	44	115	(400 ; 115)
$400 < x \leq 500$	45	160	(500 ; 160)
$500 < x \leq 600$	22	182	(600 ; 182)
$600 < x \leq 700$	14	196	(700 ; 196)
$700 < x \leq 800$	10	206	(800 ; 206)
$800 < x \leq 900$	8	214	(900 ; 214)
$900 < x \leq 1\,000$	6	220	(1 000 ; 220)

(a) Complete the above table.

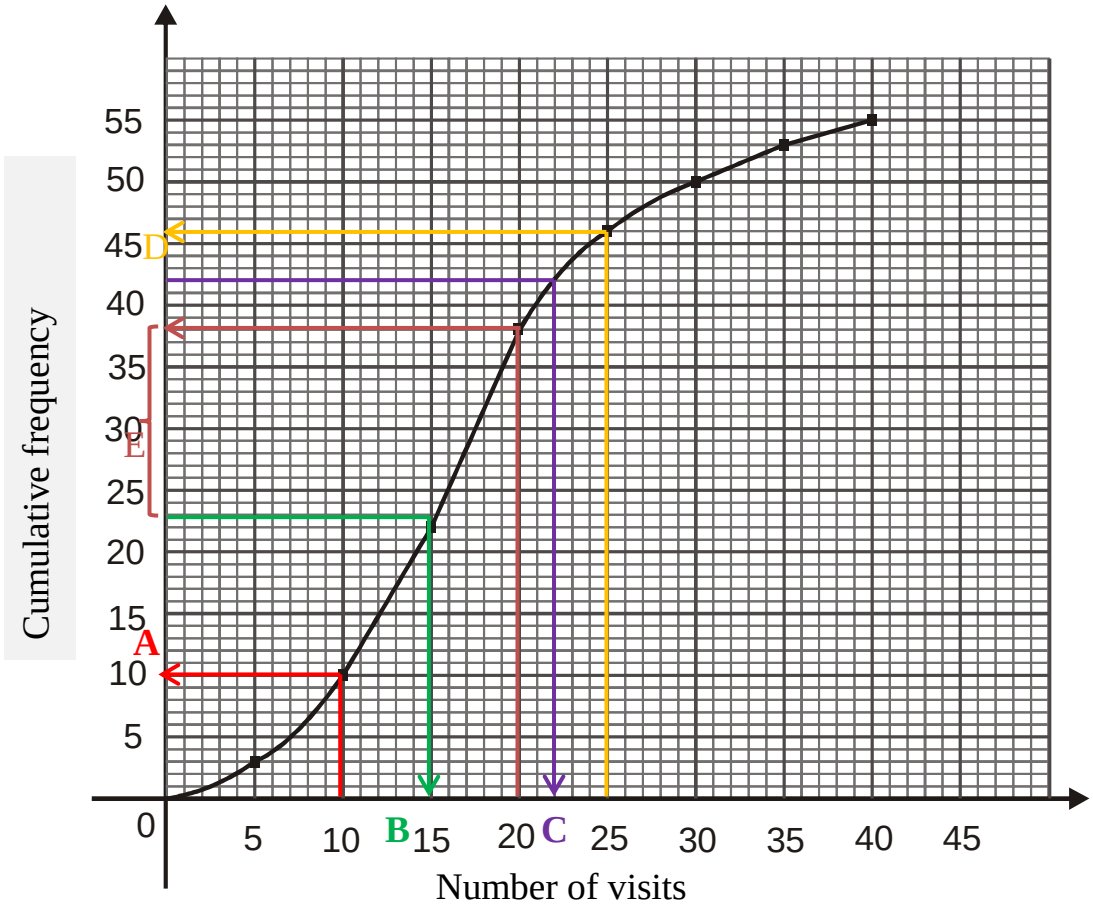
(b) Present the table in (a) as an ogive.



(c) Use the ogive in (b) and determine the median of the data. Use an M to indicate where the reading was made on the graph.

Median lies between 110th and 111th entries. ∴ **At M the median is = 390**

(2) 55 members of a gymnasium are contacted to participate in a survey. The number of visits to the gymnasium over the last five months is presented on the following ogive. Study the graph and answer the following questions.



(a) How many members have not maintained the minimum of at least two visits per month?

2×5 months $= 10$ visits.

$\therefore$ Read from A: **10 members**

(b) Calculate the median of all the visits.

Median $\rightarrow$ 23^{rd} entry. $\therefore$ **Median = 15** visits read from B.

(c) Calculate the upper quartile.

Upper quartile $\rightarrow$ 42^{nd} entry. $\therefore$ $\mathbf{Q_3 = 22}$ visits read from C.

(d) What is the least number of visits that the upper 25% of the members, made to the gymnasium?

Upper 25% $\rightarrow$ above upper quartile. $\therefore$ **22 visits**

(e) How many members visited the gymnasium 25 or more times over the last five months?

At D: 55 (Total) - 46 (at D) = **9 members**

(f) How many members visited the gymnasium in the interval $15 < x \leq 20$ over the five months?

38 - 22 = **16** read from E.

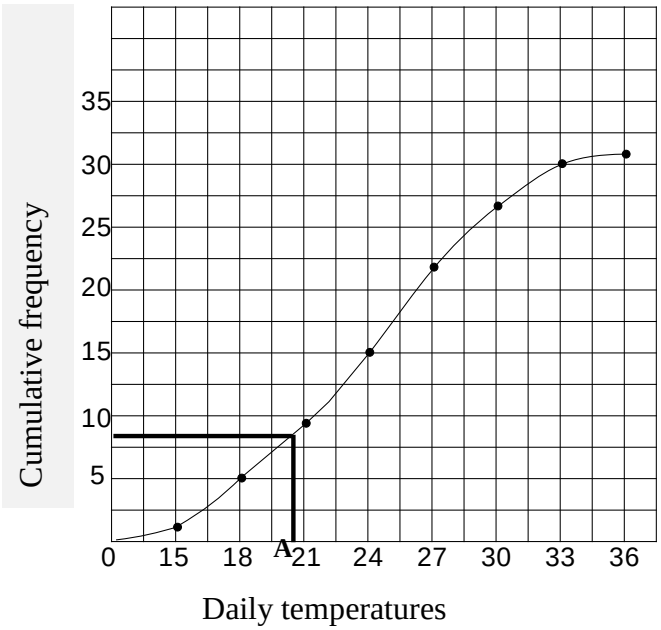
(3) The maximum daily temperatures, measured for May, for a certain town is as follow:

23	31	28	27	25	27	18	17	17	15	20	22	23	22	25	23
26	30	32	36	27	25	23	26	21	17	19	21	26	30	30	

(a) Complete the following table:

Daily temperatures (x) in °C	Tally	Frequency	Cumulative frequency	Daily temperatures (x) in °C
$12 < x \leq 15$	/	1	1	(15 ; 1)
$15 < x \leq 18$	////	4	5	(18 ; 5)
$18 < x \leq 21$	////	4	9	(21 ; 9)
$21 < x \leq 24$	///+ /	6	15	(24 ; 15)
$24 < x \leq 27$	///+ ////	9	24	(27 ; 24)
$27 < x \leq 30$	////	4	28	(30 ; 28)
$30 < x \leq 33$	//	2	30	(33 ; 30)
$33 < x \leq 36$	/	1	31	(36 ; 31)

(b) Use the frequency table in (a) and draw an ogive of the data.



(c) Use the graph and determine Q_1. Show on the graph where the reading where made.

Q_1 8th entry read from A: **Q_1 = 20**