UDS
PASIÓN POR EDUCAR

Nombre del alumno: Olaguez Ramírez Brenda Leticia

Nombre del profesor: Albores Aguilar Jorge Enrique

Nombre del trabajo: Datos agrupados y gráfica ojiva

Materia: Estadística descriptiva en nutrición

Grado: 3° A

Grupo: LNU

Comitán de Domínguez Chiapas a 30 de Julio de 2021.

Brenda Leticia Ologuez Ramírez

Ejercicio 1

50	30	50	21	40
30	49	25	50	47
29	46	34	48	25
44	33	49	40	33
31	39	43	43	35
28	23	44	44	21

Intervalo	f_i	$\%f_i$	f_{ia}	$\%f_{ia}$	$\overline{x_i}$	$f_i x_i$	$\overline{x_i}^2$	$f_i \overline{x_i}^2$
21-26	5	16.67%	5	16.67%	23.5	117.5	552.25	2761.25
27-32	5	16.67%	10	33.33%	29.5	147.5	870.25	4351.25
33-38	4	13.33%	14	46.67%	35.5	142	1260.25	5041
39-44	8	26.67%	22	73.33%	41.5	332	1722.25	13778
45-50	8	26.67%	30	100%	47.5	380	2256.25	18050
	30	100.0%				1119		43981.5

• Rango

No. mayor - no menor

$= 50 - 21$

$= 29$

• amplitud

$a_i = \dfrac{(No.\,mayor - No.\,menor) + 1}{No.\,Intervalo}$

$a_i = \dfrac{(50 - 21) + 1}{5}$

$a_i = 6$

• Intervalo

$21 + 5 = 26$

$27 + 5 = 32$

$33 + 5 = 38$

$39 + 5 = 44$

$45 + 5 = 50$

• frecuencia

21 - 26   ⅼⅼⅼⅼⅼ

27 - 32   ⅼⅼⅼⅼⅼ

33 - 38   ⅼⅼⅼⅼ

39 - 44   ⅼⅼⅼⅼ ⅼⅼⅼⅼ

45 - 50   ⅼⅼⅼⅼ ⅼⅼⅼⅼ

• $\% f_i$

$\dfrac{5}{30} \times 100 = 16.67$ $\dfrac{8}{30} \times 100 = 26.67$

$\dfrac{5}{30} \times 100 = 16.67$ $\dfrac{8}{30} \times 100 = 26.67$

$\dfrac{4}{30} \times 100 = 13.33$

• f_{ia}

$5 + 5 = 10 + 4 = 14 + 8 = 22 + 8 = 30$

• $\% f_{ia}$

$\dfrac{5}{30} \times 100 = 16.67$ $\dfrac{22}{30} \times 100 = 73.33$

$\dfrac{10}{30} \times 100 = 33.33$ $\dfrac{30}{30} \times 100 = 100$

$\dfrac{14}{30} \times 100 = 46.67$

①

○ $\overline{x_i}$

$$\frac{21+26}{2} = 23.5$$

$$\frac{27+32}{2} = 29.5$$

$$\frac{33+38}{2} = 35.5$$

$$\frac{39+44}{2} = 41.5$$

$$\frac{45+50}{2} = 47.5$$

Brenda Leticia Ologuez
Ramírez

○ $f_i \overline{x_i}$

$5 \times 23.5 = 117.5$

$5 \times 29.5 = 147.5$

$4 \times 35.5 = 142$

$8 \times 41.5 = 332$

$8 \times 47.5 = 380$

○ $\overline{x_i}^2$

$23.5^2 = 552.25$

$29.5^2 = 870.25$

$35.5^2 = 1260.25$

$41.5^2 = 1722.25$

$47.5^2 = 2256.25$

● $f_i \overline{x_i}^2$

$5 \times 552.25 = 2761.25$

$5 \times 870.25 = 4351.25$

$4 \times 1260.25 = 5041$

$8 \times 1722.25 = 13778$

$8 \times 2256.25 = 18050$

○ Media

$$\overline{x} = \frac{\sum f_i \overline{x_i}}{n} \qquad \overline{x} = \frac{1119}{30} \qquad \overline{x} = 37.3$$

$n = 30$

○ Mediana

$$Me = l_i + \frac{\frac{n}{2} - f_{ia-1}}{f_i} \cdot a_i \qquad Me = 39 + \frac{15-14}{8} \cdot 6 \qquad Mc = 39.75$$

②

• Moda

$$MO = \frac{\overline{x_i}' + \overline{x_i}_2}{2} \qquad MO = \frac{41.5 + 47.5}{2} \qquad MO = 44.5$$

• Varianza

$$S^2 = \frac{E f_i \overline{x_i}^2 - \frac{(E f_i \overline{x_i})^2}{n}}{n-1}$$

$$S^2 = \frac{43981.5 - \frac{(1119)^2}{30}}{29}$$

$$S^2 = 77.33$$

• Desviación estandar

$$S = \sqrt{77.33}$$

$$S = 8.79$$

Brenda Leticia Olaguec Ramírez

Brenda Leticia Olaguez Ramírez

Ojiva / histogram showing age intervals (21-26, 27-32, 33-38, 39-44, 45-50) with cumulative percentages: 13.33%, 16.67%, 26.67%, 33.33%, 46.67%, 73.33%, 100%
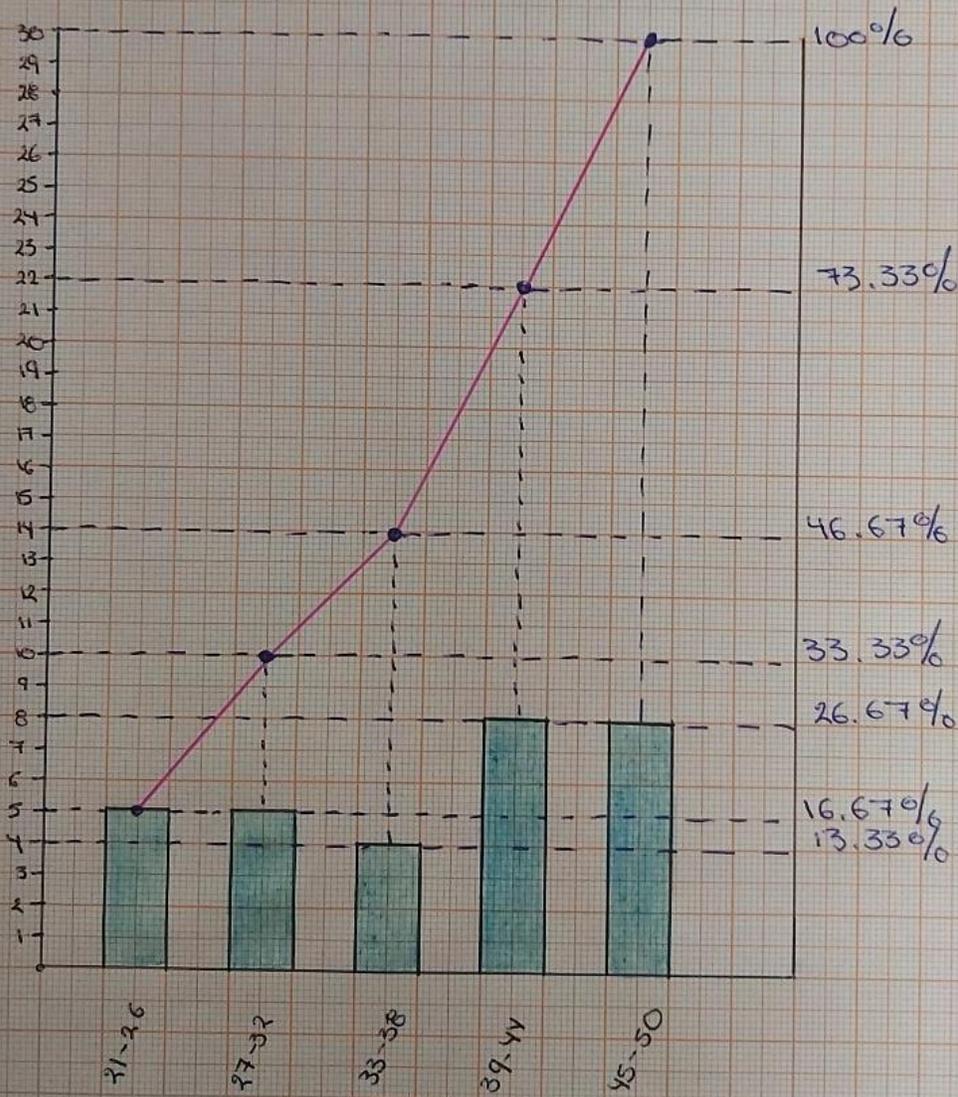
Brenda Leticia

Olaguez Ramirez

Ejercicio 2

33	56	80	42	68	33	
70	40	75	41	53	54	=30
78	42	66	45	64	58	
55	56	73	56	41	64	
39	67	79	49	44	80	

Intervalo	f_i	$\%f_i$	f_{ia}	$d_a f_{ia}$	$\overline{x_i}$	$f_i \overline{x_i}$	$\overline{x_i}^2$	$f_i \cdot \overline{x_i}^2$
33-38	2	6.67%	2	6.67%	35.5	71	1260.25	2520.5
39-44	7	23.33%	9	30%	41.5	290.5	1722.25	12055.75
45-50	2	6.67%	11	36.67%	47.5	95	2256.25	4512.5
51-56	6	20%	17	56.67%	53.5	321	2862.25	17173.5
57-62	1	3.33%	18	60%	59.5	59.5	3540.25	3540.25
63-68	5	16.67%	23	76.67%	65.5	327.5	4290.25	21451.25
69-74	2	6.67%	25	83.33%	71.5	143	5112.25	10224.5
75-80	5	16.67%	30	100%	77.5	387.5	6066.25	30031.25
	30	100.01%				1695		101509.5

• Rango

= No. mayor − no. menor

= 80−33

= 47

• Amplitud

$a_i = \dfrac{(No.\,mayor - no.\,menor) + 1}{No.\,Intervalo}$

$a_i = \dfrac{(80-33)+1}{8}$ $a_i = 6$

• Intervalo

33+5 = 38	57+5 = 62
39+5 = 44	63+5 = 68
45+5 = 50	69+5 = 74
51+5 = 56	75+5 = 80

• Frecuencia f_i

33-38	II
39-44	IIIIIII
45-50	II
51-56	IIIIII
57-62	I
63-68	IIIII
69-74	II
75-80	IIIII

$\%f_i$

$\dfrac{2}{30} \times 100 = 6.67$ $\dfrac{1}{30} \times 100 = 3.33$

$\dfrac{7}{30} \times 100 = 23.33$ $\dfrac{5}{30} \times 100 = 16.67$

$\dfrac{2}{30} \times 100 = 6.67$ $\dfrac{2}{30} \times 100 = 6.67$

$\dfrac{6}{30} \times 100 = 20$ $\dfrac{5}{30} \times 100 \; 16.67$

①

• fia

$2+7 = 9+2 = 11+6 = 17+1 = 18+5 = 23+2 = 25+5 = 30$

% fia

$\frac{2}{30} \times 100 = 6.67$ $\frac{18}{30} \times 100 = 60$

$\frac{9}{30} \times 100 = 30$ $\frac{23}{30} \times 100 = 76.67$

$\frac{11}{30} \times 100 = 36.67$ $\frac{25}{30} \times 100 = 83.33$

$\frac{17}{30} \times 100 = 56.67$ $\frac{30}{30} \times 100 = 100$

• $\overline{x_i}$

$\frac{33+38}{2} = 35.5$ $\frac{51+56}{2} = 53.5$ $\frac{69+74}{2} = 71.5$

$\frac{39+44}{2} = 41.5$ $\frac{57+62}{2} = 59.5$ $\frac{75+80}{2} = 77.5$

$\frac{45+50}{2} = 47.5$ $\frac{63+68}{2} = 65.5$

• $f_i \overline{x_i}$

$2 \times 35.5 = 71$ $6 \times 53.5 = 321$ $2 \times 71.5 = 143$

$7 \times 41.5 = 290.5$ $1 \times 59.5 = 59.5$ $5 \times 77.5 = 387.5$

$2 \times 47.5 = 95$ $5 \times 65.5 = 327.5$

• $\overline{x_i}^2$

$35.5^2 = 1260.25$ $53.5^2 = 2862.25$ $71.5^2 = 5112.25$

$41.5^2 = 1722.25$ $59.5^2 = 3540.25$ $77.5^2 = 6006.25$

$47.5^2 = 2256.25$ $65.5^2 = 4290.25$

• $f_i \overline{x_i}^2$

$2 \times 1260.25 = 2520.5$ $6 \times 2862.25 = 17173.5$ $2 \times 5112.25 = 10224.5$

$7 \times 1722.25 = 12055.75$ $1 \times 3540.25 = 3540.25$ $5 \times 6006.25 = 30031.25$

$2 \times 2256.25 = 4512.5$ $5 \times 4290.25 = 21451.25$

$n = 30$

• Media

$\overline{x} = \frac{\Sigma f_i \overline{x_i}}{n}$ $\overline{x} = \frac{1695}{30}$ $\underline{\overline{x} = 56.5}$

• Mediana

$Me = Li + \frac{\frac{n}{2} - f_{ia-1}}{f_i} \cdot a_i = 51 + \frac{15-11}{6} \cdot 6$ $\underline{Me = 55}$

Moda

$$Mo = Li + \frac{fi - fi-1}{(fi - fi-1) + (fi - fi.11)} \cdot ai$$

$$Mo = 39 + \frac{7-2}{(7-2)+(7-2)} \cdot 6 \qquad Mo =$$

$$Mo = 42$$

• Varianza

$$S^2 = \frac{E(i \cdot \bar{x})^2 - \frac{(E(i \cdot x)^2}{n}}{n-1}$$

$$S^2 = \frac{101509.5 - \frac{(1695)^2}{30}}{29}$$

$$S^2 = 198$$

• Desviación estandar

$$S = \sqrt{198}$$

$$S = 14.07$$

Brenda Leticia Olaguez Ramirez

③

Brenda Leticia Olaguez Ramírez