

EXERCISE 1

HOURS	$x_i$	$f_i$	$f_i \cdot x_i$	$F_i$
1-5	3	3	9	3
6-10	8	6	48	9
11-15	13	7	91	16
16-20	18	4	72	20
		$n=20$		

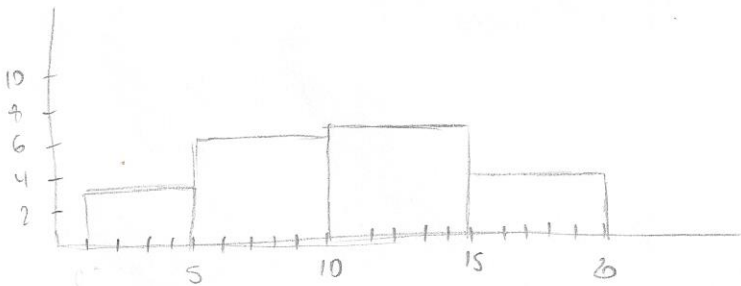
a)  $\bar{x} = \frac{\sum f_i x_i}{n} = \frac{220}{20} = 11$

b)  $mdn = L_i + \frac{1}{f_i} \left( \frac{n}{2} - F_i \right) = 10.5 + \frac{5}{7} (10 - 9) = 10.5 + 0.71 = 11.21$

$\frac{n}{2} = \frac{20}{2} = 10$

$l = 15.5 - 10.5 = 5$

c)



Histogram or frequency polygon



### EXERCISE 3

$n=100$

$X$	$f_i$	$X^2$	$f_i \cdot X^2$	$f_i \cdot X_i$	$f_i$	$F_i$
1	0.04	1	0.04	0.04	4	4
2	0.03	4	0.12	0.06	3	7
3	0.27	9	2.43	0.81	27	34
→ 4	0.47	16	7.52	1.88	47	81
5	0.1	25	2.5	0.5	10	91
6	0.05	36	1.8	0.3	5	96
7	0.04	49	1.96	0.28	4	100
	1		16.37	3.87		

$$0.04 + 0.03 + 0.27 + 0.1 + 0.05 + 0.04 = 0.53$$

$$1 - 0.53 = 0.47$$

a)

$$S^2 = \sum f_i X^2 - \bar{X}^2 = 16.37 - 3.87^2 = 16.37 - 14.98 = 1.39$$

$$\bar{X} = \sum f_i X_i = 3.87$$

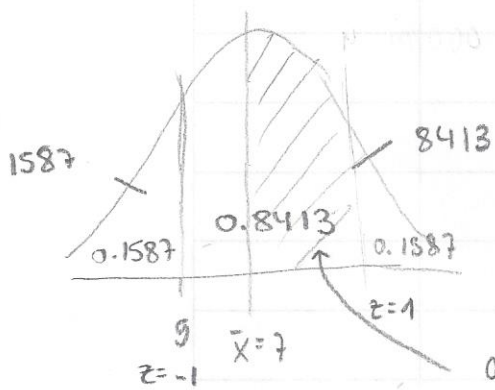
b)  $D_6 = 4$

$$\frac{i(n+1)}{k} = \frac{6(100+1)}{10} = \frac{606}{10} = 60.6$$

c)  $P_{40} = 4$

$$\frac{i(n+1)}{k} = \frac{40(100+1)}{100} = \frac{4040}{100} = 40.40$$

EXERCISE 4



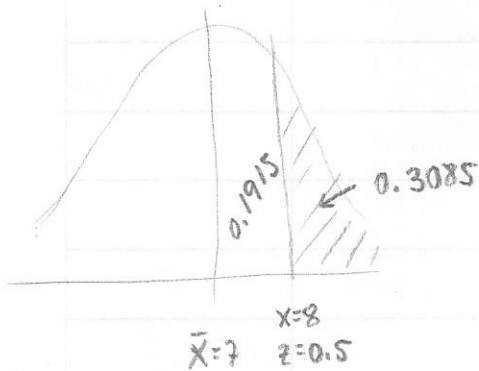
$n = 10000$

$0.5 - 0.1587 = 0.3413$

a)  $z = \frac{x - \bar{x}}{s}$

$-1 = \frac{5 - 7}{s} \rightarrow -s = -2$

$s = 2$



b)  $z = \frac{x - \bar{x}}{s} = \frac{8 - 7}{2} = \frac{1}{2} = 0.5$

$0.5 - 0.1915 = 0.3085$

$0.3085 \cdot 10000 = 3085$