

### 1 Maintenance Cost Analysis

It is expected that the maintenance cost of an aircraft increases with its age. To study this relationship, an aviation engineer selected 18 aircraft, aged between 40 and 79 months, and recorded for each one its age ( $X$ , measured in months) and its maintenance cost ( $Y$ , measured in thousands of dollars).

$Y$	82	91	100	68	87	73	78	80	65	84	116	76	97	100	105	77	73	78
$X$	71	64	43	67	56	73	68	56	76	65	45	58	45	53	49	78	73	68

- Represent these data graphically, fit a linear relationship between the variables  $X$  and  $Y$ , and characterize the goodness of fit obtained. Estimate the average maintenance cost of aircraft that are exactly 50 months old.

### 2 Hours Flown and Maintenance Costs

An aviation company collects data regarding the number of hours flown by its fleet of aircraft and the corresponding direct maintenance costs. The table below presents the collected data: 30 ordered pairs (flight hours in units, direct maintenance costs).

(26, 230)	(20, 209)	(5, 128)
(50, 341)	(30, 247)	(10, 155)
(100, 629)	(4, 135)	(10, 143)
(20, 187)	(5, 125)	(6, 131)
(8, 159)	(50, 366)	(20, 219)
(40, 327)	(200, 1146)	(15, 171)
(25, 206)	(50, 339)	(30, 258)
(6, 124)	(20, 208)	(65, 415)
(8, 155)	(10, 150)	(22, 226)
(10, 147)	(15, 179)	(10, 159)

- Represent these data graphically, fit a linear relationship between the variables flight hours and direct maintenance costs, and characterize the degree of fit obtained.