

10 Fig. 10.1 shows a sample collected from the large data set.

BMI is defined as $\frac{\text{mass of person in kilograms}}{\text{square of person's height in metres}}$

Sex	Age in years	Mass in kg	Height in cm	BMI
Male	38	77.6	164.8	28.57
Male	17	63.5	170.3	21.89
Male	18	68.0	172.3	22.91
Male	18	57.2	172.2	19.29
Male	19	77.6	191.2	21.23
Male	24	72.7	177.0	23.21
Male	25	92.5	177.9	29.23
Male	26	70.4	159.4	27.71
Male	31	77.5	174.0	25.60
Male	34	132.4	182.2	39.88
Male	38	115.0	186.4	33.10
Male	40	112.1	171.7	38.02

Fig. 10.1

(a) Calculate the mass in kg of a person with a BMI of 23.56 and a height of 181.6cm, giving your answer correct to 1 decimal place. **[2]**

Fig. 10.2 shows a scatter diagram of BMI against age for the data in the table. A line of best fit has also been drawn.

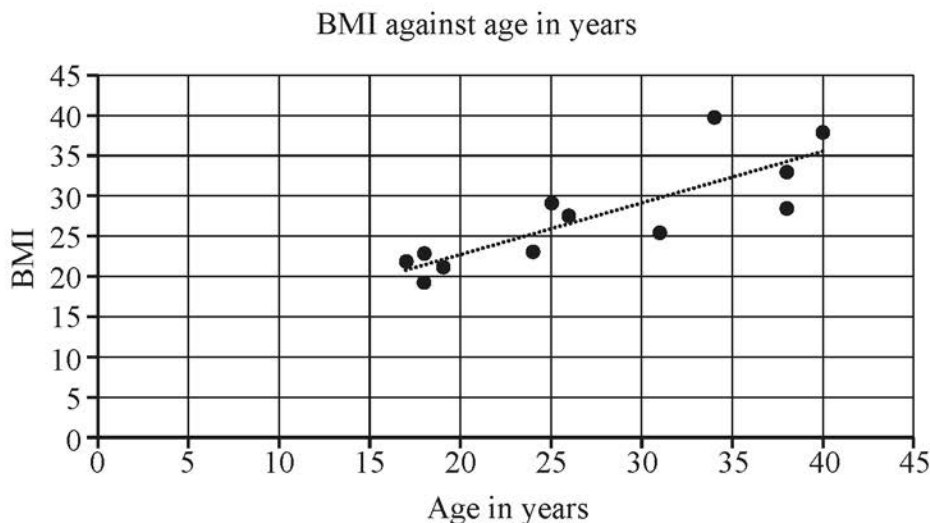


Fig. 10.2

- (b) Describe the correlation between age and BMI. [1]
- (c) Use the line of best fit to estimate the BMI of a 30-year-old man. [1]
- (d) Explain why it would not be sensible to use the line of best fit to estimate the BMI of a 60-year-old man. [1]
- (e) Use your knowledge of the large data set to suggest **two** reasons why the sample data in the table may not be representative of the population. [2]
- (f) Once the data in the large data set had been cleaned there were 196 values available for selection. Describe how a sample of size 12 could be generated using systematic sampling so that each of the 196 values could be selected in the sample. [2]