Marked example 1

Paper 1 style · No calculator

1 4 marks SL 4.4 ●○○ Routine

For 12 cars, the age x years and the value y thousand euros give $r = -0.92$ and the regression line of y on x, $y = -2.5x + 80$. The ages range from 2 to 15 years, and the mean age is 10 years.

(a) Describe the correlation between age and value. **[1]**

(b) Use the regression line to estimate the value of a car aged 12 years. **[1]**

(c) Explain why the line should not be used to estimate the value of a car aged 40 years. **[1]**

(d) Find the mean value of the 12 cars. **[1]**

MARKSCHEME (a)

strong negative (linear) correlation

A1

Total 1 mark

MARKSCHEME (b)

$-2.5 \times 12 + 80 = 50$: 50 000 euros

A1

Total 1 mark

MARKSCHEME (c)

40 is far outside the data: extrapolation

R1

Total 1 mark

Note The line also gives a negative value.

MARKSCHEME (d)

$-2.5 \times 10 + 80 = 55$: 55 000 euros

A1

Total 1 mark

Note The regression line passes through $(\bar{x}, \bar{y})$.

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