

## SAMPLE PAPER 5: PAPER 2

### QUESTION 7 (75 MARKS)

#### Question 7 (a)

Amount of claim $x$ (€/year)	0	1000	5000	10 000
Probability	0.8	0.15	0.04	0.01

$$E = \sum xP(x) = 0(0.8) + 1000(0.15) + 5000(0.04) + 10\,000(0.01) = \text{€}450$$

#### Question 7 (b)

This is the average payout per claim per year for the company.

#### Question 7 (c)

$$P(x > 450) = 0.15 + 0.04 + 0.01 = 0.2$$

#### Question 7 (d)

Profit per car (€)	$M$	$M - 500$	$M - 4500$	$M - 9500$
Probability	0.8	0.15	0.04	0.01

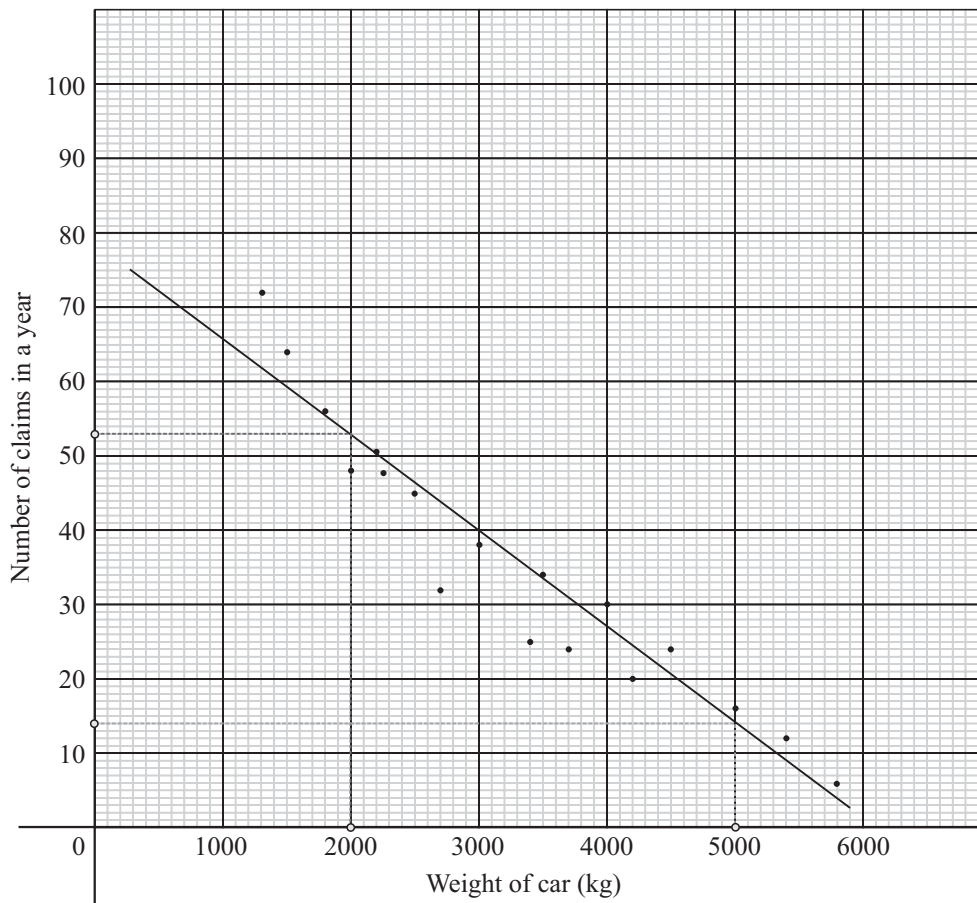
$$0.8M + 0.15(M - 500) + 0.04(M - 4500) + 0.01(M - 9500) = 200$$

$$0.8M + 0.15M - 75 + 0.04M - 180 + 0.01M - 95 = 200$$

$$M - 350 = 200$$

$$\therefore M = \text{€}550$$

#### Question 7 (e) (i)



There is a strong negative correlation between the number of claims per year and the weight of the car.

**Question 7 (e) (ii)**

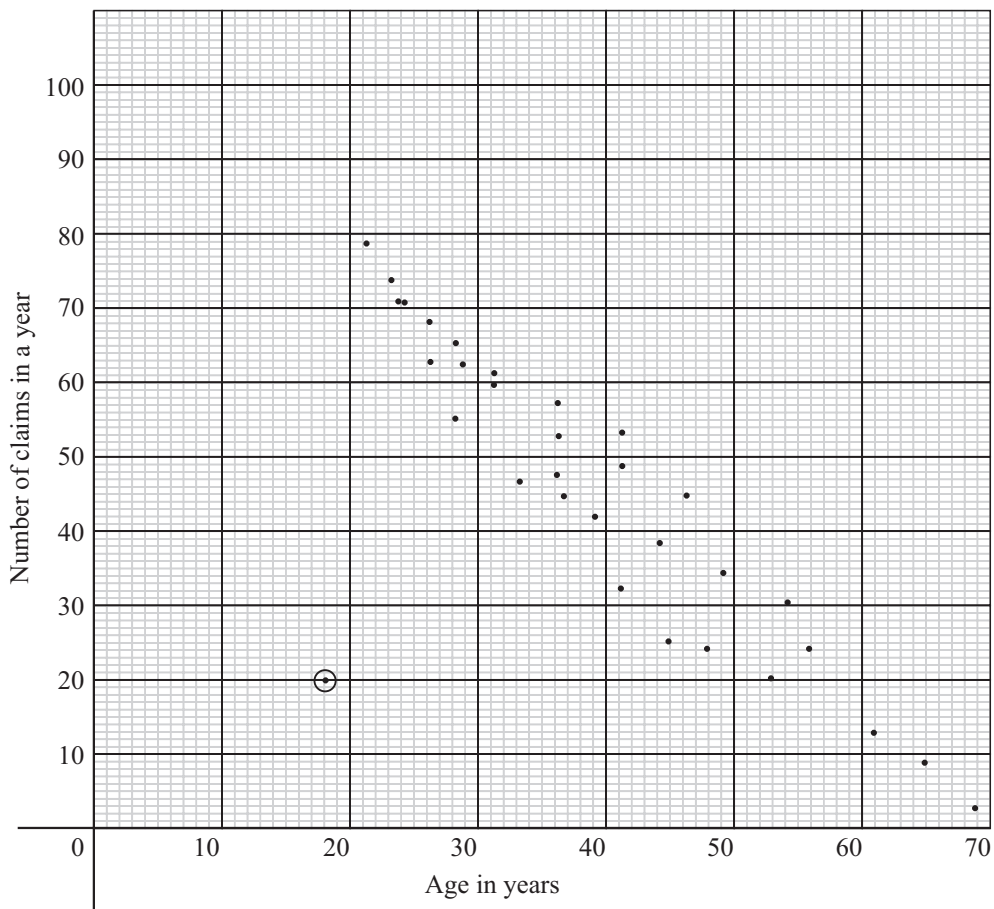
(2000, 53), (5000, 14)

$$m = \frac{14 - 53}{5000 - 2000} = -0.01$$

**Question 7 (e) (iii)**

No. Maybe there are fewer heavier cars insured with this company or because the premium on these vehicles is so high claims may not be made when minor damage is incurred.

**Question 7 (f) (i)**



Outlier (18, 20), learners usually have an experienced driver with them.

**Question 7 (f) (ii)**

Strong negative correlation.

**Question 7 (g)**

According to this data, the insurance company could claim that its lowest risk is a person aged **69 years** driving a car of weight **5800 kg** and the highest risk is a person aged **21 years** driving a car of weight **1300 kg**.