

1a)  $H_0$ : Gender and meals per day are independent.

b) 2

c)  $\chi^2_{\text{calc}} > 5.99$

d)  $\frac{45(28)}{100} = 12.6 \approx 13$

e)  $\chi^2_{\text{calc}} = 0.0321$

f) Since  $\chi^2_{\text{calc}} < 5.99$  do not reject  $H_0$ .

2 a)  $a = -0.134, b = 20.9$

$$y = 20.9 - 0.134x$$

b) 17 objects

c)  $r = -0.756$

d) negative and moderately strong

3a)  $H_0$ : Examiners and examination results are independent.

b) 4

c)  $\frac{45(30)}{135} = 10$

d) Since  $0.0327 < 0.05$ , we should reject  $H_0$ .

4 a)  $r = 0.986$

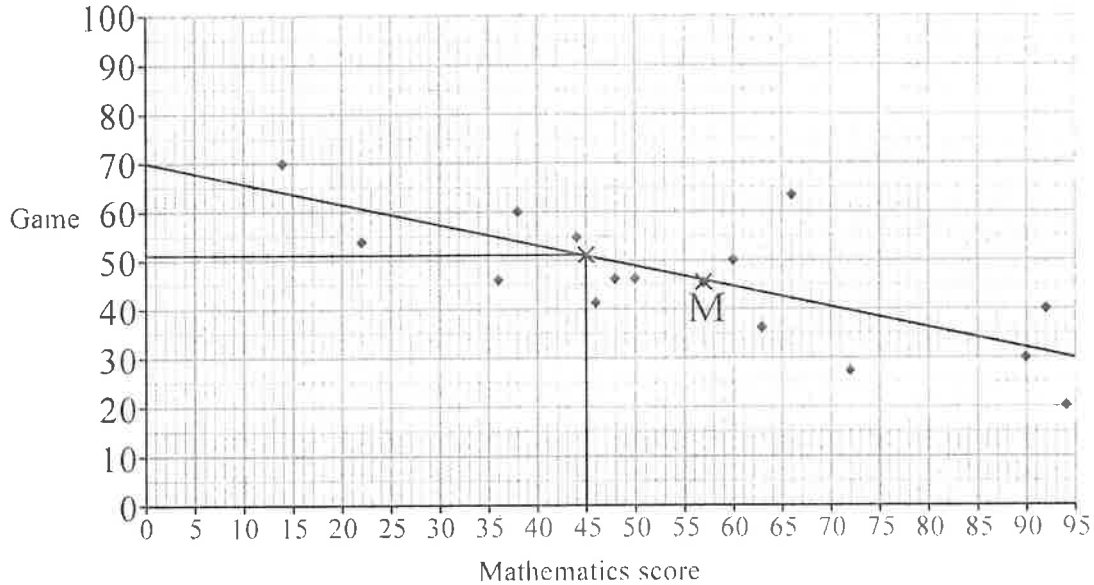
b) Strong, positive correlation

c)  $y = 0.0158x + 0.182$

d)  $y = 0.0158 \times 109 + 0.182$   
 $= 1.90$  euros.

5 a) The scores are negatively correlated

b)



Line must be drawn straight.

It must pass through (0, 69).

It must pass through the mean point  $M = (56.9, 45.9)$ .

c) For method shown using intersecting coordinate lines or a mark in the right place:  
51 is closest. Allow 50 or 52

6a) (i) Alternative Hypothesis  $H_1$ : The choice of candidate is not independent of where the voter lives.

(ii)

Cell	$f_0$	$f_c$	$f_0 - f_c$	$(f_0 - f_c)^2$
1	295	317	-22	484
2	226	204	22	484
3	313	291	22	484
4	166	<b>188</b>	<b>-22</b>	484

b) (i)  $\chi^2_{\text{calc}} = 7.97$

(ii) 1

(iii)  $\chi^2_{\text{critical}} = 3.841$

c) (i) Reject  $H_0$ .

(ii) Since  $\chi^2_{\text{calc}} > 3.841$ , reject  $H_0$ .