

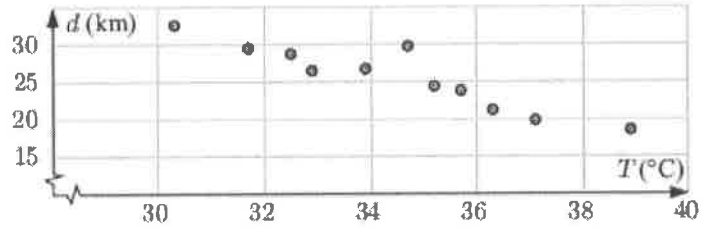
# Ch. 11 Review Set Solutions

## Review Set A

### REVIEW SET 11A

1

a



b  $r \approx -0.928$ , a strong negative linear relationship exists between the variables.

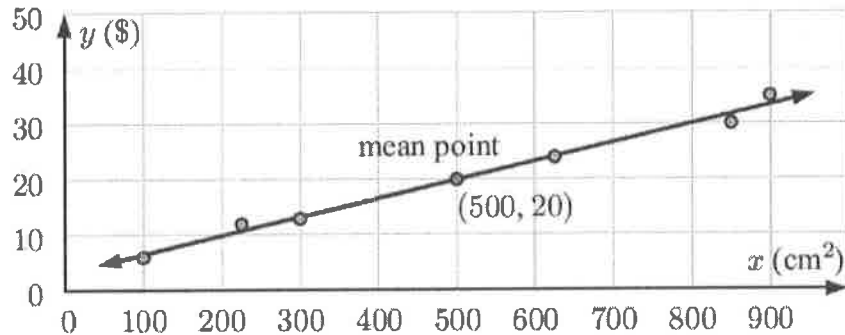
c  $d = -1.64T + 82.3$       d  $50.0^\circ\text{C}$

2  $\chi^2_{\text{calc}} \approx 7.37$ ,  $df = 2$ ,  $p \approx 0.0251$

As  $\chi^2_{\text{calc}} > 5.99$  we reject  $H_0$ . So, at a 5% level, wearing a seat belt and severity of injury are not independent.

3

a, e



b  $r \approx 0.994$

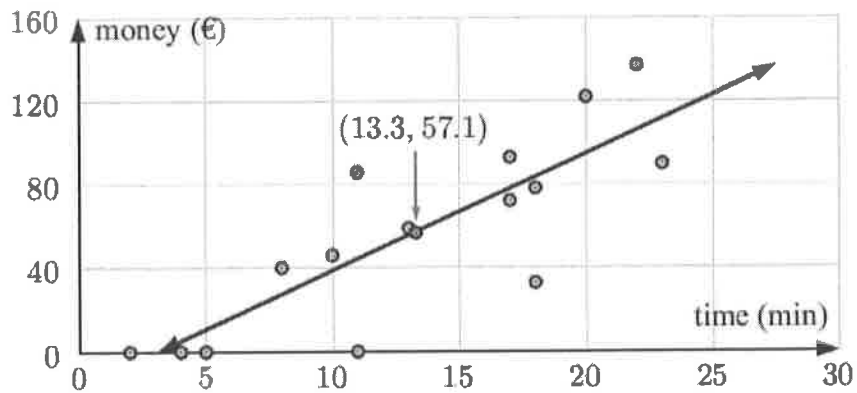
c There is a very strong positive correlation between area and price.

d  $y \approx 0.0335x + 3.27$

f \$43.42, this is an extrapolation, so it may be unreliable.

4

a, c



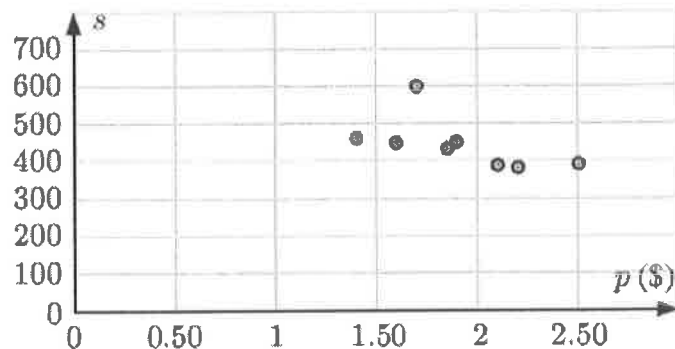
b (13.3, 57.1)

d There is a moderate positive linear correlation between *time in the store* and *money spent*.

e €66.80. This is an interpolation, so the estimate is reliable.

5

a



b Yes, the point (1.7, 597) is an outlier. It should not be deleted as there is no evidence that it is a mistake.

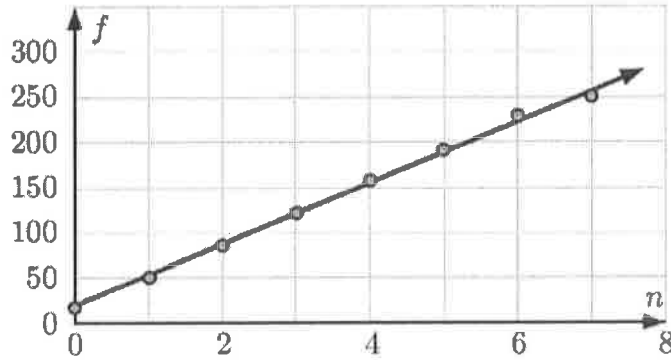
c  $s \approx -116p + 665$

d No, the prediction would not be accurate, as that much extrapolation is unreliable.

6

- a number of waterings,  $n$       b  $f \approx 34.0n + 19.3$
- c Yes, plants need water to grow, so it is expected that an increase in watering will result in an increase in flowers.

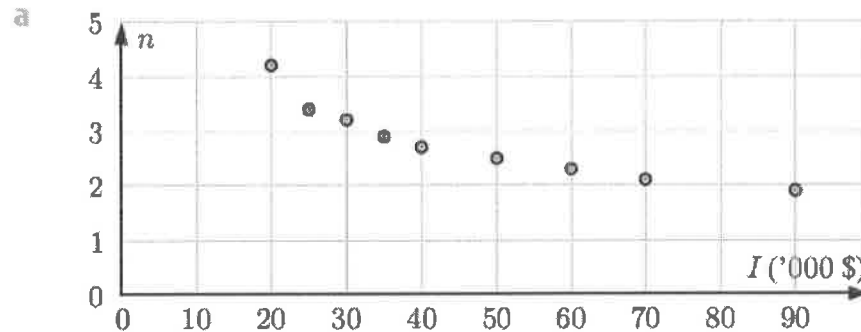
d



- e i 104 ( $n = 2.5$ ), 359 ( $n = 10$ )
- ii  $n = 10$  is unreliable as it is outside the poles and over watering could be a problem.  $n = 2.5$  is reliable.

# Review Set B

1



- b  $r \approx -0.908$       c  $n \approx -0.0284I + 4.12$
- d i 2.84 children      ii 0.144 children
- e The first is interpolation, so the estimate is reliable. The second is extrapolation, so the estimate may not be reliable.

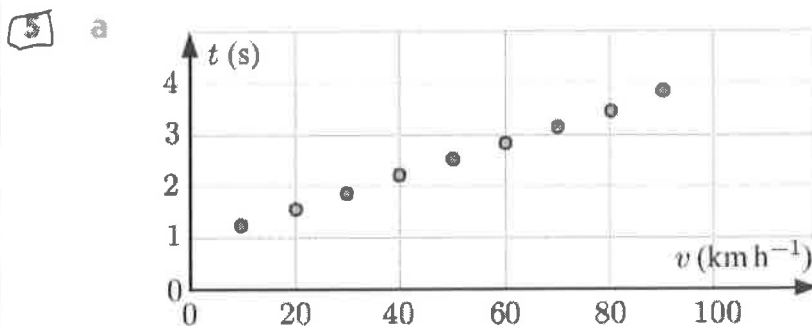
- 2
- a
    - i Negative correlation. As prices increase, the number of tickets sold is likely to decrease.
    - ii Causal. Less people will be able to afford tickets as the prices increase.
  - b
    - i Positive correlation. As icecream sales increase, number of drownings is likely to increase.
    - ii Not causal. Both these variables are dependent on the number of people at the beach.

3  $\chi^2_{calc} \approx 42.1, \quad df = 2, \quad p \approx 7.37 \times 10^{-10}$

As  $\chi^2_{calc} > 4.61$ , we reject  $H_0$ . So at a 10% level, *age of driver and increasing the speed limit* are not independent.

4  $\chi^2_{calc} \approx 25.6, \quad df = 9, \quad p \approx 0.00241$

As  $\chi^2_{calc} > 21.67$ , we reject  $H_0$ . So at a 1% level, *intelligence level and business success* are not independent.

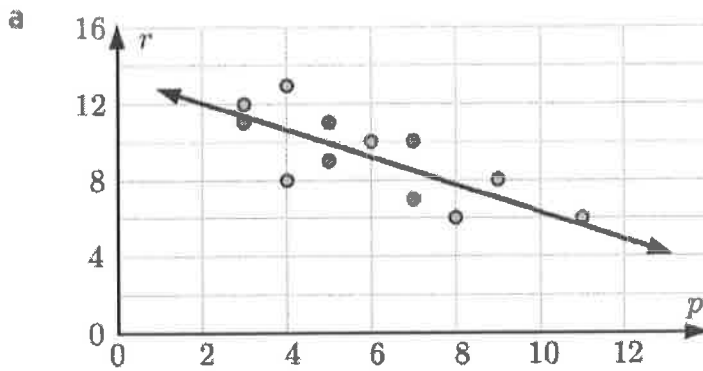


b  $t \approx 0.0322v + 0.906$

c i 2.68 seconds      ii 4.44 seconds

d The driver's reaction time.

6



- b  $r \approx -0.706p + 13.5$  dozen maidens  
c  $r \approx -0.763$ . There is a moderate negative relationship. This supports Superman's suspicions.  
d 9.25 dozen (111 maidens)  
e This would predict that Silent Predator would abduct a negative number of maidens, which is unrealistic.

- f  $r\text{-int} \approx 13.5$ ,  $p\text{-int} \approx 19.1$  These represent how many dozen maidens we would expect one villain to abduct if the other villain did not abduct any.  
g Silent Predator

# Supplemental Solutions to Ch. 11 Review Sets A & B

All of the answers are posted earlier in the blog.

Please note that none of the review problems require you to calculate the correlation coefficient

"by hand", or the LSRL "by hand". On the test,

there will be questions of this type.

}  
in POINT-SLOPE  
FORM

## Review Set A

The answer to **3c** is lacking, because a summary statement is not included. It is needed because of the strong correlation.

→ Add  
As the area of a canvass increases, the price definitely goes up.

**4d** Add there is only a moderate <sup>positive linear</sup> correlation.

We can say with limited confidence that as time in the store increases, the amount they spend increases.

**5a** Note  
one could also question the reliability of the estimate if they knew there was weak correlation between price and sales.

## Review Set B

6c since there is <sup>a</sup> moderate negative correlation, we should ~~can~~ add:

As the Silent Predator abduction rate climbs, we can be somewhat confident that the Funny predator rate will decline.