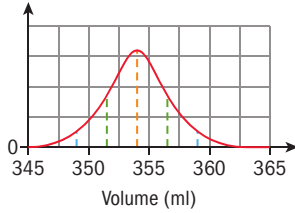


## Review exercise

### Paper 1 style questions

1 a



b 0.0548      c 5

2 a 32.2%      b 59

3 a 93.3%

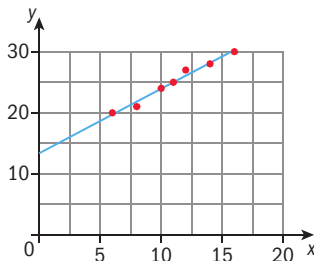
b  $p = 1.01$

4 a strong positive linear correlation

b none

c moderate negative linear correlation

5 diagram and c



a strong positive linear correlation

b mean of  $x = 11$ , mean of  $y = 25$

d 23

6 a  $r = 0.980$ , strong and positive correlation

b  $y = 0.801x - 77.4$

c 59 cm

7 a  $r = 0.810$ , strong, positive correlation

b  $y = 0.215x + 14.3$

c 22.9 s

8  $H_0$ : Flavor is independent of age  
 $H_1$ : Flavor is not independent of age  
 Expected values are:

14.1	11.8	11.1
10.6	9.0	8.4
13.3	11.2	10.5

dof = 4

$\chi^2 = 0.604$

$p$ -value = 0.963

$0.963 > 0.05$  so do not reject  $H_0$

9 a  $H_0$ : The number of pins knocked down is independent of the hand used

b dof = 2

c  $\frac{20 \times 60}{120} = 10$

d  $0.422 > 0.10$  so do not reject  $H_0$

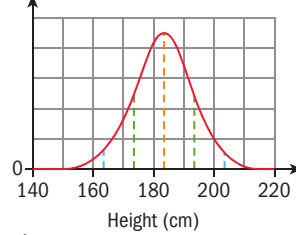
10 a  $H_0$ : The time to prepare for a test is independent of the outcome

b 2

c  $0.069 > 0.05$  so do not reject  $H_0$

### Paper 2 style questions

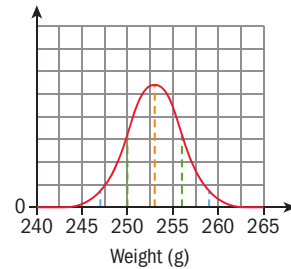
1 a



b 0.252      c 0.731

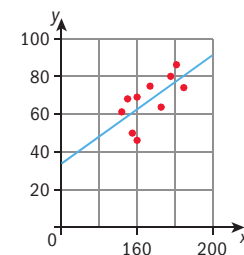
d 3 or 4      e  $k = 166$

2 a



b 15.9%      c 75 or 76

3 a and d ii



b 166.9 cm      c 67.3 kg

d i  $y = 0.719x - 52.8$

e 69.4 kg

4 a  $r = 0.823$

b strong, positive correlation

c  $y = 0.219x + 3.85$

d 12 hours

5 a 0.9

b strong, positive correlation

c  $y = 0.0666x - 2.36$

6 a  $r = 0.89$

b strong, positive correlation

c  $y = 0.0151x + 0.229$

d 1.44 euros

7 a  $y = 0.163x - 15.0$

b 12.7      c 0.741

d moderate, positive correlation

8  $H_0$ : Game chosen is independent of gender

$H_1$ : Game chosen is not independent of gender

dof = 2

expected values

39.4	14.8	26.8
29.6	11.2	20.2

$\chi^2 = 0.667$

$p$ -value = 0.717

$0.717 > 0.05$ , so do not reject  $H_0$

9 a  $p = 21.6$ ,  $q = 14.4$ ,  $r = 13.6$

b i  $H_0$ : Extra-curricular activity is independent of gender

ii  $(2 - 1)(3 - 1) = 2$

c  $\chi^2 = 4.613$

d  $4.163 > 4.605$  so reject  $H_0$

10 a i  $\frac{180 \times 300}{500} = 108$

ii  $b = 72$ ,  $c = 132$ ,  
 $d = 88$

b  $H_0$ : Position is independent of gender

$H_1$ : Position is not independent of gender

c i  $\chi^2 = 59.7$

ii dof = 2

iii  $\chi^2 >$  critical value so reject  $H_0$

11 a  $H_1$ : Choice of candidate is not independent of where the voter lives

b  $\frac{3680 \times 3720}{8000} = 1711.2$   
 $\approx 1711$

c i  $\chi^2 = 58.4$       ii 2

d i reject  $H_0$

ii  $58.4 > 9.21$

12 a  $\frac{90 \times 110}{200} = 49.5$

b i  $H_0$ : Grade is independent of gender

ii 2

iii  $\chi^2 = 0.400$

c  $0.400 < 5.991$  so do not reject  $H_0$