S1 Numerical Answers

6683 Statistics S1 – January 2001

2. (*a*) 0.8517

3. (*a*) $P(Y = y) = \frac{1}{6}$, $y = 1, 2, 3, 4, 5, 6$
(*b*) Discrete uniform distribution (*c*) 23 (*d*) $46\frac{2}{3}$

4. (*a*) 0.28 (*b*) 0.3 (*d*) 0.76 (*e*) 0.59

5. (*c*) 9.65 (*d*) 9 mins 58 secs (9.96), 2 mins 47 secs (2.78)
(*e*) 0.329

6. (*a*) 3.18, 5.64, 10.48 (*b*) 0.977 (*c*) 1.77, 0.566
(*f*) (i) £4814 (ii) £2655

6683 Statistics S1 – June 2001

1. (*a*) 43, 4
(*b*) Mean unchanged – one value is 8 above μ and the other is 8 below.

2. (*a*) 1 270 600 (*b*) –0.976
(*b*) As height above sea level increases, temperature decreases.

3. (*a*) 0.1056 (b) 11.2

4. (*a*) 0.2 (*b*) 0.6 (*c*) 0.3 (*d*) 4.9 (*e*) 8.04

5. (*b*) 0.61 (*c*) 0.21 (*d*) 0.47 (*e*) $\frac{21}{47}$

6. (*a*) 30, 42, 46
(*b*) All have same *median* and same IQR. Alan - negative skew; Diane – positive skew; Gopal – symmetrical; any other sensible comment.

7. (*b*) $y = 19.4 – 0.968x$
(*c*) $b \Rightarrow$ for every extra hour of practice 1 (–0.968) less error will be made, $a \Rightarrow$ without practice 19/20 errors will be made.

(*d*)(i) Yes – all points reasonably close to the line.
(ii) No – more likely to be

6683 Statistics S1 – January 2002

1. (*a*) (i) A text/investigation/process adopted for collecting data to provide evidence for or against a hypothesis.

(ii) Sub-set of possible outcomes of an experiment.

(b) Advantage – Quick, cheap, vary parameters; predict
Disadvantage – Does not replicate real-world situation in every detail/accuracy.

2. $28\frac{1}{3}$ days

3. (*a*) $\frac{1}{2}$ (*b*) $\frac{17}{36}$ (*c*) $\frac{5}{6}$

4. (*a*) 0.4 (*b*) 0.4 (*c*) 0.2 (*d*) Events are independent

5. (*b*) 286 – μ = 1.0364 (*c*) 268, 17 (*d*) 251, 285

6. (a) 33, 24 (c) 41.2, 20.7 (e) Median male > Median female, IQR male > IQR female, Range male > Range female, Male position skew, Female almost symmetrical.

7. (*b*) 0.843 (*d*) $s = 44.3 + 1.14t$

6683 Statistics S1 – June 2002

1. *(a)* $\frac{5}{6}$ *(b)* $\frac{25}{216}$

2. Observe real-world problem; devise a statistical model and collect data; compare and observe against expected outcomes and test model; refine model if necessary.

3. *(c)* 0.01 *(e)* 0.042

4. *(a)*

x	1	2	3	4	5	6	7	8
P($X=x$)	0.1	0.1	0.05	0.15	0.1	0.1	0.15	0.25

(b) 5.2 *(c)* 13.4; 23.04

5. *(a)* Bell shaped curve; symmetrical about mean; mean = mode = median; 95% of data lies within 2 standard deviations of lean; Asymptotic curve etc. Any two sensible comments.

(b) 4585.4583..; 466.6028… *(c)* 0.1056

6. *(a)* Frequency densities – 5, 0, 10, 4, 110, 75, 1.7 *(b)* 19.78/19.8; 0.96/0.963 *(c)* 20.1

(d) Median – data skewed.

7. *(a)* 0.797

(b) r close to 1, value supports use of regression line

(c) $c = -13.6 + 2.92t$ *(e)* 33/34

(f) Temperature likely to be outside range of validity.

6683 Statistics S1 – November 2002

1. (b) (i) Normal (ii) Discrete uniform

2. (*a*) 0.108 (*b*) 0.449

3. (*a*) 0.075 (*b*) 0.475 (*c*) 0.25

4. (*b*) 0.8664 (*c*) 0.0178

5. (*a*) $t = 0.8796 + 1.1951s$ (*b*) $y = 13.709 + 1.195x$

(*c*) 0.943

6. (*a*) $\alpha = 0.3$, $\beta = 0.2$ (*b*) 0.6 (*c*) 2.36

(*d*) –2.6 (*e*) 9.44

7. (*a*) 78 (*b*) $Q_1 = 56$, $Q_2 = 70$, $Q_3 = 78$

(*d*) $\mu = 67.26$, $\sigma = 15.56$

6683 Statistics S1 – January 2003

2. (*a*) 0.1 (*b*) 0.75 (*c*) 0.6

3. (*a*) $\sigma = 3.90$ (*b*) 6.18% (*c*) $\mu = 55.88$

4. (*a*) $Q_2 = 16$, $Q_1 = 15$; $Q_3 = 16.5$; IQR = 1.5 (*c*) 16.1

(*d*) Almost symmetrical/Slight negative skew.
Mean (16.1) ≈ Median (16) & $Q_3 - Q_2$ (0.5) ≈ $Q_2 - Q_1$ (1.0)

5. (*b*) 1 (*c*) 13.5

(*e*)

y	0	1	2	3	4	5	6
P($Y = y$)	0.25	0.25	0.0625	0.25	0.125	(0)	0.0625

(*f*) 0.3125

6. (*b*) $y = -1.63 + 1.33x$

(*c*) $2653.7 + 13.3p$

(*d*) Number sold if no money spent on advertising
$p = 0$ is well outside valid range – meaningless

7. $2 \times 13.3 \Rightarrow 27$ extra cars sold
Only valid in range of data for 1990s

6683 Statistics S1 – June 2003

2. $t = 14.52$

3. (*a*) $S_{xy} = -157.9$; $S_{xx} = 155.9$; $S_{yy} = 215.0$
(*b*) –0.862 (*c*) (i) –0.862

4. (*b*) E(X) = 5.4; Var(X) = 0.52 (*c*) 2.08

5. (*a*) Discrete uniform (*b*) E(X) = 3.5; Var(X) = 2.917

(*c*) $\frac{1}{216}$ (*d*) (6,5,5); (5,6,5); (5,5,6); (6,6,4); (6,4,6); (4,6,6)

(*e*) $\frac{1}{36}$

6. (*a*) 22.3 (*c*) $Q_2 = 20$; $Q_1 = 13$; $Q_3 = 31$

(*d*) No outliers (*f*) $Q_3 - Q_1 > Q_2 - Q_1 \therefore$ positive skew

7. (*a*) m is explanatory variable (*c*) $p = 2.23 + 1.41m$

(*e*) 23 or 24

6683 Statistics S1 – November 2003

1. (*b*) $S_{xy} = 6694$; $S_{xx} = 712.4$ (*c*) (i) $y = 5.95 + 9.40x$

(*e*) £33495

2. (*a*) 0.216 (*b*)

x	0	10	20	30
$P(X = x)$	0.4	0.24	0.144	0.216

(*c*) Mean = 11.8; s.d. = 11.7 (*d*) 0.358

3. (*a*) (i) 0.3085 (ii) 9.23 (*b*) $\mu = 523$

4. (*c*) $\frac{1}{12}$ (*d*) $\frac{1}{3}$ (*e*) $\frac{1}{2}$

5. (*b*) $\frac{2}{3}$ (*c*) $\frac{20}{3}$

6. (*a*) Mean = 805; s.d. = 621 (*b*) Median = 650; IQR= 665

(c) 2100 and 2315 are outliers

6683 Statistics S1 – January 2004

1. (*a*) $S_{mt} = 357$; $S_{mm} = 1750$ (*b*) $t = 6.83 + 0.204$ m (*c*) 13.973

2. (*b*) 0.0796

3. (*a*) $0.16\dot{6}$ (*b*) $0.91\dot{6}$ (*c*) 0.917 (*d*) –1.17 (*e*) 0.743

4. (*a*)(*i*) $\frac{2}{5}$ (*ii*) 0 (*iii*) $\frac{9}{10}$ (*iv*) 0

5. (*b*) $Q_1 = 108.933$, $Q_2 = 228.5$ $Q_3 = 420.838$, IQR = 311.905

(*c*) $\mu = 308.2777$; $\sigma = 257.6238$ (*d*) Median & IQR

6. (*b*) $\frac{1}{12}$ (*c*) $\frac{5}{12}$ (*d*) $\frac{5}{12}$

6683 Statistics S1 – June 2004

1. $\frac{7}{12}$

2. (*b*) $S_{hc} = 1433\frac{1}{3}$; $S_{hh} = 1000\frac{2}{9}$; $S_{cc} = 2550$

(*c*) 0.897488 (*d*) Taller people tend to be more confident.

(*e*) $c = 317 + 1.43h$ (*f*) 574.4 (*g*) $161 \leq h \leq 193$

3. (*a*) $a = 0.4$; $b = 0.1$ (*b*) 0.3 (*c*) 0.4 (*e*) 5.64

4. (*a*) (i) 16.875; 1.16592 (ii) 93.75

(*c*)

	Mode	Median	IQR
First	18	47	2
Second	15	16	3

5. (*a*) 41.587 (*b*) 0.0594

(*c*) Normal distribution is not suitable

6. (*b*) 0.2 (*c*) 0.6 (*d*) $\frac{5}{8}$

6683 Statistics S1 – November 2004

1. (*a*) $a = 202$, $b = 202$, $c = 233$

2. (*a*) $y = 0.16 + 0.79x$ (*b*) $y = 35.71$

3. (*b*) (ii) 75 (*c*) 0.8301

4. (*a*) $\alpha = 0.2$ (*b*) 0.5 (*c*) 0.8 (*d*) $a = 2$ (*e*) 2.49
(*f*) 22.41

5. (*b*) $\frac{7}{12}$ (*c*) $\frac{3}{8}$

6. (*a*) $S_{xx} = 916$; $S_{yy} = 664$; $S_{xy} = 342$ (*b*) 0.439

(c) Slight evidence that students perform similarly in pressups and situps

(*d*) 10.7 (*e*) 21.0

7. (*a*) Time is a continuous variable (*b*) 39.5, 44.5

6683 Statistics S1 – January 2005

1. (*b*) 0.966

2. (*a*) $Q_1 = 33$, $Q_2 = 41$, $Q_3 = 52$

3. (*b*) Positive (*c*) 1793 (*d*) 1.028 (*e*) 13.3 (*f*) 35.7, 87.7
(*g*) All values between 35.7 and 87.7 so could be normal

4. (*b*) $\frac{2}{5}$ (*c*) $\frac{11}{3}$ (*d*) 7

5. (*b*) 0.918 (*c*) 0.978 (*d*) $\frac{19}{60}$ (*e*) $\frac{37}{27750}$

6. (*a*) Uniform (*b*) Tossing a fair dice/coin

7. (*a*) 0.2266 (*b*) 0.8166 (*d*) $b = 8.64$

6683 Statistics S1 – June 2005

1. Diagram *A*: –0.79 As x increases, y decreases
Diagram *B*: 0.08 No real pattern
Diagram *C*: 0.68 As s increases, t increases

2. (*a*) Distance is continuous (*b*) 0.8, 3.8, 5.3, 3.7, 0.75, 0.1

(*c*) $Q_2 = 58.8$; $Q_1 = 52.48$; $Q_3 = 67.12$ (*d*) $\bar{x} = 62.5$; $s = 15.8$

(*e*) 0.1366; positive skew

3. (*a*) $y = -0.425 + 0.395x$ (*b*) $f = 0.735 + 0.395m$ (*c*) 93.6

4. (*b*) Distribution is positive skew

(*c*) Many delays are small so passengers should find these acceptable or sensible.

5. (*a*) $\frac{1}{17}$ (*b*) $3\frac{13}{17}$ (*d*) 13.3

6. (*a*) 0.0764 (*b*) 0.6393 (*c*) 153.2

7. (*a*) 0.338 (*b*) 0.46 (*c*) 0.743 (*d*) 0.218

6683 Statistics S1 – January 2006

1. (*a*) 56 (*b*) $Q_1 = 35$; $Q_2 = 52$; $Q_3 = 60$

(*c*) $\bar{x} = 49.4$; $\sigma^2 = 14.6$ (*d*) – 0.448

2. (*a*) $p + q = 0.4$; $2p + 4q = 1.3$ (*b*) $p = 0.15$, $q = 0.25$

(*c*) 1.75 (*d*) 7.00

3. (*c*) $a = 29.02$; $b = 3.90$ (*e*) (i) 103.12 (ii) 165.52

4. (*b*) $\frac{1}{4}$ (*c*) $\frac{2}{11}$

5. (*b*) (i) height, weight

(ii) score on a face after tossing a fair die

6. (*b*) P(*A*) = 0.54; P(*B*) = 0.33 (*c*) $\frac{32}{67}$

(*d*) Not Independent

7. (*a*) 0.0618 (*b*) 0.9545 (*c*) 0.00281

(*d*) Evidence suggests height and weight are positively correlated. Assumption of independence is not sensible

6683 Statistics S1 – June 2006

1. (*b*) (i) 37 mins

2. (*a*) 0.037 (*b*) 19.27 (*c*) 24.8

3. (*a*) $S_{xy} = 71.4685$; $S_{xx} = 1760.45875$

(*b*) $y = 0.324 + 0.0406x$

(*c*) 2461.948 (*d*) $l = 2460.324 + 0.0406t$ (*e*) 2463.978

4. (*a*) 3 (*b*) 7 (*c*) 18

5. (*b*) 1.70; 0.095 (*c*) 0.3372

6. (*b*) $\frac{1}{10}$ (*c*) $\frac{41}{100}$ (*d*) $\frac{21}{100}$ (*e*) 0.667

7. (*a*) 0.338 (*b*) 0.46 (*c*) 0.743 (*d*) 0.218

6683 Statistics S1 – January 2007

1. (*a*) £17 (*b*) $S_{tt} = 983.8$, $S_{mm} = 1728.9$, $S_{tm} = 1191.8$

(*c*) 0.914 (*d*) 0.914

2. (*b*) (i) 0.0105 (ii) 0.0455 (*c*) 0.44

3.

(*a*)

x	1	2	3	4	5	6
$P(X = x)$	$\frac{1}{36}$	$\frac{3}{36}$	$\frac{5}{36}$	$\frac{7}{36}$	$\frac{9}{36}$	$\frac{11}{36}$

(*b*) 0.583 (*c*) 4.47 (*d*) 21.97 (*e*) 17.7

4. (a) Positive skew (*b*) 26.7 (*c*) 29.6, 16.6 (*d*) 0.520

5. (*d*) 30

7. (*a*) 0.274 (*b*) $k =$

6683 Statistics S1 – June 2007

1. (*a*) –0.81579… (*c*) –0.816

2. (*a*) $\frac{1}{2}$ (*b*) 54 (*e*) $\sigma = 13.43\ldots$

3. (*c*) 17.0 (*d*) $l = 2460.324 + 0.0406t$ (*e*) 2463.978

4. (*c*) 25%

5. (*a*) 35, 15 (*b*) 40 (*c*) 18.91 (*d*) 7.26

(*e*) Median = 18.1, Lower Quartile = 15.25, Upper Quartile = 23.15

(*f*) 0.376…, positive skew

6. (*a*) 0.1056 (*b*) $d = 27.2$

7. (*a*) $p + q = 0.45$, $3p + 7q = 1.95$ (*b*) $p = 0.15$, $q = 0.30$

(*c*) 0.35 (*d*) 7.15 (*e*) 1 (*f*) 114.4

6683 Statistics S1 – January 2008

1. (*a*) 0.155

2. (*a*) 230, 87.3 (*b*) 189; 170, 254 (*c*) *F* and *B*

(*d*) $0.\dot{3}$, positive skew

3. 12

4. $S_{xx} = 153.9$, $S_{xy} = 19.9$ (*b*) $y = 8.89 + 7.73x$

(*d*) 48 000

5. (*b*) 0.01 (*c*) 0.04 (*d*) 0.03 (*e*) 0.06

(*f*) $\frac{31}{32}$ or 0.969

6. (*a*) 200 g (*b*) 11.9 (*c*) 0.046

7. (*a*) $\frac{1}{16}$ (*b*) 0, 3, 6, 9; 0, (2), 4, 6; (0), 1, 2, 3; 0, 0, 0, 0

(c) a = $\frac{7}{16}$, b = $\frac{1}{16}$, c = $\frac{1}{16}$, d = $\frac{1}{16}$ (d) $2\frac{1}{4}$ (e) $7\frac{3}{16}$

6683 Statistics S1 – June 2008

1. (*b*) 0.0484 (*c*) 0.607438

2. (*a*) 50 (*b*) $Q_1 = 45\ Q_2 = 50.5\ Q_3 = 63$

(*c*) 52.46 (*d*) 0.20

3. (*c*) $q = 0.1,\ p = 0.4$ (*b*) 2.25 (*c*) = –2.9

4. (*a*) $S_{tt} = 186.6973$ $S_{vv} = 0.40184$ $S_{tv} = 6.9974$

(*b*) 0.808 (*e*) 0.0375, 0.669 (*f*) 1.4

5. (*b*) $\frac{47}{60}$ (*c*) $\frac{10}{143}$ (*d*) $\frac{1}{15}$

6. (*a*) 1

(*b*)

x	2	3	4
$P(X = x)$	$\frac{9}{25}$	$\frac{7}{25}$	$\frac{9}{25}$

7. (*a*) 0.0668 (*b*) 45.35

(*c*) 0.012

6683 Statistics S1 – January 2009

1. (*a*) $S_{xx} = 11.424$ $S_{xy} = 108.26$

(*b*) $y = -10.7 + 9.48x$ (*d*) 20.6

2. (*a*) 0.24 or $\frac{6}{25}$ or $\frac{18}{75}$ (*b*) $\frac{13}{75}$ or $0.17\dot{3}$

3. (*a*) 1 (*b*) 0.7 (*c*) 2 (*d*) 9 (*e*) 0.15

4. (*a*) $Q_1 = 35$ $Q_2 = 53$ $Q_3 = 60$ (*e*) –0.0057

5. (*a*) width = 5 cm height = 0.75 cm

(*b*) $Q_2 = 10.2$ IQR = 9 (*c*) 12.8 (*d*) 9.88

6. (*a*) 0.9641 (*b*) $d = 24$ (*c*) $e = 36$ (*d*) 0.7698

6683 Statistics S1 – June 2009

1. (*a*) $S_{pp} = 18322.5$ and $S_{pt} = 16150$ (*b*) 0.8088…

2. (*b*) (i) $\frac{1}{30}$ (ii) $\frac{4}{5}$ (*c*) $\frac{5}{6}$

3. (*a*) 1 cm (*b*) 6 cm

4. (*a*) 17.1 (*b*) mean = 17.129**;** standard deviation = 3.294
(*c*) –0.00802

5. (*a*) $w = -60.45 + 1.80l$
(*b*) In range 47.3 – 47.6 inclusive

6. (*a*) a (b) $a = 0.1$, $b = 0.4$ (*c*) 0.3 (*d*) 2.8

7. (*a*) (i) $a + b$ (ii) $a + b - ab$ (*b*) 0.5 (*c*) 0.035
(*d*) 0.185

8. (*a*) 0.345 (*b*) 172.3 (*c*) 49.9

6683 Statistics S1 – January 2010

1. (*b*) $\frac{1}{6}$

2. (*a*) 33 (*b*) 16

3. (*a*) 2.75, 5.5 (*b*) $3.227\dot{3}$ (*c*) 0.421 (*d*) 3.2457
(*e*) negative skew

4. (*b*) $\frac{4}{45}$ (*c*) $\frac{17}{180}$ (*d*) $\frac{1}{10}$

5. (*b*) $\frac{13}{14}$ (*c*) $\frac{18}{7}$ (*d*) $\frac{19}{49}$

6. (*a*) 7270, 2369, 1569.43… (*b*) 0.701
(*e*) $p = 45.5 + 1.51t$ (*g*) $p = 105.84$

7. (*c*) $\sigma = 8.30$, $\mu = 168$ (*d*) 0.8212

6683 Statistics S1 – June 2010

1. (*a*) 0.763 (*c*) 0.763

2. (*a*) $\frac{5}{12}, \frac{7}{12}$; $\frac{2}{3}, \frac{2}{3}, \frac{1}{2}, \frac{1}{2}$ (*b*) $\frac{41}{72}$ (*c*) $\frac{20}{41}$ (*d*) $\frac{37}{72}$

3. (*a*) 0.25 (*b*) 1 (*c*) 2.1 (*d*) 8.4 (*e*) $\frac{9}{20}$

4. (*b*) $\frac{7}{15}$ (*c*) 0 (*d*) $\frac{9}{20}$ (*e*) independent

5. (*a*) 23, 35.5 (*b*) 2 cm, 10.4 cm (*c*) 23.5 (*d*) 23.7
(*e*) negative skew

6. (*c*) 24.2, 49.1 (*d*) $f = 15.0 + 2.03d$ (*e*) $t > 505$

7. (*a*) 0.8944 (*b*) 35.4 (*c*) 24.6
(*d*) $h = 8.5, k = 51.5$ (*e*) 0.007

8. (*a*) 0.0902 (*b*) 0.184 (*d*) £216

6683 Statistics S1 – January 2011

1. (*a*) $S_{ll} = 3419.92$, $S_{lw} = 569.666$ (*b*) $r = 0.572$
(*c*) As the length increases, the weight increases

2. (*a*) 3.8 mm (*b*) No effect

3. (*b*) Negative skew (*c*) Not true

4. (*a*) $p = 1.92 + 0.293v$ (*c*) 4.3

5. (*a*) 41.3 (*b*) 44.1875, 14.7 (*c*) Positive skew

6. (*b*) 3 (*c*) 10 (*d*) 25 (*f*) 0.2, 0.16
(*g*) 0.05

7. (*a*) $\frac{2}{3}, \frac{1}{3}$; $\frac{4}{9}$; $\frac{3}{5}, \frac{2}{5}$; $\frac{4}{9}, \frac{4}{9}, \frac{5}{9}$ (*b*) $\frac{2}{5}$ (*e*) $\frac{11}{15}$ (*f*) $\frac{6}{11}$

8. (*a*) 0.0548 (*b*) $w = 148.37$ (*c*) $\mu = 155$, $\sigma = 2.22$

6683 Statistics S1 – June 2011

1. (*a*) 209.9 (*b*) –0.871 (*d*) 3.54 (*e*) –0.871

2. (*a*) 16 (*b*) 0.4192

3. (*a*) $a = 0.1,\ b = 0.4,\ c = 0.2,\ d = 0.8$ (*b*) 0.9

4. (*a*) 0.2420 (*b*) 15.28

5. (*a*) 10.5 (*b*) 15.875 or 16.0625 (*c*) 5.88
(*e*) postive skew

6. (*a*) 0.3 (*b*) 0.2 (*c*) 0.6 (*d*) not independent

7. (*a*) 64.75 (*b*) 1.6392 (*c*) 138 – 139

8. (*a*) 0.1 (*b*) 2.55 (*d*) 2.9475 (*e*) 0.04
(*f*) 0.038 (*g*) 0.064

6683 Statistics S1 – January 2012

1. (*a*) 14, 5 (*b*) 69

2. (*a*) *R* and *S* are mutually exclusive
(*b*) $\frac{5}{9}$ (*c*) $\frac{5}{12}$ (*d*) $\frac{4}{9}$

3. (*b*) $\frac{11}{21}$ (*c*) $\frac{74}{21}$ (*d*) 14 (*e*) $\frac{698}{9}$

4. (*a*) 60 (*b*) 46, 54, 64 (*c*) 55.5, 10.3 (*e*) 45, 9

5. (*a*) 191.6, –5.03 (*b*) –0.908, –0.026
(*c*) $w = 11.6 - 0.0263t$
(*e*) (i) 11.5 g (ii) decrease 0.1 g
(*f*) decrease

6. (*b*) 0.07 (*c*) 0.08 (*d*) 0.55 (*e*) $\frac{3}{13}$

7. (*a*) 0.0548 (*b*) 235

6683 Statistics S1 – June 2012

1. (*b*) $-\frac{1}{3}$ (*d*) 11

2. (*a*) 0.818 (*b*) 0.818

3. (*c*) 167, 526 (*d*) $t = 0.741 + 0.318p$ (*f*) 5.825

4. (*a*) *B* and *W* or *T* and *W* (*b*) not independent

(*c*) $\frac{7}{25}$ (*d*) $\frac{1}{5}$ (*e*) $\frac{5}{9}$

5. (*a*) 90 (*b*) 28.8 mph (*c*) 28.1 mph (*d*) positive skew

6. (*a*) 0.945 (*b*) 164 cm (*c*) 174 cm

(*d*) not independent

7. (*b*) 0.0284 (*b*) 0.903 (*c*) 0.0745

6683 Statistics S1 – January 2013

1. (*a*) $S_{tt} = 2045.6$, $S_{gt} = -90.68$ (*b*) $r = -0.715$

(*c*) Positive

2. (*b*) $P(X = 1) = \frac{14}{40}$, $P(X = 2) = \frac{7}{40}$, $P(X = 3) = \frac{19}{40}$

(*c*) $\text{Var}(4X - 5) = \frac{259}{20}$

3. (*b*) $m = 8.47 - 0.256t$ (*c*) 5.9 s (*d*) Should be reliable

4. (*a*) $P(L > 127) = 0.0359$ (*b*) $d = 80.776$ (*c*) 0.39

5. (*a*) $w = 4$ cm, $h = 2.25$ cm (*b*) £276

(*c*) $\bar{y} = 316$, $\sigma_y = 157$ (*d*) positive skew

(*e*) $P(240 < X < 400) = 0.40 \sim 0.41$

(*f*) Reasonable fit but not good fit overall

6. (*b*) Discrete Uniform (*c*) $E(B) = 3$ (*d*) $E(R) = 3$

(*e*) $\text{Var}(R) = \frac{7}{3}$ (*f*) P(Avisha wins) $= \frac{5}{12}$

7. (*a*) $P(A \cup B) = 0.67$ (*b*) $P(A' \mid B') = 0.6$

(*c*) $P(B \cap C) = 0.09$ (*e*) $P(B \cup C)' = 0.44$

6683 Statistics S1 – June 2013 (R)

1. (*a*) $y = 5.52 + 0.0588x$ (*b*) $e = 46 + 0.15g$ (*c*) 61

2. (*a*) $P(X = 1) = 0.4$, $P(X = 2) = 0.25$, $P(X = 3) = 0.35$
(*b*) $F(1.8) = 0.4$

3. (*a*) width = 3cm, height = 2 cm (*b*) 8.96
(*c*) $\bar{x} = 10.8$, $\sigma_x = 7.46$ (*d*) positive skew
(*e*) 12 plants

4. (*a*) 0.309 (*b*) $d = 14.5$ (*c*) 0.538

5. (*a*) $S_{yy} = 20.9$, $S_{xy} = 16$ (*b*) 0.661 (*d*) new $x = 6$
(*e*) r will decrease

6. (*a*) $p = 0.15$ (*b*) $q = 0.24$, $r = 0.21$ (*c*) 0.75

7. (*a*) 2.6 (*c*) 3.64 (*d*)(i) 10 (*d*)(ii) 91
(*e*) 0.6 (*g*) 0.57

6683 Statistics S1 – June 2013

1. (*a*) $S_{th} = -22\,400$, $S_{hh} = 1\,490\,000$ (*b*) –0.952
(*d*) $t = 24.2 - 0.015h$ (*f*) 7.5°C

2. (*a*) 25 (*b*) $Q_2 = 51$, IQR = 17

3. (*a*) 0.55 (*b*) 0.99 (*c*) 0.375 (*e*) 0.25

4. (*a*) mean = 24.2, $\sigma = 9.29$ (*b*) $Q_2 = 22.7$ (*d*) IQR = 6.9

5. (*a*) $a = 0.1$, $b = 0.2$ (*c*) 24.84 (*d*) $k = 0.2$ (*f*) 0.01

6. (*a*) $\mu = 210$ (*b*) 2.7% (*c*) $\sigma = 2.15$

6683 Statistics S1 –June 2014 (R)

1. (*a*) $p = 0.2$ (*b*) –0.5 (*c*) 0.6
(*d*) 0.35 (*d*) $a = \pm 2$

2. (*a*) Uniform
(*b*) (i) $\frac{1}{10}$ (ii) $\frac{9}{10}$
(*c*) (i) 0 (ii) $\frac{1}{2}$

3. (*a*) 158 (*b*) 0.750 (*c*) 28.3
(*d*) £3700 (*e*) Goes up £82.40
(*f*) (i) $r = 0.750$ (ii) $b = 0.412$

4. (*a*) $\frac{1}{5}$ (*c*) 0.35 (*d*) $\frac{4}{7}$ (*e*) 0.3

5. (*a*) 4.5 (*c*) 17

7. (*a*) $\frac{117}{500}, \frac{273}{500}, \frac{187}{1000}, \frac{33}{1000}$
(*b*) 0.733 (*c*) 0.556 (*d*) 0.488

6683 Statistics S1 – June 2014

1. (*a*) $a = 44$, $b = 76$

2. mean = 57.7, standard deviation = 4.71

3. (*a*) 0.962 (*c*) 0.740 (*d*) $-467 + 0.74v$ (*f*) 1380

4. (*b*) 0.245 (*c*) 0.0335 (*d*) 0.597

5. (*b*) $\frac{1}{3}$ (*c*) $5\frac{7}{9}$ (*d*) $37\frac{1}{3}$ (*e*) 63.2

6. (*a*) Width: 0.5cm, Height: 7.5cm
(*b*) Median = 75.4
(*c*) (i) Mean = 76 (ii) Standard deviation = 21.3
(*d*) Coefficient of skewness = 0.08

7. (*a*) 0.106 (*b*) 0.0587 (*c*) 173

8. (*a*) 0.6 (*b*) 0.82 (*c*) 0.33 (*d*) Independent

6683 Statistics S1 – June 2015

1. (*a*) 39 (*b*) 13 (*c*) 68.5

2. (*a*) $a = 1800$, $b = 10$ (*b*) -0.749 (*c*) -0.749

3. (*b*) 0.1625 (*c*) 0.5875 (*d*) 0.809

4. (*b*) -22.2 (*c*) $y = 28.1 - 2.14x$ (*e*) 23.8

5. (*b*) 0.288 (*c*) 0.311 (*d*) 12
(*e*) 162 (*f*) 30

6. (*a*) (i) 0.1357 (ii) 0.9713 (iii) 0.8664 (iv) 0.9332
(*b*) 29.2