

Case Studies

Very enterprising:

- 1 a £167.50
b £1.71
- 2 a 1250
b Place candles on a heat resistant surface
Place candles in a holder
Keep candles away from pets/children
Keep candles apart
Don't place candles under shelves
Double check candles are out when extinguishing
Or any other relevant point

Wedding dresses:

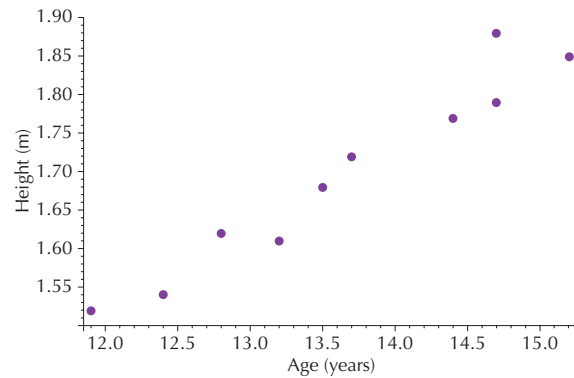
- 1 a £1287.49
b Yes. Shop deal is £1193.27 which is £94.22 cheaper
- 2 Wedding Belles has much wider range of prices. The median price is lower in Wedding Belles.

Frank's case study:

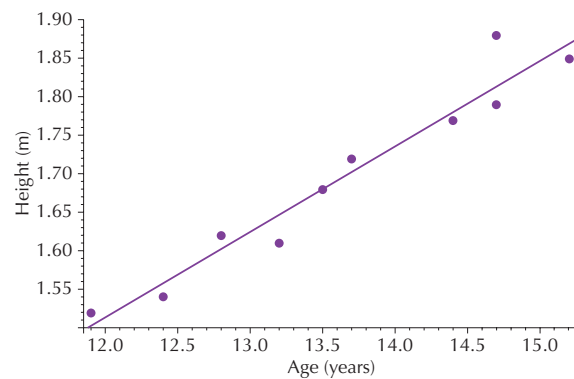
- 1 a Cheaper in USA. USA is £1152.62, Germany is £1472.61 and Japan is £1431.64
b i USA. USA is £1225.72, Germany is £1522.10 and Japan is £1487.11
ii Yes. The total cost from USA is £1225.72. £174.27 cheaper than the UK
- 2 a 26, 8.56
b DGS games are cheaper and prices are less variable

Basketball players:

1 a



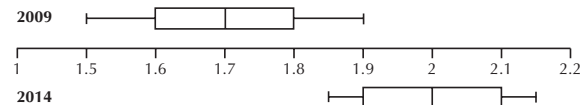
b



c 1.72 m

d Between 11 and 16 there is a strong positive correlation between age and height. For 16 and over there is no, or very weak positive correlation.

- 2 a i 1.7 m
ii 0.18m
iii



b Median height in 2009 is less but range slightly greater.

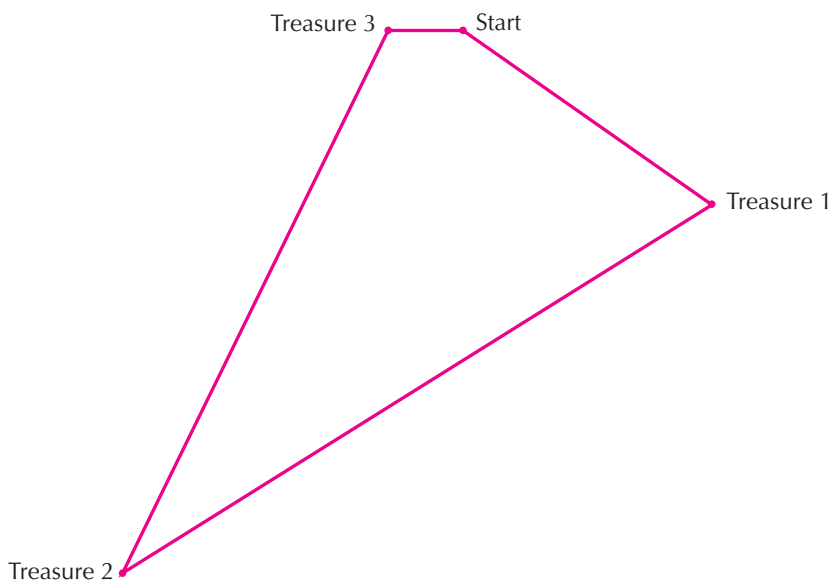
- 3 a 0.382%
b 98.838%
c Medium risk. There is a low probability of injury but quite serious harm can be caused if injury occurs.

Nursing Home:

- 1 No. Gradient is too steep – 1:13.75
- 2 9:22 am

Hidden treasure:**a**

1 cm : 50 m



- b** 26°, 400 m
- c** No. Course is 1110 m and minimum allowed in 1150 m

Community Centre:

- 1 **a** 3.41 m
b 4.26
c No. Greater than 4
d Yes. Gradient is now 3.35
- 2 Yes. Cost is £199.96

Drinks package:

- 1 **a** 5.87 cm
b $1 \times 4 \times 6 = 3086.21 \text{ cm}^2$
 $2 \times 3 \times 4 = 2832.16 \text{ cm}^2$
The second box is more efficient as has less volume.

- 2 **a** 9.358 kg
b 38

Buying a car:

- 1 **a** Dixie, Lagonda
b £440
c £500
d 34.1%

- 2 Yes

Allotments:

- 1 Michael's. Michael's is 30m^2 and Janice's is 27.71 m^2
- 2 Michael by 1.46 m^2

Buying a sofa:

- 1 a deal1: £108.80 extra
deal2: £127 extra
- b deal1:10.9%
deal2:12.7%
- c deal 1 as smaller interest
- 2 a 112.5 kg
- b £55
- 3 a £275.80
- b 6 years

Forth Road Bridge:

- 1 a Annual crossings are increasing with time.
- b i 22.7%
ii 916%
- c Increase capacity, lower traffic on Forth Road Bridge
- 2 a 75 km/h
- b 121 seconds
- c Yes, less than 50 mph

Extended case studies

Jo's case study:

- 1 a £1343.75
- b £102.08
- c £81.69
- d £73.91

e

J McNab	Employee number 1284			NI Number JH194727G	Month June
Payments	Value	Deductions	Value		
pay	1343.75	Income tax NI Pension @ 5.5%	102.08 81.69 73.91		
Gross pay	£1343.75	Total deductions	£257.68	Net Pay	£1086.07

- 2 a £1396.40
- b No. She has a surplus of £496.15 each month but needs £545 each month.
- 3 a Plug cheapest at £434.60.
- b Tower Technology is the best deal in the second year as the cost is £410.00
- c Yes. £8.54 each per month instead of £15

The zoo:

- 1 a Entrance – Hippos – Meerkats – Chimpanzees – Koalas – Flamingos – Penguins – Rhinos
- b 040°, 88m
303°, 56m
056°, 88m
000°, 56m
270°, 76m
270°, 104m
180°, 104m

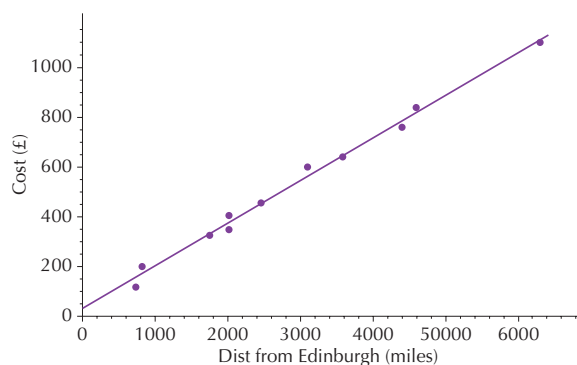
- 2 a 12:17pm
b 12:00 pm

2011 parliament:

- 1 a 44%
b 26%
c Both won a higher percentage of seats than their percentage of votes. SNP 53% of seat, Labour 29%
- 2 a i 50
ii 4.5
b Labour MPs are younger on average but the age is more variable
- 3 a £8 Billion
b i 14.7%
ii Higher than the UK Government (12.5%)

Air travel:

1 a



- b Too expensive. From using best-fitting line you would expect price to be about £300
- c For domestic flights there is a very weak positive correlation. For international flights there is strong positive correlation.

- 2 a Mean = £545, SD = £112.03
b Mean = £560, SD = £112.03
c Prices to Toronto are higher on average and much less variable
- 3 a 1447
b 2200 till 0400 (UK time)

Removal day:

- 1 585, $13 \times 5 \times 9$
- 2 No. 5.03 is max length that will fit.
- 3 a 72256.63cm^3
b Yes. It will fit and is 173.4kg so less than the max of 400kg
- 4 No. They will take approximately 14 hours and 1 minute

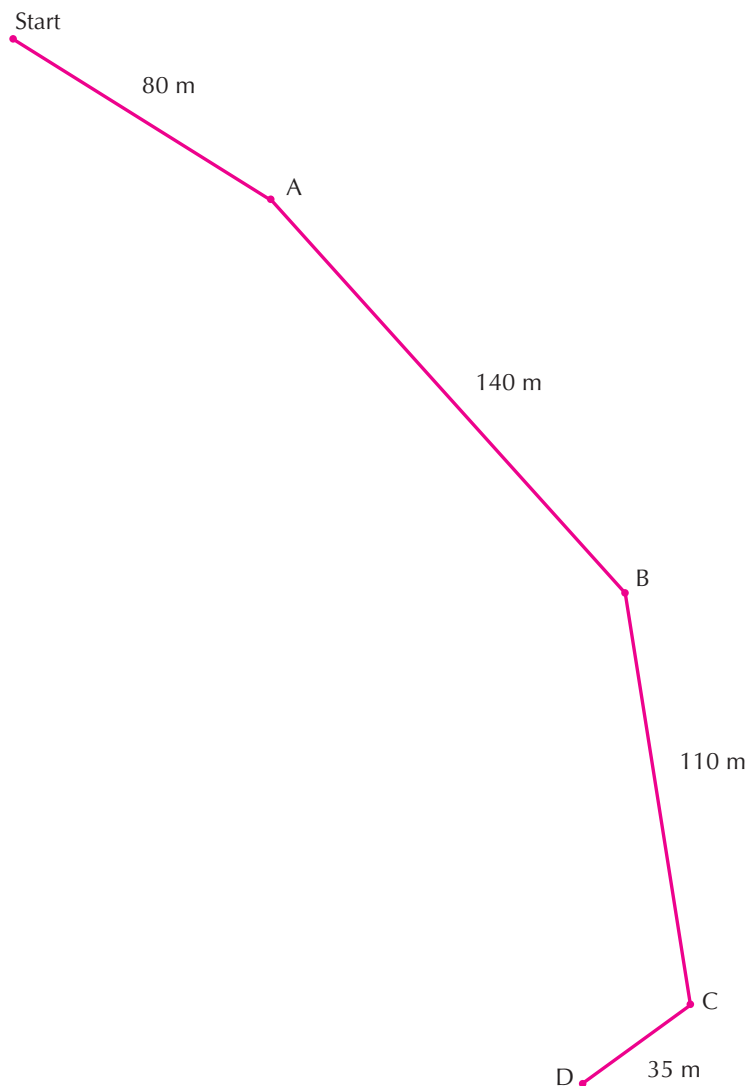
Fundraising day:

- 1 a 3 eggs
125g caster sugar
3ml vanilla extract
125g self-raising flour
83g unsalted butter
208g icing sugar
b 3620 cm^3
c 764 cm
d 9.0 cm
e i 810 cm
ii Cylinder uses 46 cm less ribbon.
- 2 a $1/5$
b i 40
ii £20

Preparation for assessment

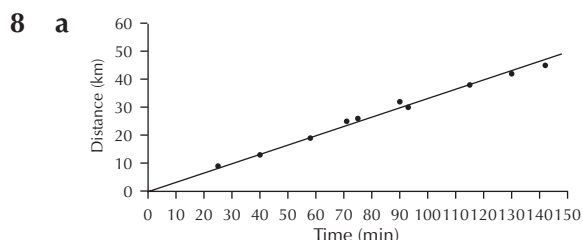
Paper 1 – Non-calculator

- 1 a £29.85
b \$2.24
- 2 £25.95
- 3 Cost best £530.40 compared to £535.99
- 4 a 19°C
b $34 \times 2 + 30 = 98^{\circ}\text{F}$
- 5 a $\frac{4}{9}$
b $\frac{1}{15}$
- 6 a Scale: 1 : 20

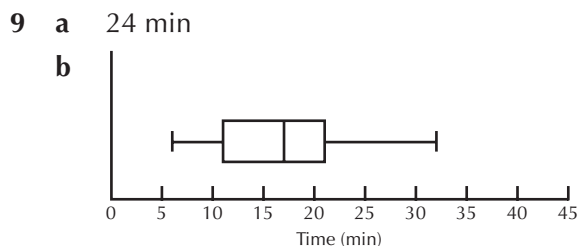


- b 10 min 11 sec

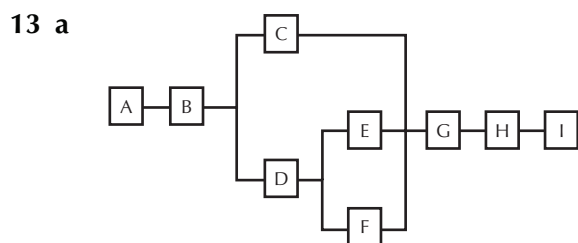
- 7 a Yes, 0.43 m/s
 b Yes, gradient is 1 in 1.5
 c Yes, both points met



- b See diagram
 c i 20 km
 ii 20 km/h
 d 1 hour 45 min



- c Dr Leckie shorter waiting times and less variable
- 10 a $10\frac{1}{3}$ km
 11 a $16\frac{1}{4}$ miles
 b $1\frac{1}{4}$ miles
 12 180 mph



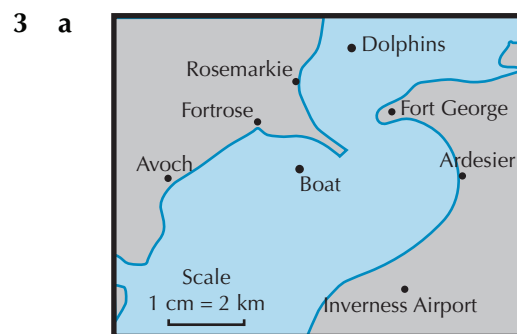
- b Yes, time is 15 hours 45 min
 c A, B, D, E, G, H, I
- 14 a Aileen £3600
 David £6300
 Wendy £8100
 b Aileen 20%
 David 35%
 Wendy 45 %
 c No. She is due £25200

15 $162\,000\text{ cm}^3$

Paper 2 – Calculator

- 1 a Yes, median is 121
 b Yes, all between 116 and 124
 c Happy Eats mean 120.67, sd 7.66
 Yummy Treats mean 120.83, sd 3.06
 Yummy Treats slightly more on average and much less variable

- 2 a £1175.50
 b i £3150
 ii £2822.67



- b Travel 2km on a bearing of 090°
 Travel 3.3 km on a bearing of 349°
 c Yes. He can get there in 16 min
- 4 a 1:6:2
 b Sean €2607
 Hilda €15642
 Kevin €5214
 c £4149.82
 d Yes. He has JPY 385 124
- 5 a 489.12 m^3
 b 1 136 223 Kg
- 6 5.29m
- 7 Yes, gradient is 1.14, weight is 31.98 kg/m^2
- 8 a Peg tiles £25 453.00
 Concrete tiles £15 910.18
 Barrel tiles £38 372.13
 b Concrete tiles, lowest total cost
- 9 a £518, £504, £516
 b Comfee Settee
 c £548.53