

1

Five years ago, Helen bought an Egyptian vase for £12400. Each year it has appreciated by 4.3%. How much is it worth now? Give your answer to three significant figures.

$$\text{DM} = 100 + 4.3 = 104.3\% = 1.043$$



$$\text{Value now} = (1.043)^5 \times 12400$$



$$\text{Value now} = 15305.348\dots$$



$$\text{Value now} = \text{£}15300$$



2 350ml bottles of water are sold in trays of 24 bottles. Each empty bottle weighs 55g.

A store chain orders 500 trays of these drinks. The manufacturer's delivery van can take a maximum load of 5 tonnes. Can the store's order be delivered in a single van? (1 litre of water weighs 1 kilogram)

$$350\text{ml} = 350\text{g} = 0.35\text{kg}$$

$$1 \text{ bottle} = 0.35 + 0.055 = 0.405\text{kg}$$

$$1 \text{ case} = 0.405 \times 24 = 9.72\text{kg}$$

$$500 \text{ trays} = 500 \times 9.72 = 4860\text{kg}$$

It can be delivered in a single van as

$$4.86\text{tonnes} < 5\text{tonnes}$$

3 The Smiths family went to Florida on holiday. They took £1200 with them to spend. On average over the 14 days, they spent \$95 each day. How much, in Pounds Sterling, did they return with? Give your answer to the nearest penny. The exchange rate was £1 = \$1.24.

$$\text{£}1200 = 1200 \times 1.24 = \$1488$$



$$\text{Spend} = 95 \times 14 = \$1330$$



$$\text{Remainder} = 1488 - 1330 = \$158$$



$$\begin{aligned} \text{Remainder} &= 158 \div 1.24 = 127.419\dots \\ &= \text{£}127.42 \end{aligned}$$



4

a) The Smiths flew from Gatwick to Florida; their flight left at 11:46 GMT and arrived 16:11 local time. Florida is 5 hours behind the UK. How long was their flight?



Journey time = 9 hours 25 min 

b) Several airlines offer flights from Gatwick to Florida each with different deals. The Smiths chose the company which was cheapest, who did they go with? The Smiths have three children.

British Airways	United Airlines	Air France
Adult fare £1250	Adult fare £690	Adult fare £1025
Children go free	Children 50% off	Child £610
		Buy 1 adult get 1 child free

$$\begin{aligned} \text{Adults} &= 2 \times 1250 \\ &= \text{£}2500 \end{aligned}$$



$$\begin{aligned} \text{Adults} &= 2 \times 690 \\ &= \text{£}1380 \end{aligned}$$

$$\begin{aligned} \text{Kids} &= (3 \times 690) \times 0.5 \\ &= \text{£}1035 \end{aligned}$$

$$\text{Total} = \text{£}2415$$



$$\begin{aligned} \text{Adults} &= 2 \times 1025 \\ &= \text{£}2050 \end{aligned}$$

$$\begin{aligned} \text{Kids} &= 2 \text{ free} + 610 \\ &= \text{£}610 \end{aligned}$$

$$\text{Total} = \text{£}2660$$



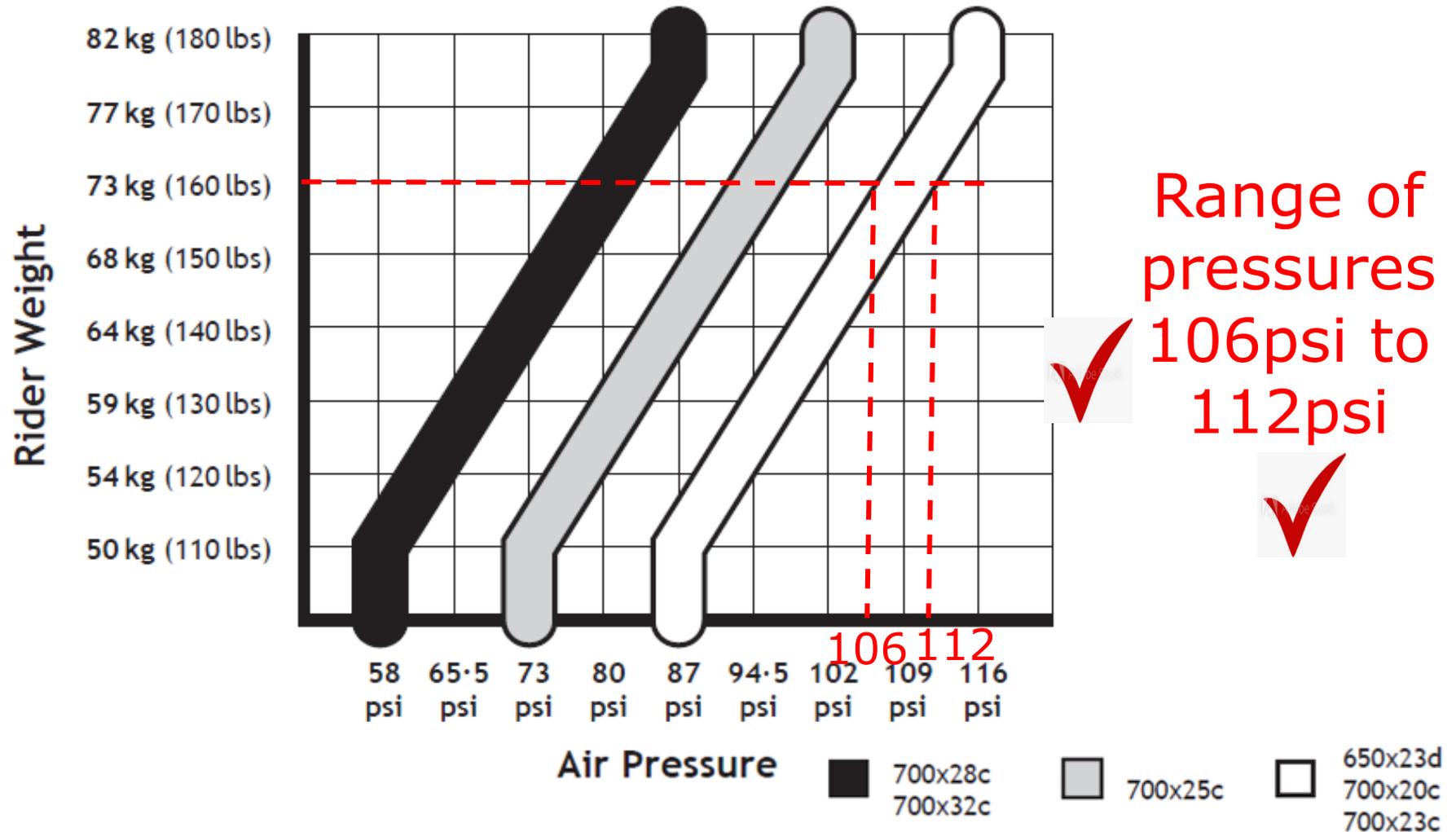
United Airlines is the cheapest option



Patryk is a keen cyclist.

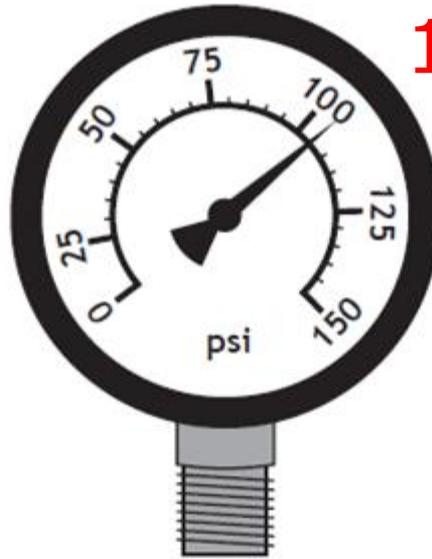
Before Patryk goes for a cycle he checks the recommended air pressure for his tyres using the graph below.

Patryk weighs 73 kilograms and he is using 700 × 23C tyres.



The gauge below shows the reading when he checks his front tyre.

Range of pressures
106psi to
112psi



105psi



State any adjustment Patryk should make so that his tyre has the correct air pressure.

Patryk has to increase the pressure in his tyre by between 1 and 7psi



6 A survey showed that $\frac{2}{9}$ of people surveyed chose Coca Cola as their favourite cola and $\frac{1}{5}$ chose Pepsi. The rest chose other colas.

What fraction of the people chose other colas?

$$\text{Other colas} = 1 - \left(\frac{2}{9} + \frac{1}{5}\right) \quad \checkmark$$

$$\text{Other colas} = 1 - \left(\frac{2 \times 5}{45} + \frac{1 \times 9}{45}\right) \quad \checkmark$$

$$\text{Other colas} = 1 - \left(\frac{19}{45}\right) \quad \checkmark$$

$$\text{Other colas} = \frac{26}{45} \quad \checkmark$$

7

a) An inheritance is to be split between three siblings, Ian, Heather and Paul, in the ratio 2:3:1. If Ian will inherit £2800 how much will each of the others get?

Ian:Heather:Paul

2 : 3 : 1

2800:3x1400:1x1400



£2800: £4200 : £1400



b) There is also a large stamp collection that is to be shared in the same ratio. There are 9000 stamps in the collection, how many will each get?

$$\text{Number of Shares} = 2 + 3 + 1 = 6$$



$$\text{Value of 1 Share} = 9000 \div 6 = 1500 \text{ stamps}$$



Ian:Heather:Paul

2 : 3 : 1

$$2 \times 1500 : 3 \times 1500 : 1 \times 1500$$

$$3000 : 4500 : 1500$$



Mrs Abid took a survey in her mathematics class of how pupils travelled to school.

The results are shown in the table.

	Walk	Cycle	Bus
Boys	6	4	3
Girls	2	3	12

What is the probability that a pupil chosen at random is a girl who cycles to school?

Give your answer in its simplest form.

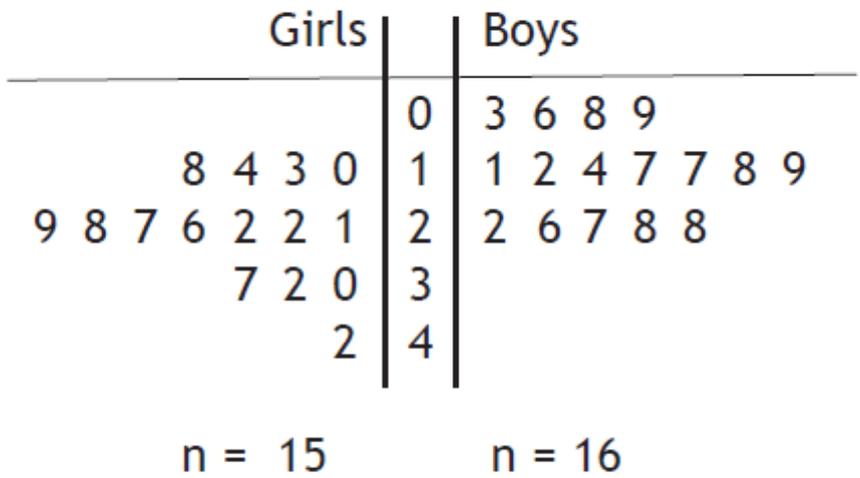
Total number of pupils = 30

Number of girls cycling = 3

$$P(G+C) = \frac{3}{30}$$

$$P(G+C) = \frac{1}{10}$$

This back-to-back stem and leaf diagram represents the number of hours a class spends on social networking websites in a week.



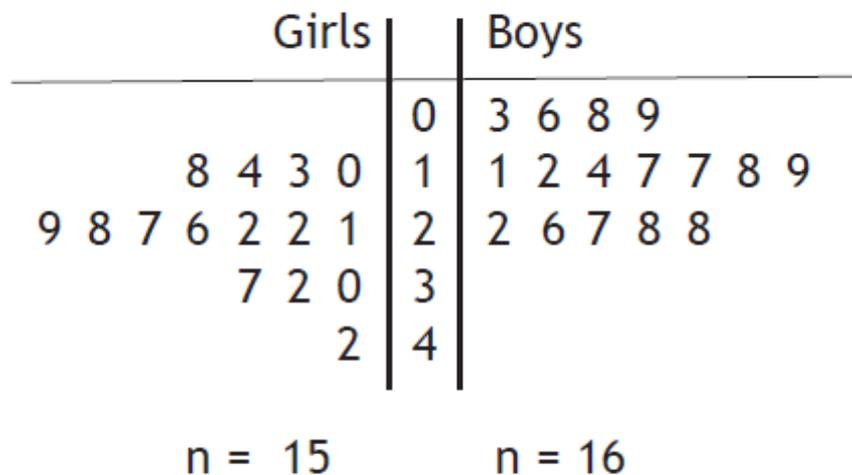
KEY

3 | 1 | represents 13 hours
 | 2 | 5 | represents 25 hours

(a) What was the highest number of hours that the girls spent on the websites

42 hours 

This back-to-back stem and leaf diagram represents the number of hours a class spends on social networking websites in a week.



KEY

$3 \mid 1 \mid$ represents 13 hours
 $2 \mid 5 \mid$ represents 25 hours

(b) Calculate the mean of the boys

Mean =

$$(3+6+8+9+11+12+14+17+17+18+19+22+26+27+28+28) \div 16$$

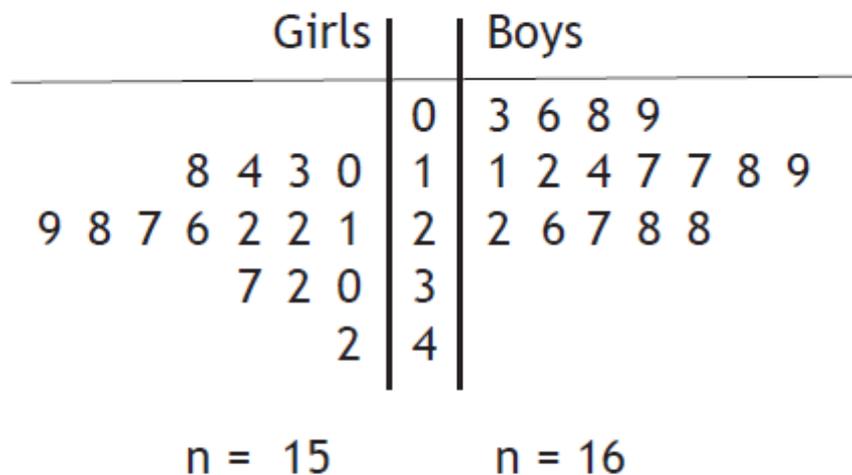
$$\text{Mean} = 265 \div 16$$



$$\text{Mean} = 16.56 \text{ hours}$$



This back-to-back stem and leaf diagram represents the number of hours a class spends on social networking websites in a week.



KEY

$3 \mid 1 \mid$ represents 13 hours
 $2 \mid 5 \mid$ represents 25 hours

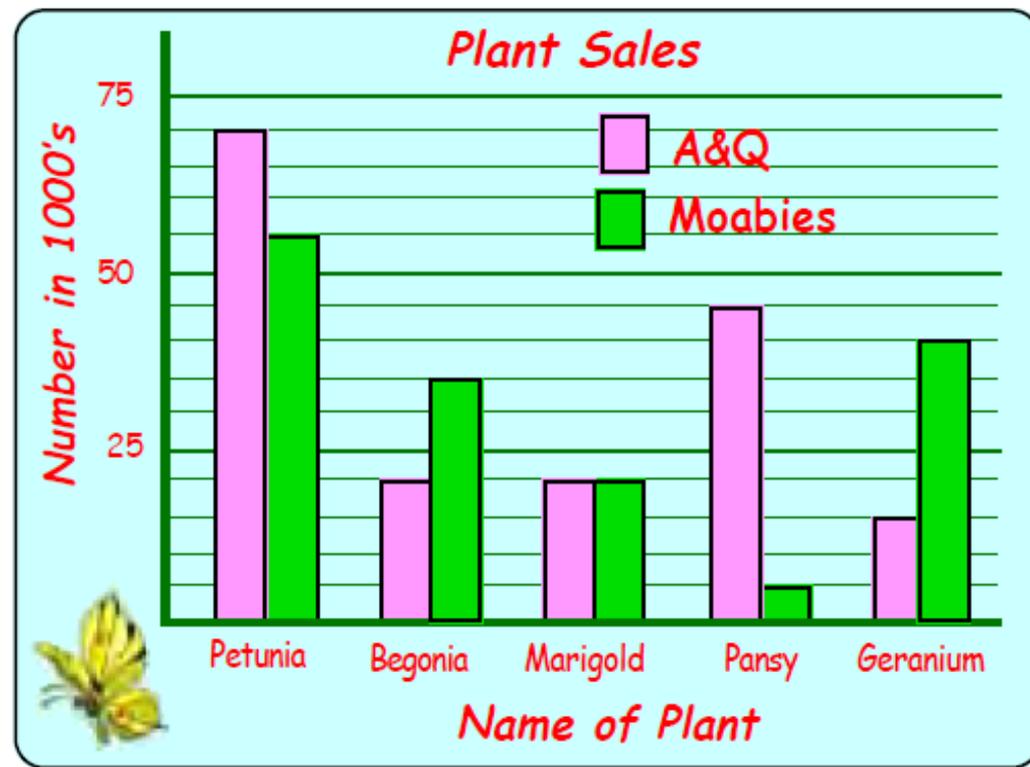
(c) On average do the boys or girls use the websites more, give a reason for your answer.



On average the girls use websites more as the results for the girls show in general they are in the middle and bottom of the table (higher values) whereas the boys are middle and top (lower values)

This bar chart shows the sales of bedding plants in two garden centres during the final week in May last year.

- a How many petunias did A&Q sell ?
- b How many pansies did Moabies sell ?
- c Which plant sold the same in both centres ?
- d How many more begonias did Moabies sell ?
- e Looking at sales of geraniums and pansies together - which garden centre sold more ? - How many more ?



a) 70 petunias



b) 5 pansies



c) Marigolds



d) Begonias = $35 - 20 = 15$ more



e) A&Q = $15 + 45 = 60$



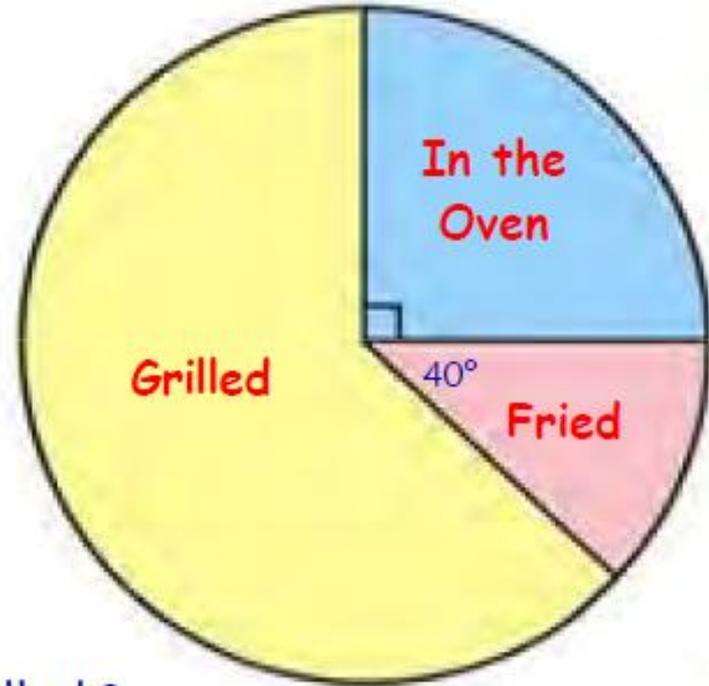
Moabies = $40 + 5 = 45$

A&Q sold 15 more



In a survey in a fish market, 540 people were asked which method they preferred to cook a piece of haddock.

The results are shown in the pie chart.



- a What angle at the centre is taken up by grilling the fish ?
- b How many people preferred the haddock :-
(i) done in the oven (ii) fried ?
- c How many preferred to have their haddock grilled ?

a) $360 - (90 + 40) = 230^\circ$ ✓

b) In Oven = $\frac{90}{360} \times 540 = 135$ people ✓

Fried = $\frac{40}{360} \times 540 = 60$ people ✓

c) Grilled = $540 - (135 + 60) = 345$ people ✓

Total out of 47

29 or more what we
are aiming at

