

Drawing them

- You need to know how many data items (often people) the pie chart has to represent.
- The whole pie chart has 360° . Find out how many degrees each (person) gets: $360 \div \text{number of (people)}$
- To work out the size of each slice, multiply the angle found above by the number of (people) in each category. Repeat for each slice.
- Remember to mark an initial zero line on the pie chart and then measure the first angle. Draw and label your first slice. **Now move the zero line on your angle measurer to the start of the next slice.** Measure, draw, label and repeat.

Reading from them

- To write the size of a slice as a fraction of the pie, measure the angle at the centre of the slice and write $\frac{\text{size of slice}^\circ}{360^\circ}$
- To work out how many (people) this slice represents, you multiply the fraction found above by the total number of data items (people) that the whole pie chart represents.

Comparing them

- If you are asked to compare information on two pie charts, **DO NOT** use words like 'more' or 'less' **unless** you know that the pie charts each represent the same totals of data items, or you have actually calculated the number represented by each slice. Otherwise you can only say 'a larger proportion' or 'a smaller proportion of' when comparing.

PPQs

1.

One sunny Sunday morning, the owner of *Lizzy's Ices* ice cream van recorded the number of ice-cream sales.

Flavour of ice cream	Number sold
Vanilla	22
Strawberry	17
Chocolate	12
Banana	15
Toffee	6

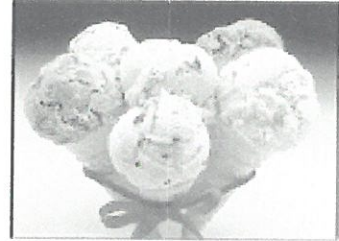
$$22 \times 5 = 110^\circ$$

$$17 \times 5 = 85^\circ$$

$$12 \times 5 = 60^\circ$$

$$15 \times 5 = 75^\circ$$

$$6 \times 5 = 30^\circ$$

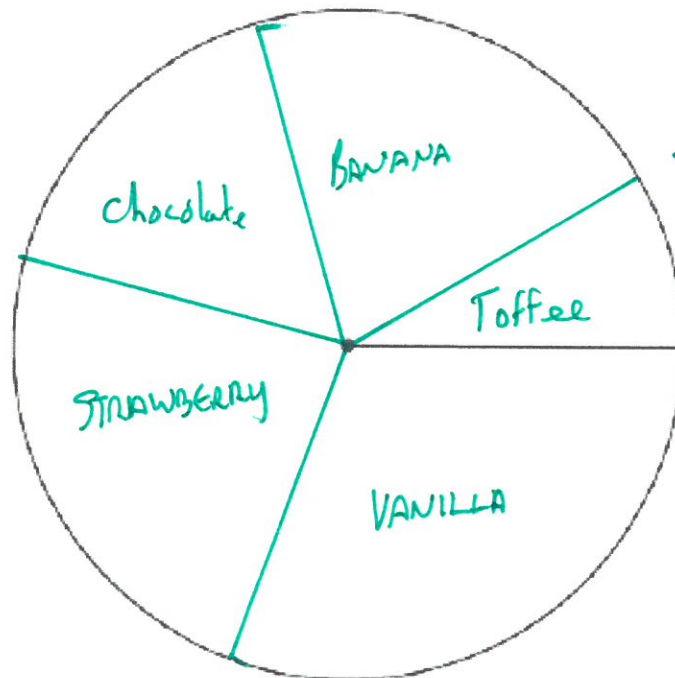


- (a) Draw a pie chart to represent the number of ice-cream sales made by *Lizzy's Ices*. You should show how you calculate the angles of your pie chart. [4]

Working:

$$\text{Total ice creams sold} = 72$$

$$\text{degrees per ice cream} = 360 \div 72 = 5^\circ$$



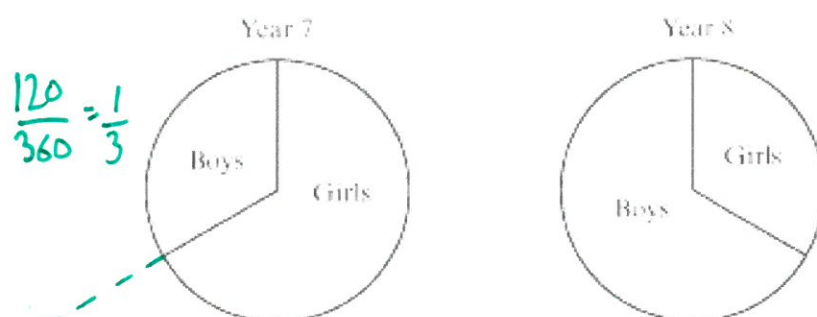
- (b) On the same Sunday morning, another ice-cream van, Cameron's Cones, sold 90 ice creams.
Of these 90 ice creams, 18 were chocolate flavour.
Who sold the higher proportion of chocolate flavour ice creams?
You must show your working. [5]

$$\text{Cameron's: } \frac{18}{90} \times 100 = 20\%$$

$$\text{Lizzy's: } \frac{12}{72} \times 100 = 16.6\%$$

∴ Cameron sold a greater proportion of chocolate.

2. The pie charts below represent the number of boys and the number of girls in two year groups.



There are 150 pupils in Year 7.

There are 40 more boys in Year 8 than there are boys in Year 7.

How many girls, in total, are there in Year 7 and Year 8?

$$\therefore \text{Y7 boys} = \frac{1}{3} \times 150 = 50 \text{ boys}$$

$$\therefore \text{Y7 girls} = 100$$

$$\therefore \text{Y8 boys} = 50 + 40 = 90$$

$$\therefore \text{Y8 girls} = 90 \div 2 = 45$$

$$\therefore \text{Total girls} = 100 + 45 = 145$$

[5]

3.

The winning team of the Six Nations Rugby Tournament from 2000 to 2014 is recorded in the table below:

YEAR	WINNING TEAM	YEAR	WINNING TEAM
2014	Ireland .	2006	France .
2013	Wales .	2005	Wales .
2012	Wales .	2004	France .
2011	England .	2003	England .
2010	France .	2002	France .
2009	Ireland .	2001	England .
2008	Wales .	2000	England .
2007	France .		

Use this data to draw a pie chart to illustrate the number of times that each team won the Six Nations Rugby Tournament from 2000 to 2014.

You must show how you calculate the angles of your pie chart.

(5)



$$\text{Ireland} = 2$$

$$\text{Wales} = 4$$

$$\text{England} = 4$$

$$\text{France} = 5$$

$$\text{Total} = 15$$

$$\text{each win} = 360 \div 15 = 24^\circ$$

$$\text{Ire } 2 \times 24 = 48^\circ$$

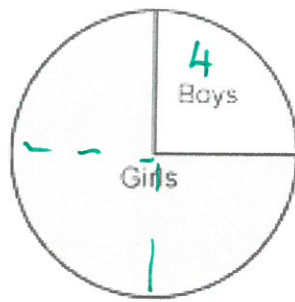
$$\text{WAL } 4 \times 24 = 96^\circ$$

$$\text{Eng } 96^\circ$$

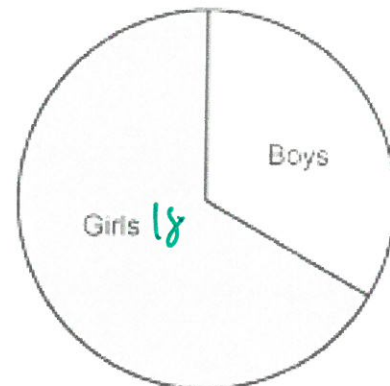
$$\text{Fr } 5 \times 24 = 120^\circ$$

4.

The pie charts show the proportion of boys to girls in class A and class B



Class A



Class B

There are more pupils in class B than in class A.

There are 4 boys in class A.

There are $1\frac{1}{2}$ times as many girls in class B than in class A.

How many boys are there in class B?

[4]

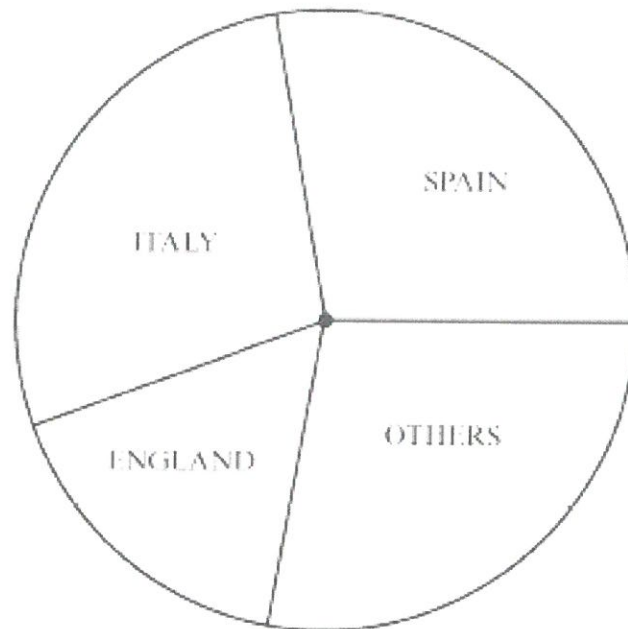
$$\text{Girls in Class A} = 3 \times 4 = 12$$

$$\text{Girls in Class B} = 12 + 6 = 18$$

$$\text{So in Class B} = 18 \div 2 = 9 \text{ boys}$$

5.

A sports magazine used the following pie chart to illustrate the countries from which the first 18 European Championship League winners came.



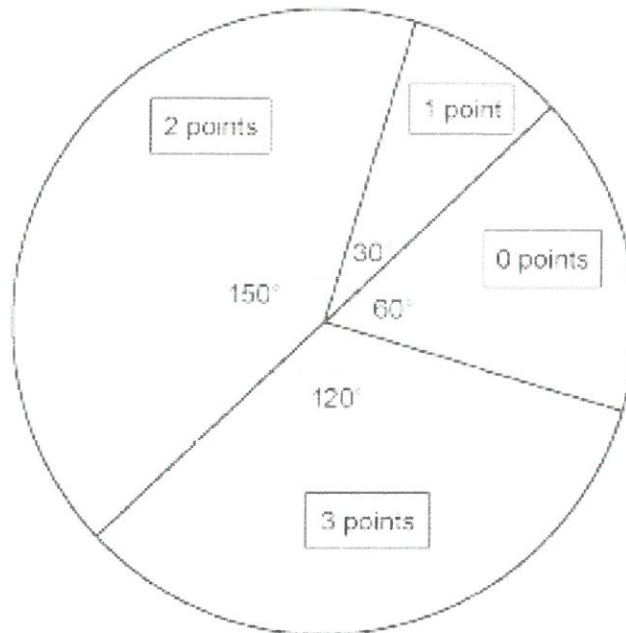
How many times did a team from Spain win the Championship?

$$\text{Spain} = \frac{100}{360} \times 18 = 5 \text{ wins}$$

6.

Sara plays a game 72 times
 Each game results in Sara gaining 0 points, 1 point, 2 points or 3 points.

The pie chart below summarises the results of the 72 games played.



Use the information from the pie chart to complete the frequency table below, and then calculate the mean number of points Sara scored per game. Give your answer correct to 1 decimal place. [5]

Points gained		Number of games	
0	x	12	0
1	x	6	6
2	x	30	60
3	x	24	72

$$0 \text{ points} = \frac{60}{360} \times 72 = 12$$

$$3 \text{ points} = \frac{120}{360} \times 72 = 24$$

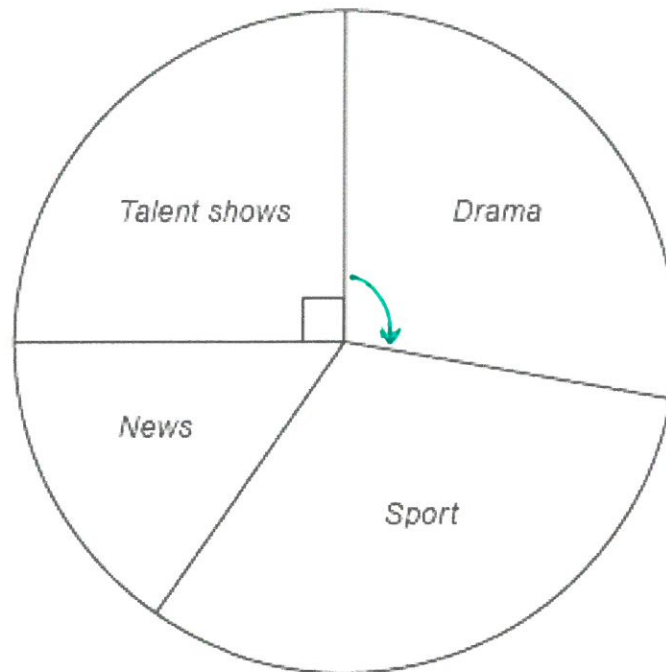
$$1 \text{ point} = \frac{30}{360} \times 72 = 6$$

$$2 \text{ points} = \frac{150}{360} \times 72 = 30$$

$$\text{Mean} = \frac{138}{72} = 1.9$$

Mean = points

7. (a) 36 000 people took part in a survey to find out their favourite type of TV programme. The pie chart shows the results.



- (i) How many people chose *Drama* as their favourite type of TV programme? You must show your working. [3]

$$\frac{100}{360} \times 36000 = 10000$$

- (ii) How many more people chose *Sport* rather than *News* as their favourite type of TV programme? You must show your working. [3]

$$\text{Sport} = \frac{115}{360} \times 36000 = 11500$$

$$\text{News} = \frac{55}{360} \times 36000 = 5500$$

So 6000 more

- (iii) Twice as many women as men chose *Talent shows* as their favourite type of TV programme.
Calculate how many women chose *Talent shows*.
You must show your working. [3]

$$\text{N}^\circ \text{ of people who chose talent shows} = \frac{1}{4} \times 36000 = 9000$$

$$W : M \quad 9000 \div 3 = 3000$$

$$2 : 1$$

$$6000 : 3000 \quad \text{So } 6000 \text{ women}$$

- (b) 1000 people were asked,

'Should news programmes include details of the weather?
Yes or No?'

70% of the people answered 'yes'.

A pie chart is to be drawn to represent the answers to this question.

What size would the angle be to represent the answer 'yes'?

[2]

$$70\% \text{ of } 360 =$$

$$\frac{70}{100} \times 360 \quad \text{or} \quad 0.7 \times 360 \quad \text{or} \quad 360 \times 70\%$$

Angle representing 'yes' is 252 °