

Fractions and angle to remember

$$\frac{1}{2} \text{ of } 360^\circ = 180^\circ \quad \frac{1}{3} \text{ of } 360^\circ = 120^\circ$$

$$\frac{1}{4} \text{ of } 360^\circ = 90^\circ \text{ right angle}$$

$$\frac{1}{6} \text{ of } 360^\circ = 60^\circ$$

$$\frac{1}{8} \text{ of } 360^\circ = 45^\circ$$

$$\frac{1}{10} \text{ of } 360^\circ = 36^\circ$$

$$\frac{1}{12} \text{ of } 360 = 30^\circ$$

Two ways Pie Charts can be given

① When given the angles (degrees) in a pie chart put the given angle over 360° and multiply by the total amount - To find the amount of each sector

② When given the amounts of each sector and asked to find the angles. Put the given amount over the total amount and multiply this fraction by 360° to work out each of the angles of the sectors.



Statistics 3 – Presenting Data

chapter 13

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Section 13.2 Pie charts

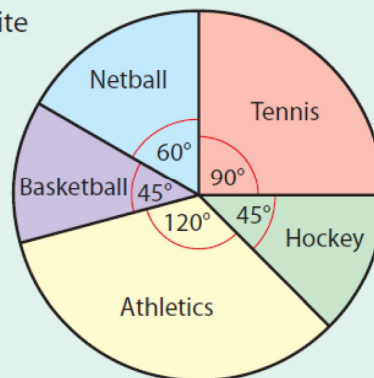
Example 1

120 first-year girls were asked to name their favourite sport. The result is shown in the given pie chart.

How many girls named

- (i) tennis
- (ii) athletics
- (iii) hockey
- (iv) netball

as their favourite sport?



Example 2

In a survey, 72 people were asked what type of heating they had in their homes. The results are given in the table below:

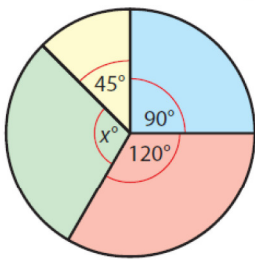
Type of heating	Oil	Gas	Electricity	Solid fuel
Number of households	30	24	12	6

Draw a pie chart to illustrate this information.

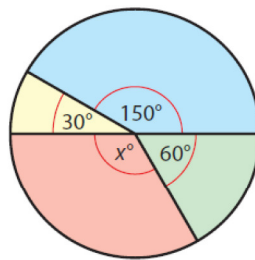
Exercise 13.2

1. Find the value of x in each pie chart shown.

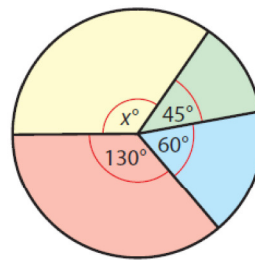
(i)



(ii)

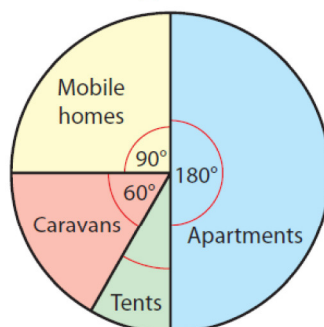


(iii)



When given the angles.

2. The pie chart below shows the different types of accommodation in a holiday village.



If the total number of 'units' in the village was 600, find

180° / 600 = 300



If the total number of 'units' in the village was 600, find

- (i) the number of apartments in the village 300 $\frac{180^\circ}{360} \times 600 = 300$
- (ii) the number of mobile homes in the village 150
- (iii) the number of caravans in the village 100 $\frac{60^\circ}{360} \times 600 = 100$
- (iv) the angle in the sector representing tents.

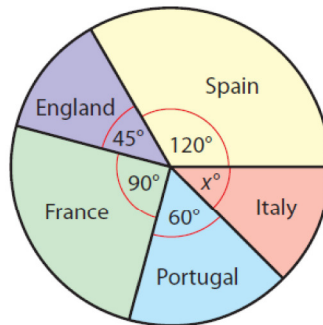
$$360 - (180 + 90 + 60) = 30^\circ$$

$$\frac{30}{360} \times 600 = 50 \text{ tents.}$$

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3. On returning to Dublin, 240 holiday makers were asked to name countries they had visited.

The results are shown in the pie chart on the right.



- (i) What is the size of the angle marked x° ?
- (ii) How many people visited Portugal?
- (iii) Which country was visited by the most people?
- (iv) Which country was visited by $\frac{1}{4}$ of the people questioned?
- (v) Which two countries combined accounted for one half of the holiday makers questioned?

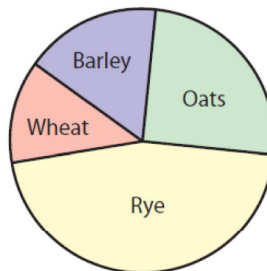
When given the amounts.

4. A packet of breakfast cereal weighing 600 g contains 4 ingredients as follows:

Oats	Barley	Wheat	Rye
150 g	100 g	75 g	275 g

In the pie chart on the right, find the angle in the sector representing

- (i) oats
- (ii) wheat
- (iii) rye.



Total amount 600g

$$\text{Oats} = \frac{150}{600} \times 360^\circ = 90^\circ$$

$$\text{Rye} = \frac{275}{600} \times 360^\circ = 165^\circ$$

$$\text{Barley} = \frac{100}{600} \times 360^\circ = 60^\circ$$

$$\text{Wheat} = \frac{75}{600} \times 360^\circ = 45^\circ$$

...

$$\text{Wheat} = \frac{1500}{600}$$

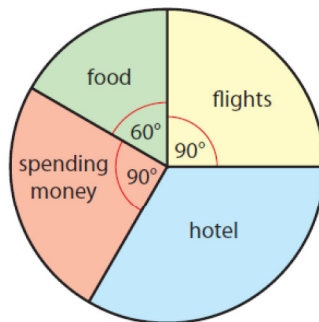
Hiw

5. Sixty people were asked how they generally travel to work and the results are given in the following table:

Transport	Bus	Car	Train	Walk	Bicycle
Number of people	20	15	12	8	5

- Calculate the angle in each of the sectors.
- Draw a pie chart to illustrate the data.

6. The pie chart shows how the cost of a holiday was shared between various items.



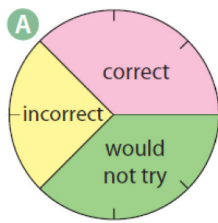
The flights cost €450.

- Calculate the total cost of the holiday.
- Calculate the size of the angle which represents the cost of the hotel.
 - Calculate the cost of the hotel.

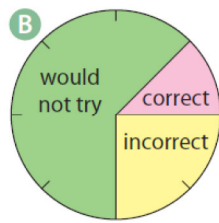
7. 100 people were asked to spell 'hypotenuse'.

40 spelt it correctly, 35 would not try and 25 spelt it incorrectly.

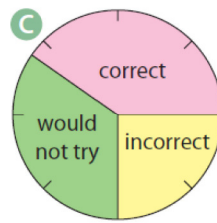
Select the pie chart below that correctly matches the information given.



Spelling



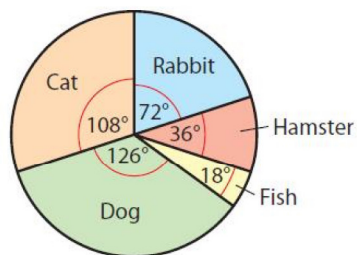
Spelling



Spelling

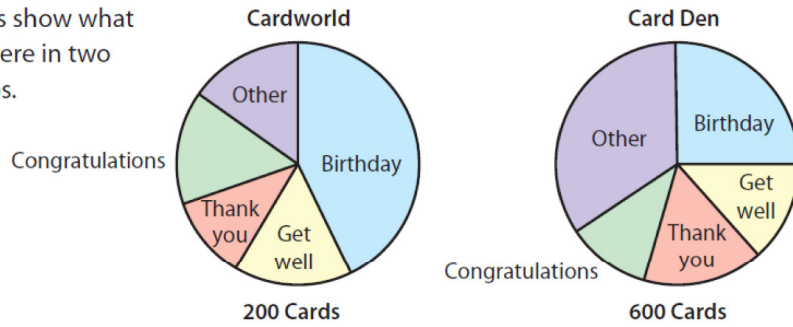
8. In a survey, some small children were asked to name their favourite pet.

The given pie chart shows information about their answers.



- What fraction of the children named hamster as their favourite pet?
- If 20 children named rabbit, work out the number of children who took part in the survey.

9. These pie charts show what sorts of cards were in two stationery shops.

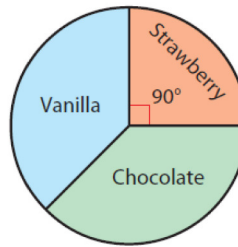


Cardworld had 200 cards and Card Den had 600 cards.

- (i) Approximately how many birthday cards were at Card Den?
- (ii) Jenny thought the pie charts above showed there were more Congratulations cards at Cardworld than at Card Den.

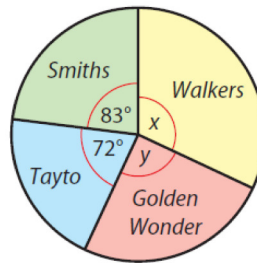
Explain why the pie charts show that this is not so.

10. An ice cream stall sells vanilla, strawberry and chocolate ice creams. The pie chart illustrates the sales of ice cream for last Saturday. The number of vanilla and the number of chocolate ice creams sold were the same. The stall sold 60 strawberry ice creams. How many chocolate ice creams were sold?



11. The pie chart illustrates the sales of four brands of crisps.

- (i) What percentage of total sales does *Tayto* have?
 (ii) If *Walkers* accounts for 35% of total sales, calculate the angles x and y .



Answers

Exercise 13.2

1. (i) 105° (ii) 120° (iii) 125°
2. (i) 300 (ii) 150 (iii) 100 (iv) 30°
3. (i) 45° (ii) 40 (iii) Spain
 (iv) France (v) Spain and Portugal
4. (i) 90° (ii) 45° (iii) 165°
5. (i) Bus – 120° , Car – 90° , Train – 72° ,
 Walk – 48° , Bicycle – 30°
6. (i) €1800 (ii) (a) 120° (b) €600
7. Pie chart (C)
8. (i) $\frac{1}{10}$ (ii) 100
9. (i) 150
 (ii) Slightly larger % of cards at *Cardworld* are c'ions cards but there are 3 times as many cards (in total) at *Card Den*.
10. 90
11. (i) 20% (ii) $x = 126^\circ$, $y = 79^\circ$