

WJEC MATHEMATICS  
**INTERMEDIATE**  
STATISTICS AND PROBABILITY

**PIE CHARTS**

## **Contents**

Interpreting Pie Charts

Drawing Pie Charts

## **Credits**

WJEC Question bank

<http://www.wjec.co.uk/question-bank/question-search.html>

## Interpreting Pie Charts

Pie charts are a way of representing data in a circle.

### Angles as Fractions

Remember **all the angles of the sectors of a pie chart sum to 360°**. This means that if the angle to one 'slice' was 90° we can write this as a fraction of the whole pie chart.

$$\frac{90}{360} = \frac{1}{4}$$

Similarly, if the entire pie chart contained 120 people and the angle of a specific sector was 36° we can calculate how many people are contained in this sector

$$\frac{36}{360} = \frac{1}{10}$$

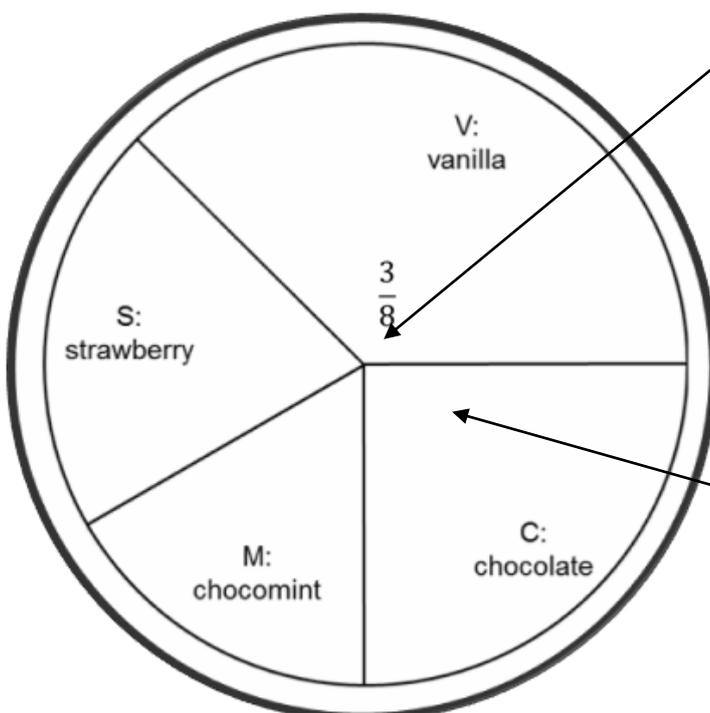
$$\frac{1}{10} \text{ of } 120 = 12 \text{ people}$$

**Key point!**

If you aren't given the total of a pie chart you **CANNOT** compare them

### Example

*The following pie chart shows 240 people's favourite ice cream flavour. How many said vanilla?*



Using a protractor, this sector is 135°. So to calculate the fraction of this sector

$$\frac{135}{360} = \frac{3}{8}$$

Now find  $\frac{3}{8}$  of 240 = 90  
You should be able to recognise 90° (one quarter)

## Drawing Pie Charts

Here's a worked example of how to draw a pie chart from a frequency table

Flavour	Number Sold (Frequency)
Vanilla	13
Banana	22
Chocolate	28
Strawberry	57

### Step 1

Add the total number of ice creams sold

$$13 + 22 + 28 + 57 = 120$$

### Step 2

We know that the angles of all 120 ice creams must add to 360. To we need to find the angle **per icecream**

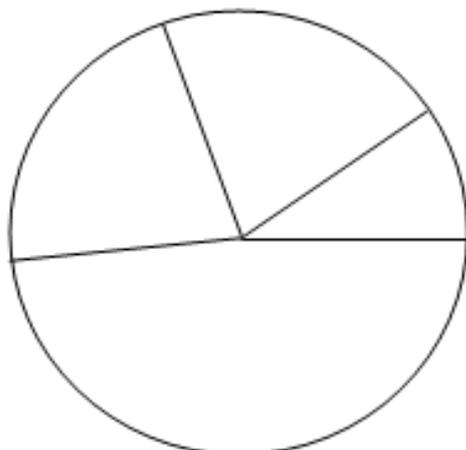
$$360 \div 120 = 3 \text{ (degrees)}$$

### Step 3

Now that we know the angle of each ice cream we can calculate the angle of each section (flavour)

- Vanilla =  $13 \times 3 = 39^\circ$
- Banana =  $22 \times 3 = 66^\circ$
- Chocolate =  $28 \times 3 = 84^\circ$
- Strawberry =  $57 \times 3 = 171^\circ$

Check that these  
add up to 360

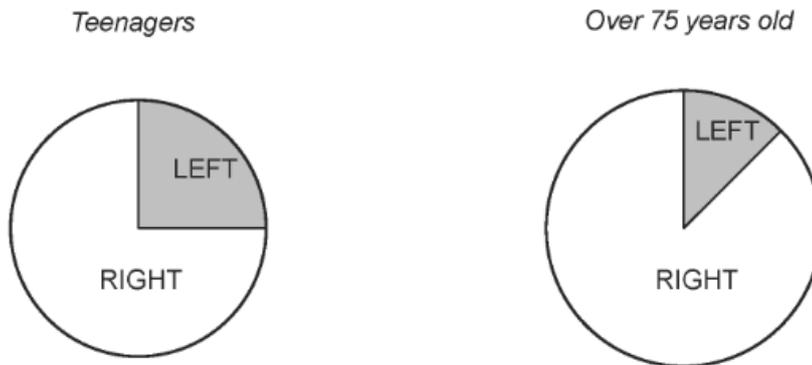


Draw with a pencil and protractor on angle at a time. If you finish and have not joined back up with the start, you have made a mistake

### Exam Questions S3

1. Clearly explain why the statements that accompany each of the following diagrams in a newspaper may not be true.  
Your comments should be based on the diagrams and not on your personal opinion.

(i) Taken from an item about left-handedness. [1]

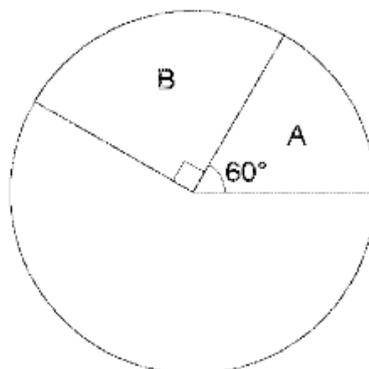


'There are twice as many left-handed teenagers as there are left-handed people over 75 years old.'

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2. A number of people were asked to choose which of four brands of ice cream they liked the most. The brands were labelled A, B, C and D respectively.

Dimitar has begun to show the results using a pie chart.



He knows that:

- 10 people chose brand A,
- 30 people chose brand C.

Calculate how many people chose brand D. [4]

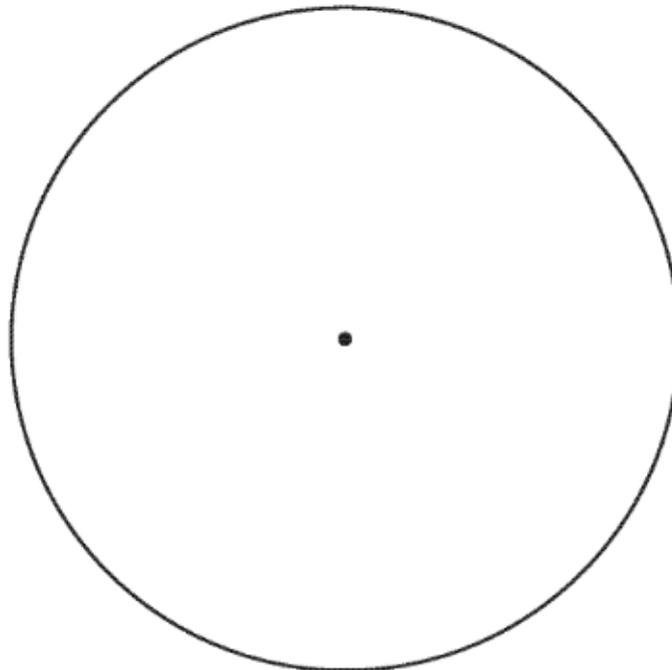
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3. A hospital collected data on the age group of each of 120 people that were treated as outpatients on a particular day.

The results are summarised below.

Age group	Number of people
Pre-school	18
School	24
60 and over	35
Others	43

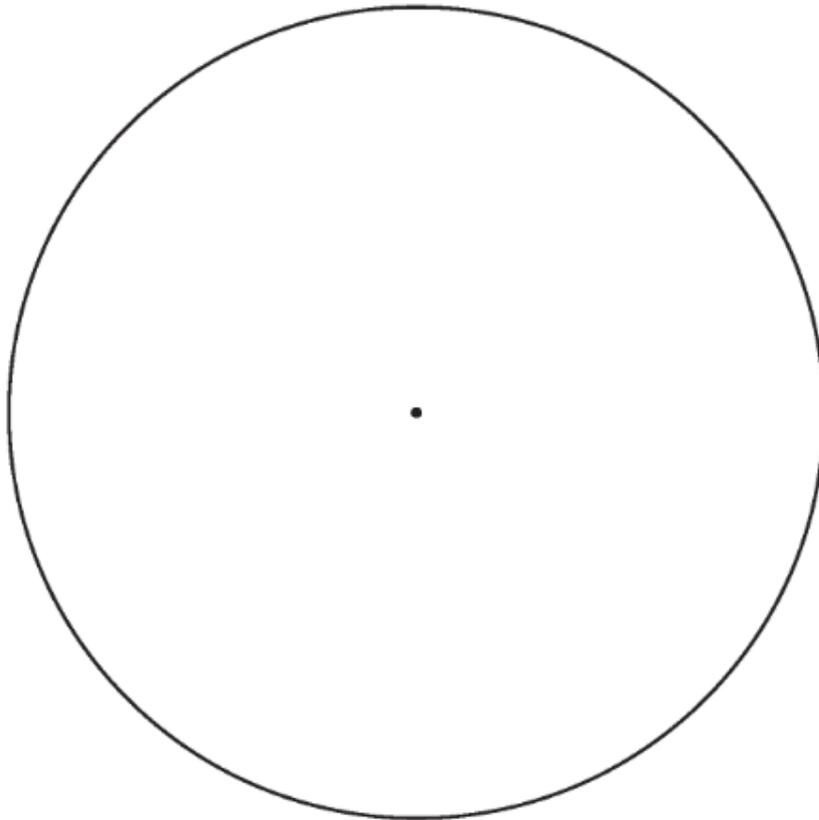
Draw a pie chart to illustrate these results.  
You should show how you calculated the angles of your pie chart.



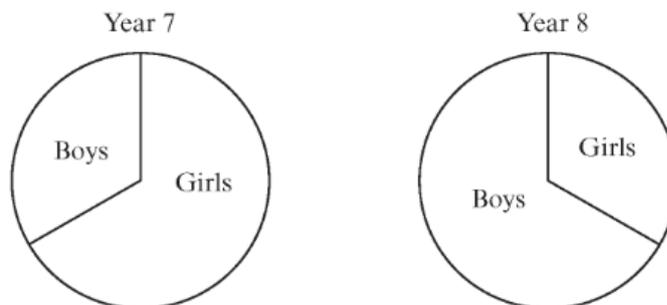
4. The table shows the number of ice creams of each of four flavours bought from a van one Saturday.

Ice cream flavour	Vanilla	Chocolate	Strawberry	Raspberry
Number bought	110	70	38	22

Draw a pie chart to illustrate this data. You should show how you calculate the angles of your pie chart.



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

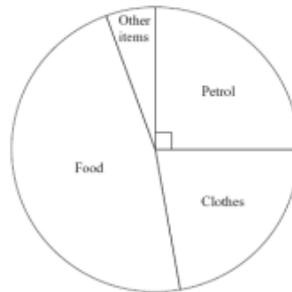


There are 150 pupils in Year 7.  
There are 40 more boys in Year 8 than there are boys in Year 7.

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

6. Mrs Yusuf went shopping at a superstore.

The pie chart shows information about the money she spent on petrol, on clothes, on food and on other items.



(a) What did she spend most money on?

.....  
(1)

(b) What fraction of the money she spent was on petrol?

.....  
(1)

Mrs Yusuf spent £25 on petrol at the superstore.

(c) In total, how much money did she spend?

£ .....  
(2)

7. The pie chart shows some information about the time Gill spent working in her garden one month.



(a) What fraction of the time did Gill spend cutting the grass?

.....  
(1)

Gill spent 7 hours weeding.

(b) How much time did Gill spend planting?