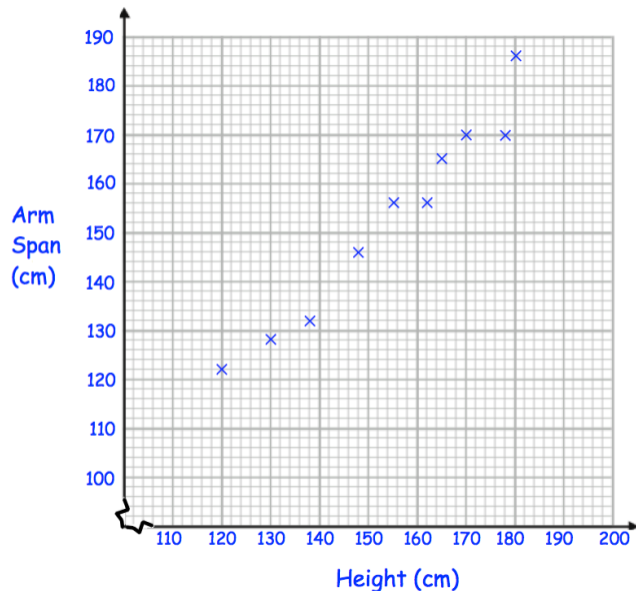


Graphs and charts

[CONTENTS](#)

Worked example

The scatter graph shows the height and arm span of ten students.



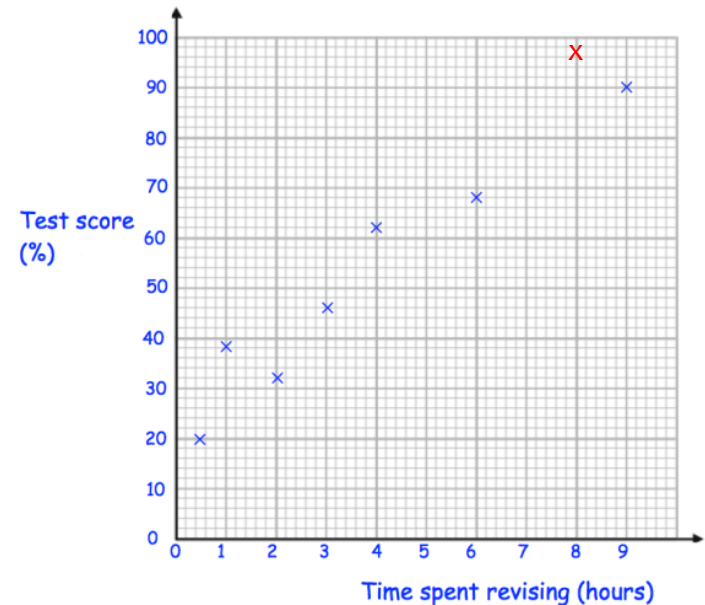
Describe the correlation

Another student is 174 *cm* tall and has an arm span of 180 *cm*. Plot this on the graph.

Another student is 142 *cm* tall. Estimate the arm span of this student.

Your turn

The scatter graph shows the time spent revising and the test score of seven students.



Describe the correlation

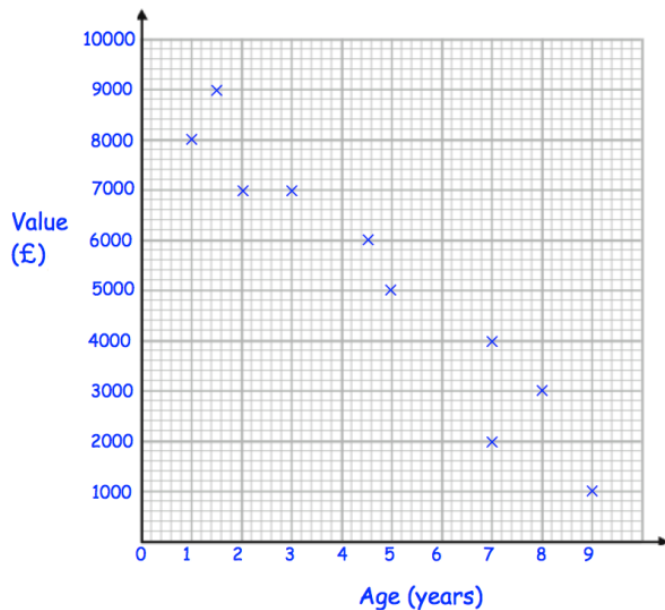
Positive – as time spent revising increases, test score increases.

Another student revised for 8 hours and scored 98%. Plot this on the graph.

Another student achieved a test score of 80%. Estimate the time they spent revising.

Worked example

The scatter graph shows the value of cars and their age.



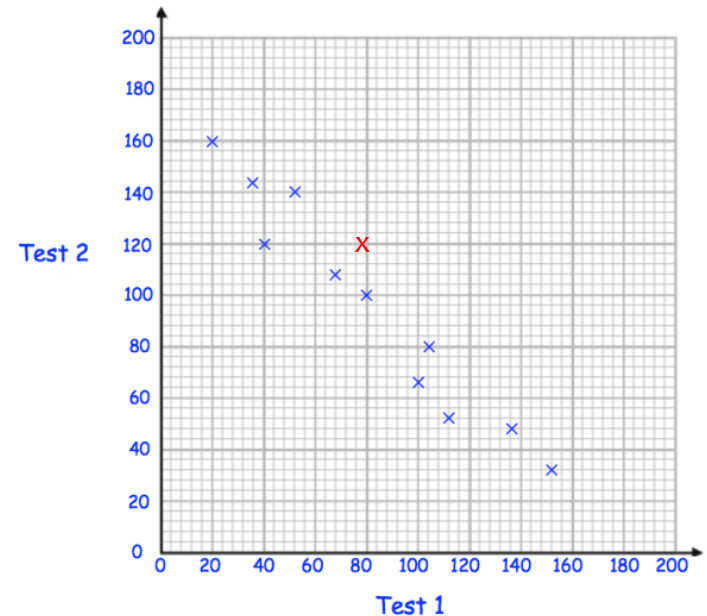
Describe the correlation

Another car is 6 years old and worth £1500. Plot this on the graph.

Another car is 4 years old. Estimate its value.

Your turn

The scatter graph shows the scores on two tests



Describe the correlation

Negative – as the score on test 1 decreases, the score on test 2 decreases.

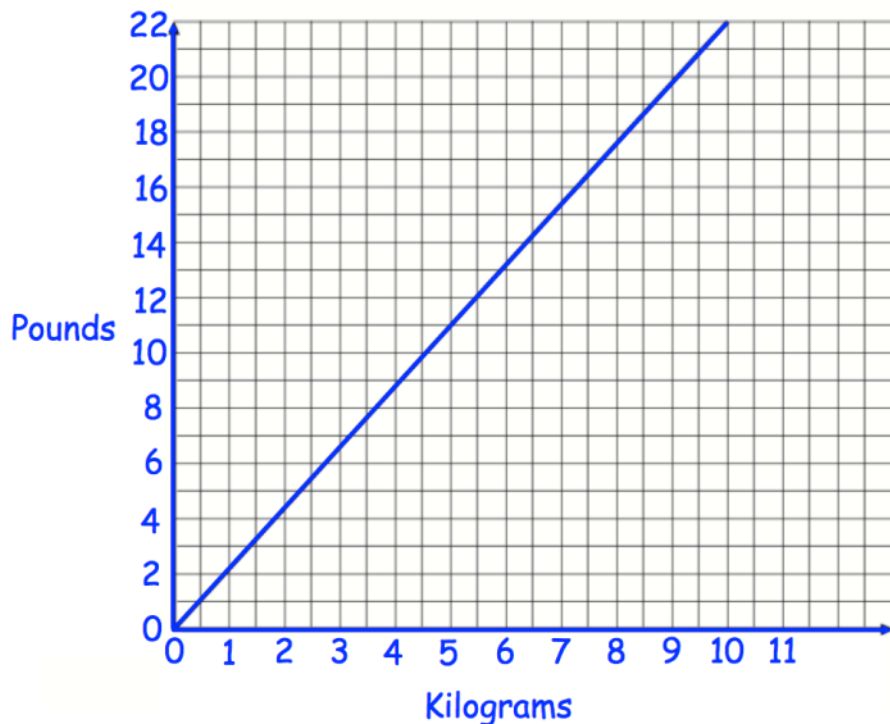
Another student scores 80 on test 1 and 120 on test 2. Plot this on the graph.

Another student scored 20 on test 2.

Estimate the student's score on test 1. **160**

Worked example

Use the graph to convert:



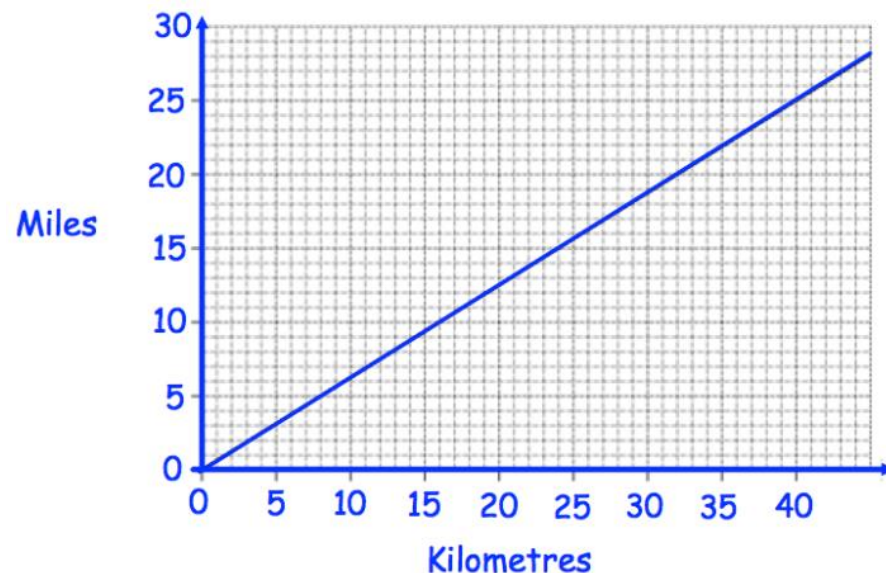
5 kilograms to pounds

8 pounds to kilograms

150 kilograms to pounds

Your turn

Use the graph to convert:



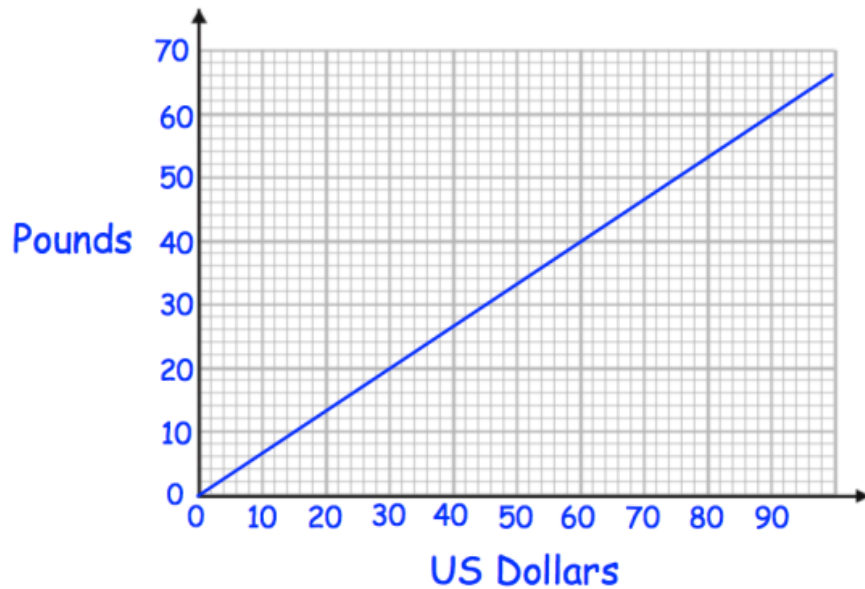
40 kilometres to miles **25 miles**

10 miles to kilometres **16 km**

800 kilometres to miles **500 miles**

Worked example

Use the graph to convert:



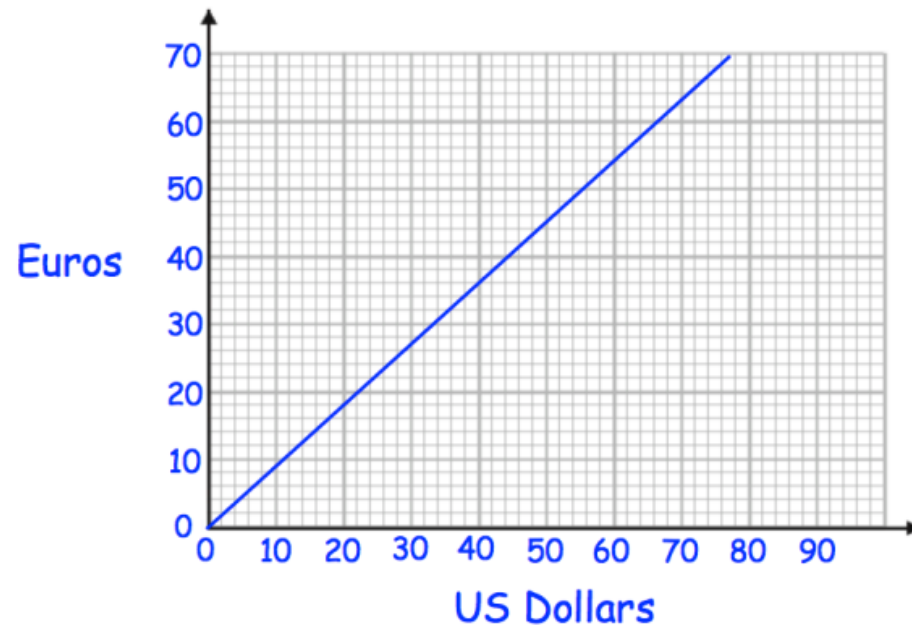
60 US Dollars to Pounds

20 Pounds to US Dollars

1800 US dollars to Pounds

Your turn

Use the graph to convert:



60 US Dollars to Euros €54

20 Euros to US Dollars US \$22

1800 US dollars to Euros €1620

Worked example

Students were asked their favourite subject.
The results were:

Maths Maths Maths English Science

English French PE PE English

Maths Maths Maths Maths Maths

Draw a frequency table for the results

Your turn

A person asked their friends for
their favourite colour.

Green Blue Red Green Blue
Green Red Blue White Blue
Red Green Blue Red Blue Green

Draw a frequency table for the
results.

Colour	Tally	Frequency
Blue	<del> </del>	7
White		1
Red		4
Green	<del> </del>	6

Worked example

Students were asked their favourite subject.
The results were:

Maths	Maths	Maths	English	Science
English	French	PE	PE	English
Maths	Maths	Maths	Maths	Maths

Write down the mode

Your turn

A person asked their friends for their
favourite colour.

Green	Blue	Red	Green	Blue	Blue
Green	Red	Blue	White	Blue	Green
Red	Green	Blue	Red	Blue	Green

Write down the mode

Blue

Worked example

Students were asked their favourite subject.
The results were:

Maths	Maths	Maths	English	Science
English	French	PE	PE	English
Maths	Maths	Maths	Maths	Maths

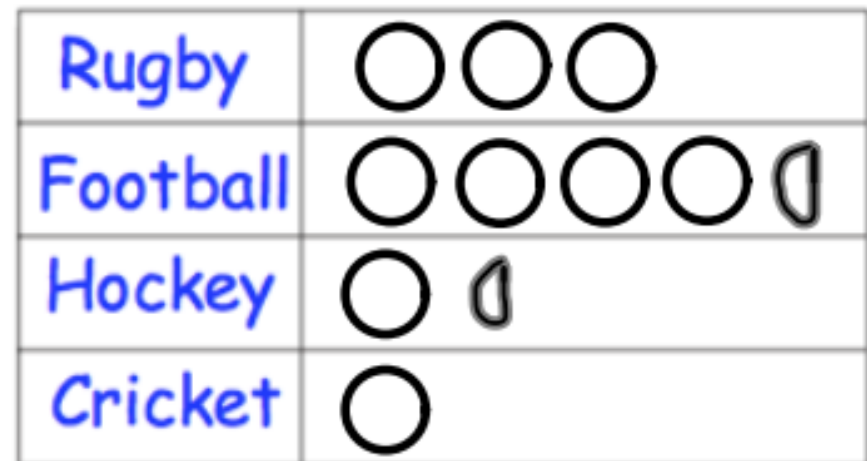
Draw a pictogram for the results

Your turn

A person asked their friends for
their favourite sport.

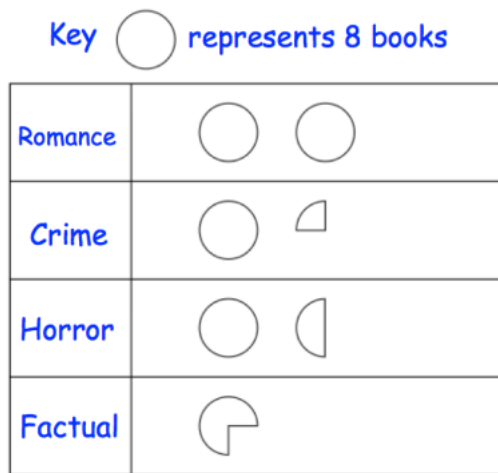
Rugby	Football	Rugby	Hockey	Cricket
Football	Football	Rugby	Hockey	Football
Rugby	Cricket	Hockey	Football	Football
Football	Rugby	Football	Football	Rugby

Draw a pictogram for the results,
where a circle represents 2
people



Worked example

The pictogram shows the type of books a person read last year.



How many books were:

Romance

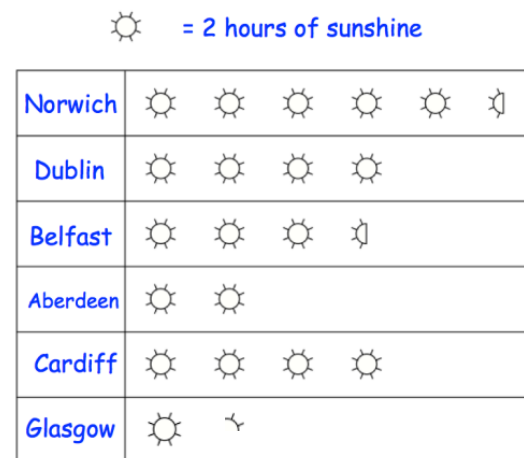
Crime

Horror

Factual

Your turn

The pictogram shows the number of hours of sunshine in a day across various cities



How many hours of sunshine were there in:

Belfast 7

Glasgow 2.5

Worked example

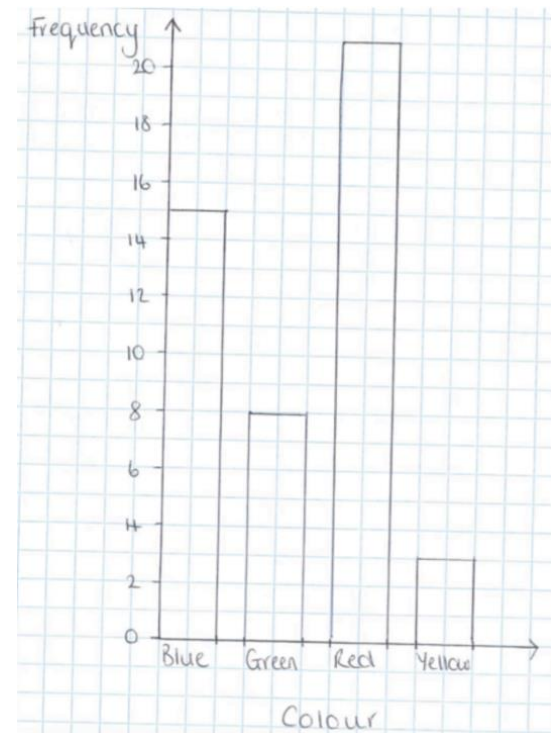
Draw a bar chart for the data:

Sport	Frequency
Cricket	4
Football	3
Hockey	6
Rugby	1

Your turn

Draw a bar chart for the data:

Colour	Frequency
Blue	15
Green	8
Red	21
Yellow	3



Worked example

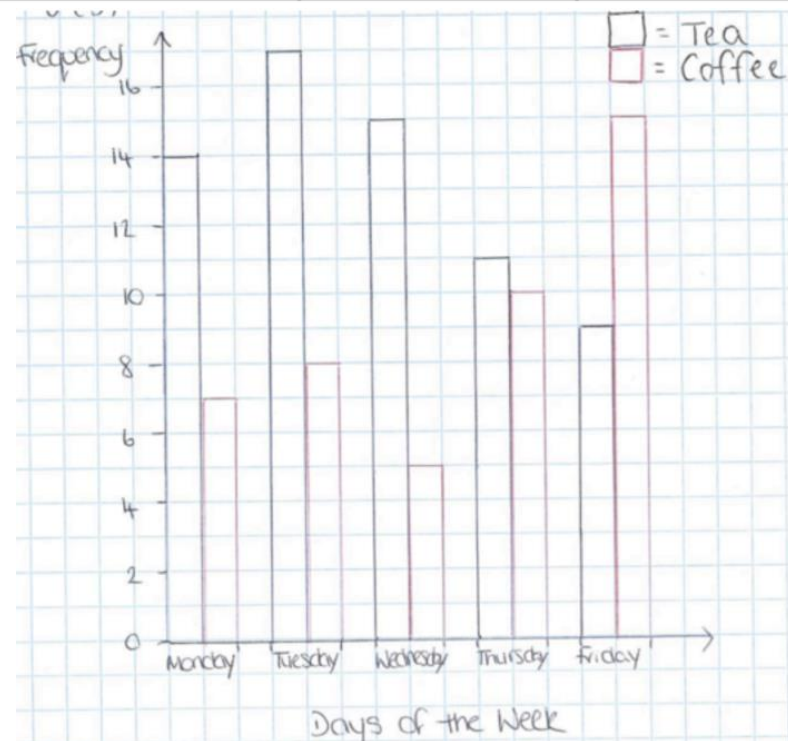
Draw a dual bar chart for the data:

	Boys	Girls
Year 7	8	4
Year 8	6	6
Year 9	5	7

Your turn

Draw a dual bar chart for the data:

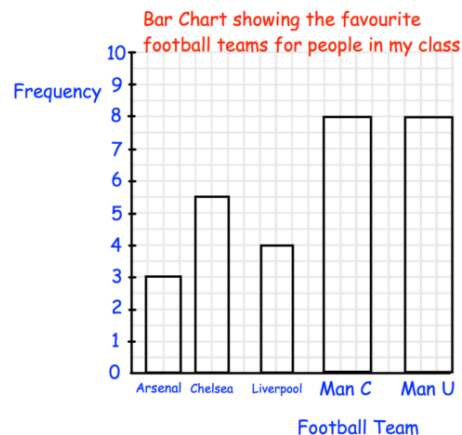
	Tea	Coffee
Monday	14	7
Tuesday	17	8
Wednesday	15	5
Thursday	11	10
Friday	9	15



Worked example

Spot the mistakes in the bar chart:

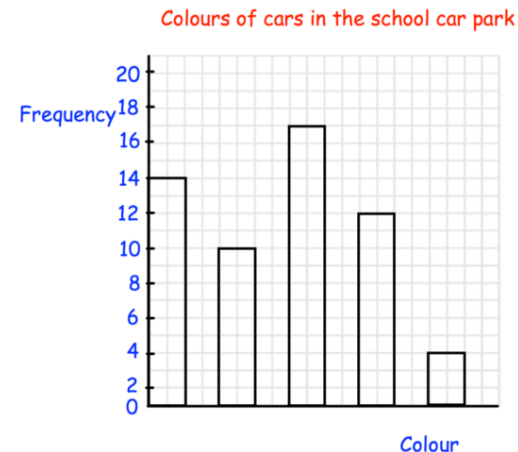
Football Team	Frequency
Arsenal	3
Chelsea	5
Liverpool	4
Man City	8
Man United	8



Your turn

Spot the mistakes in the bar chart:

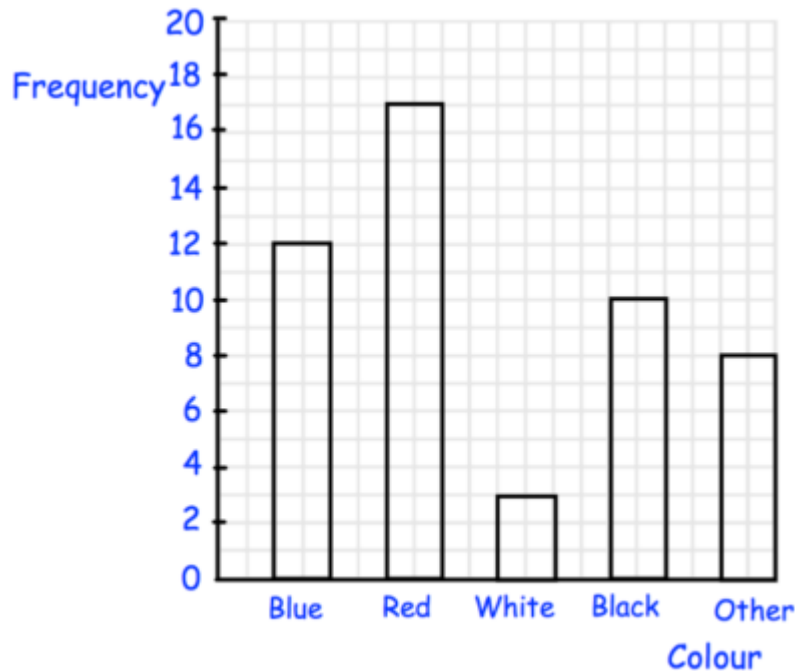
Colour	Frequency
Blue	14
Red	9
Silver	17
White	12
Green	4



- The scale is not consistent throughout the y-axis
- There are no labels on the x-axis
- The height of the red car bar is incorrect

Worked example

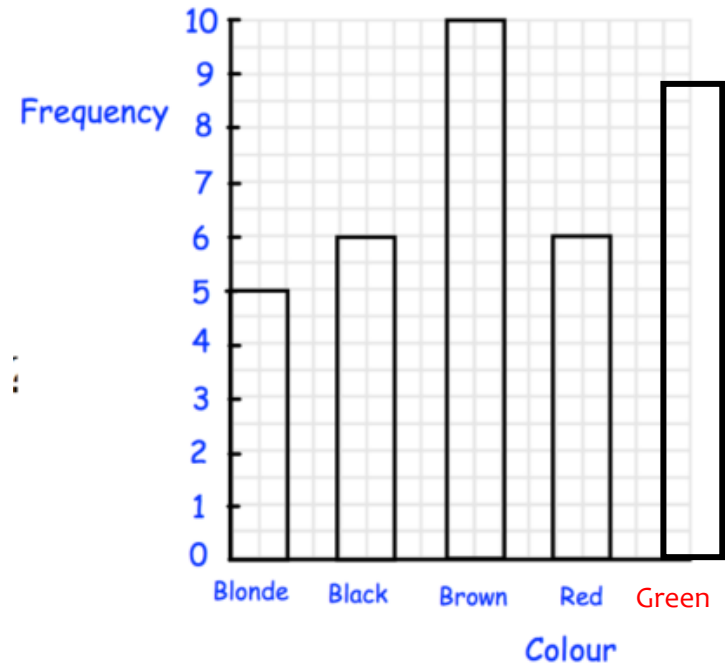
The bar chart shows the colour of cars in a car park:



What is the most common colour?
How many cars were blue?
How many cars were white?
How many more cars were red than other?
How many cars were there in total?
What fraction of the cars are black?
Seven grey cars arrive to the car park. Add this to the bar chart.

Your turn

The bar chart shows hair colour of students in a class:



What is the most common hair colour? **Brown**
How many students had black hair? **5**
How many more students had red hair than blonde hair? **1**
How many students are in the class? **27**
What fraction of the students have brown hair? $\frac{10}{27}$
Nine students with green hair join the class. Add this to the bar chart.

Worked example

Draw an ordered stem and leaf diagram for this data:

12	21	13	31	53
47	29	21	18	46
21	53	45		

Work out the median

Write down the mode

Work out the range

Your turn

Draw an ordered stem and leaf diagram for this data:

55	23	48	29	41	47	36
35	40	35	44	34	35	

key 2/3 means 23

2		3	9			
3		4	5	5	5	6
4		0	1	4	7	8
5		5				

Work out the median **36**

Write down the mode **35**

Work out the range **32**

Worked example

Draw an ordered stem and leaf diagram for this data:

12	21	13	31	53
47	29	21	18	46
21	53	45	21	

Work out the median

Write down the mode

Work out the range

Your turn

Draw an ordered stem and leaf diagram for this data:

42	35	56	39	40	51	47
38	42	55	42	48	49	41

Handwritten stem and leaf diagram:

1		2	8	9		
2		1	4	8	8	8
3		1	3	5	6	
4		1	3			

112 means 12

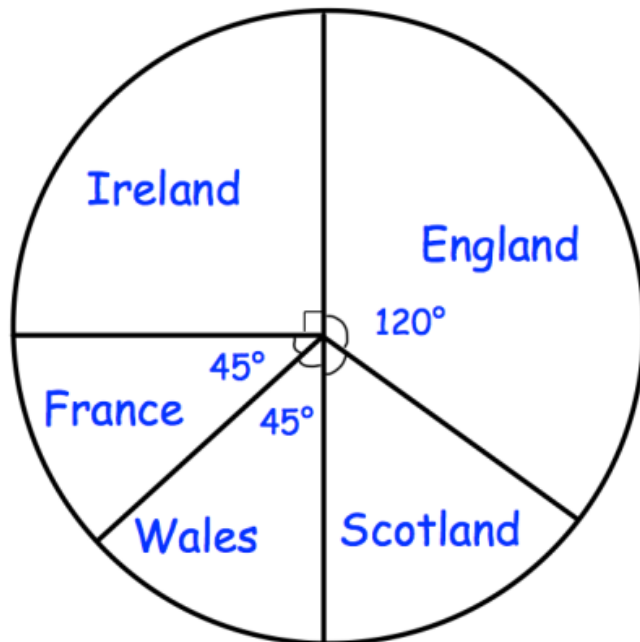
Work out the median **28**

Write down the mode **28**

Work out the range **31**

Worked example

A group of 720 people were asked which rugby team they support.

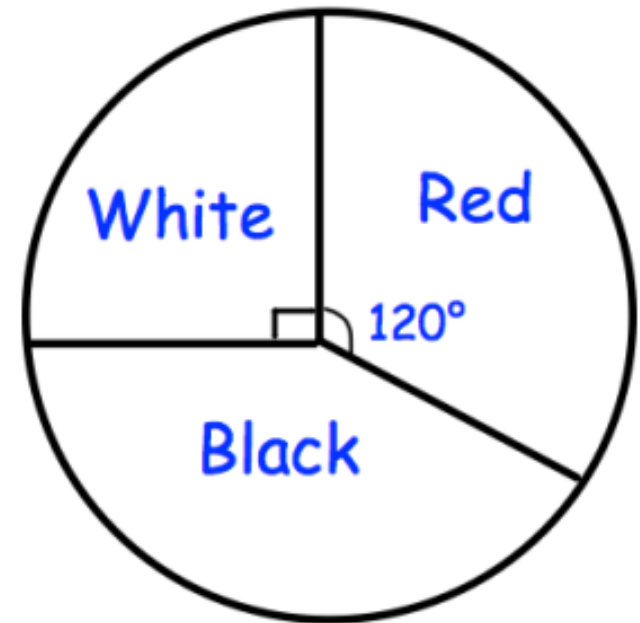


How many supported:

Ireland
England
Wales
Scotland

Your turn

There are 1440 counters in a bag. Each is white, red or black.



How many counters are:

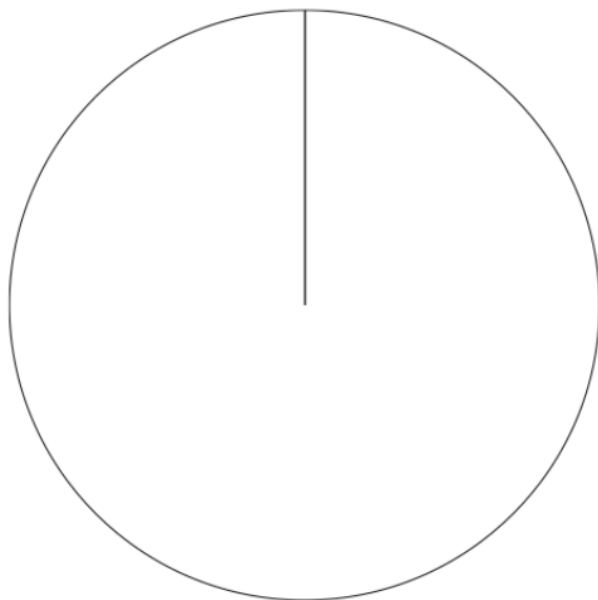
White	360
Red	480
Black	600

Worked example

The table shows the number of ice creams sold in a day. In total 120 were sold.

Flavour	Number sold
Vanilla	20
Chocolate	40
Strawberry	24
Honeycomb	24
Mint	12

Draw a pie chart to represent this information

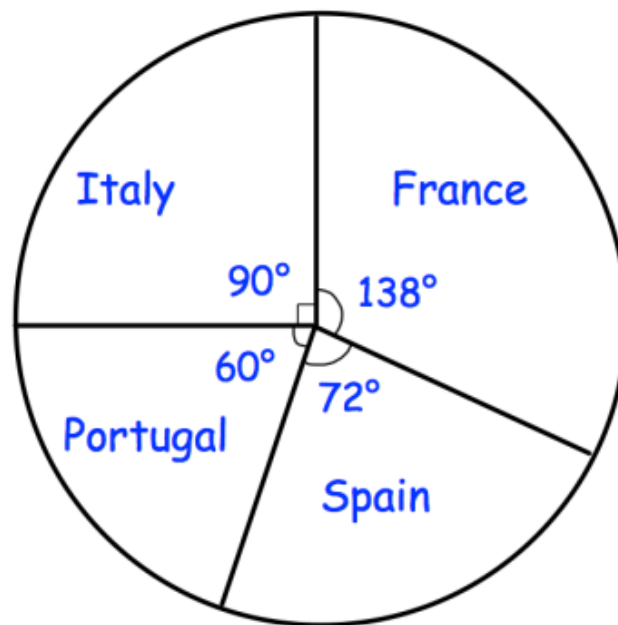


Your turn

The table shows the holiday destinations of 60 people.

Destination	Number of people
Italy	15
Portugal	10
Spain	12
France	23

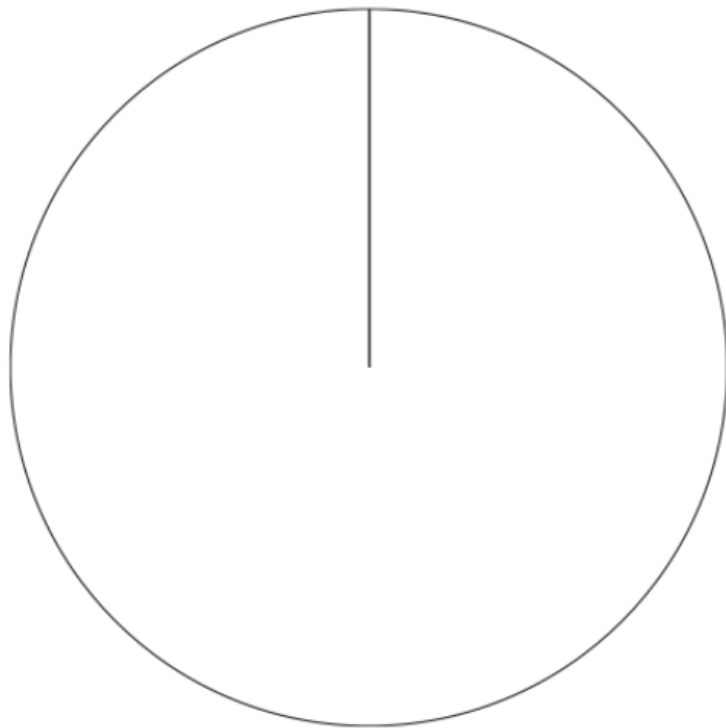
Draw a pie chart to represent this information



Worked example

Draw a pie chart for the data

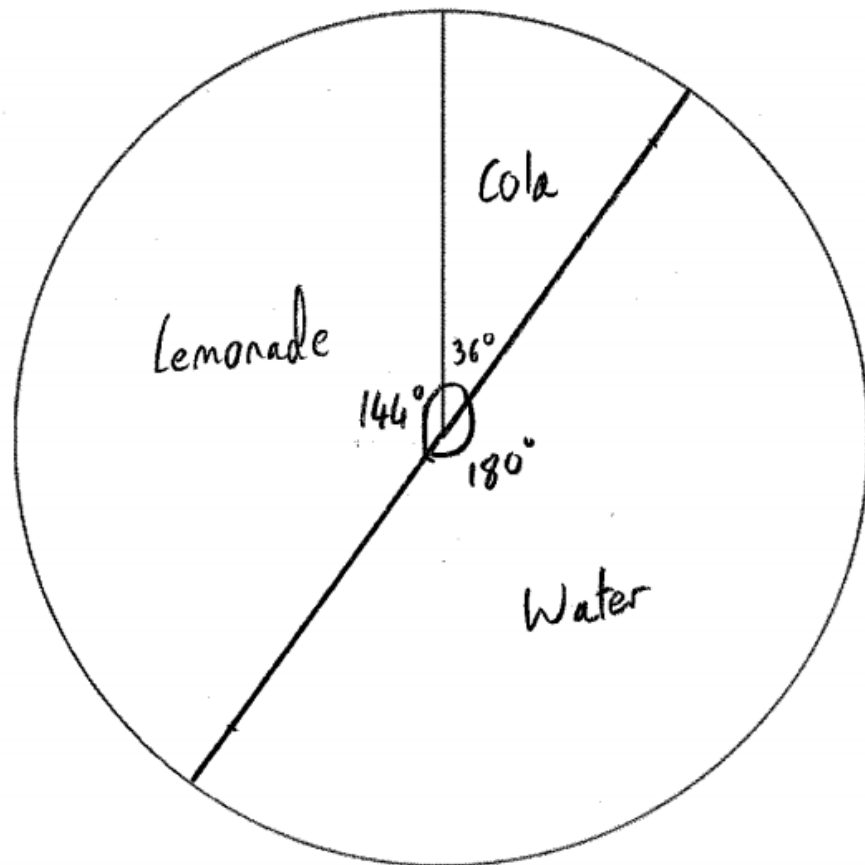
Flavour	Number sold
Vanilla	20%
Chocolate	10%
Strawberry	50%
Honeycomb	5%
Lemon	15%



Your turn

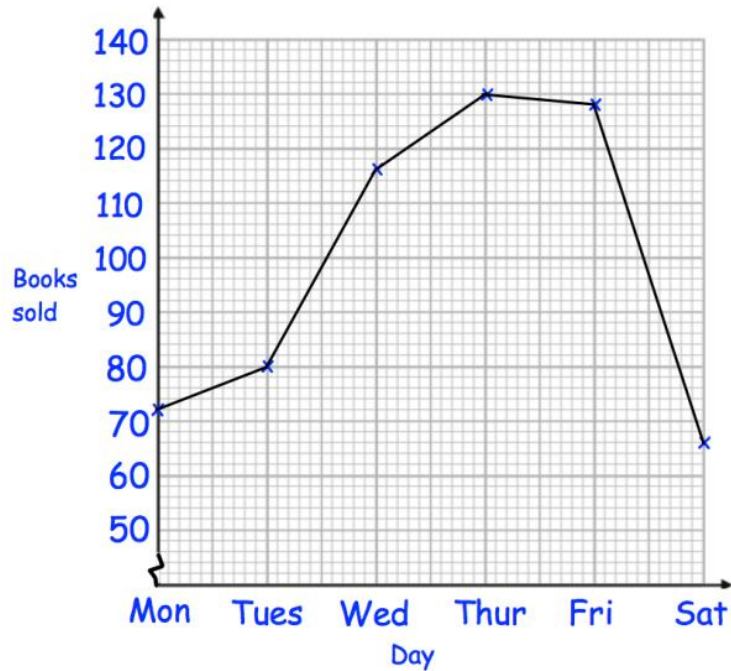
Draw a pie chart for the data

Drink	Percentage
Cola	10%
Water	50%
Lemonade	40%



Worked example

The line graph shows the number of books sold in a charity shop over one week.



When did the charity shop sell:

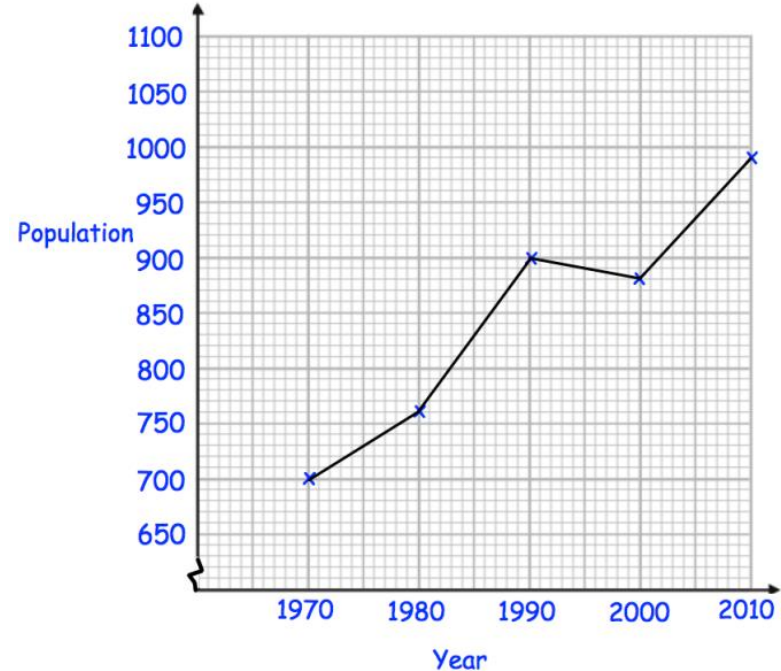
The most books

The least books

How many books were sold on Friday?

Your turn

The line graph shows the population of a village over time.



When was the population:

Highest? **2010**

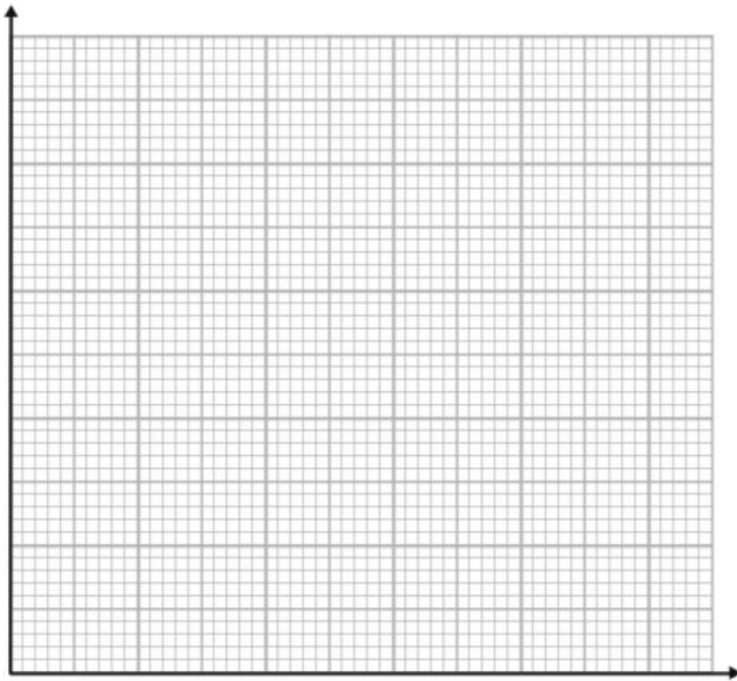
Lowest? **1970**

What was the population in 2000? **870**

Worked example

The table shows the number of customers to a shop over several days. Draw a line graph for the data

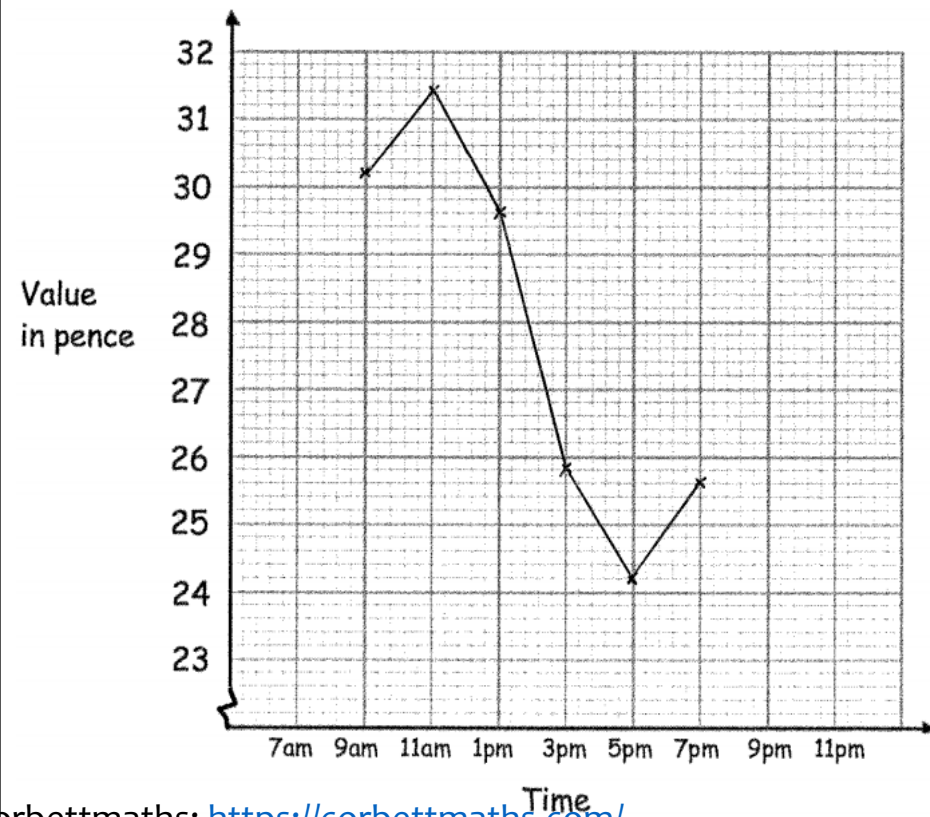
Day	Customers
Monday	42
Tuesday	47
Wednesday	3
Thursday	36
Friday	40
Saturday	31



Your turn

The table shows the value of a share in a mobile phone company over one day. Draw a line graph for the data

Time	Value
9am	30.2p
11am	31.4p
1pm	29.6p
3pm	25.8p
5pm	24.2p
7pm	25.6p



Worked example

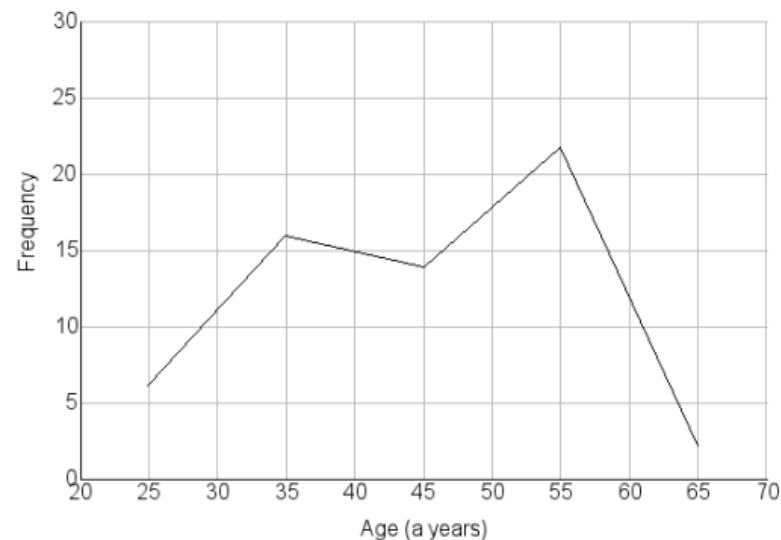
Draw a frequency polygon for the information

Weight (w kg)	Frequency
$80 < w \leq 90$	3
$90 < w \leq 100$	5
$100 < w \leq 110$	7
$110 < w \leq 120$	4
$120 < w \leq 130$	1

Your turn

Draw a frequency polygon for the information

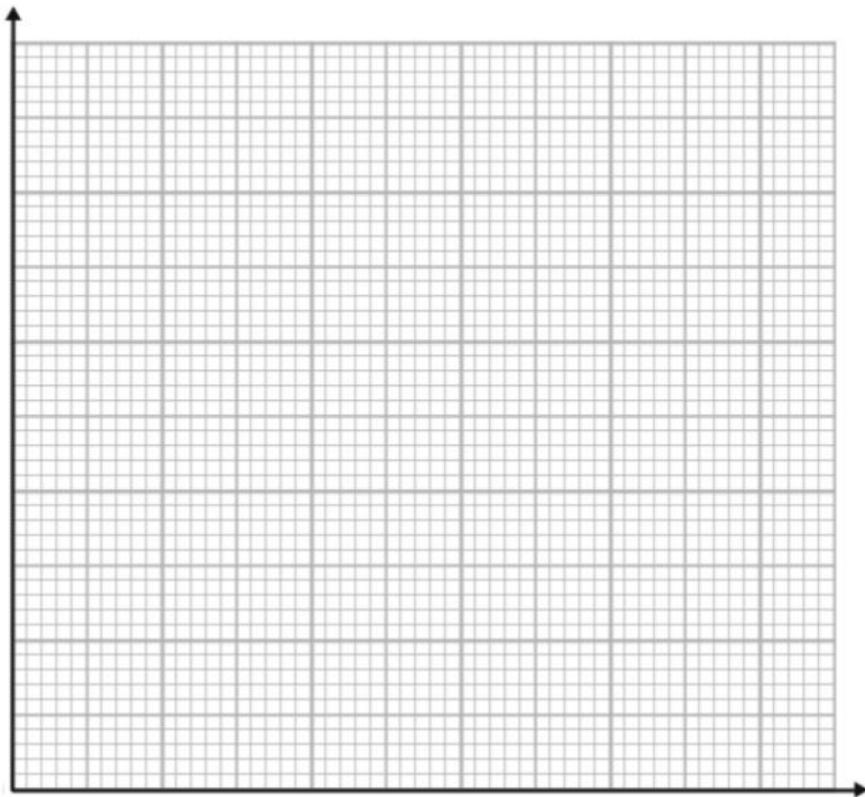
Age (a years)	Frequency
$20 < a \leq 30$	6
$30 < a \leq 40$	16
$40 < a \leq 50$	14
$50 < a \leq 60$	22
$60 < a \leq 70$	2



Worked example

Draw a frequency polygon for the information

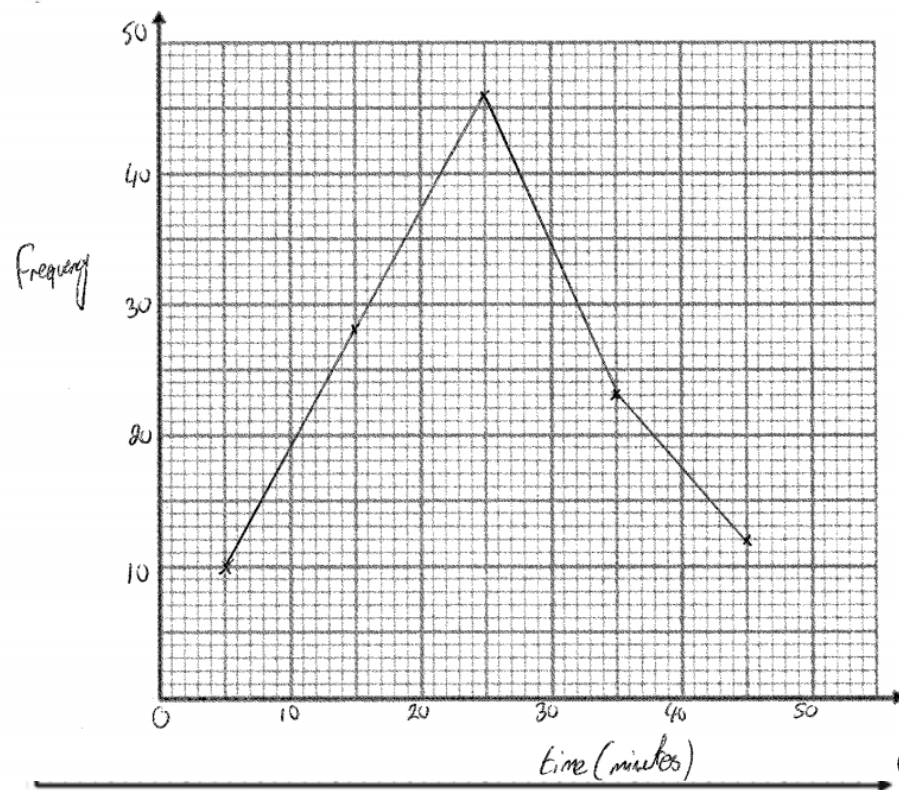
Lengths (cm)	Frequency
$0 < L \leq 0.5$	8
$0.5 < L \leq 1$	17
$1 < L \leq 1.5$	20
$1.5 < L \leq 2$	10
$2 < L \leq 2.5$	5



Your turn

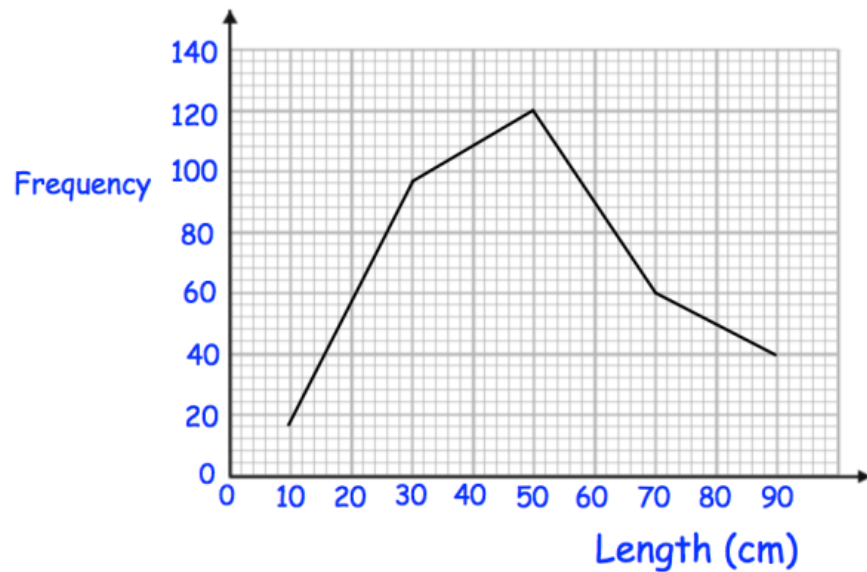
Draw a frequency polygon for the information

Time (minutes)	Frequency
$0 < t \leq 10$	10
$10 < t \leq 20$	28
$20 < t \leq 30$	46
$30 < t \leq 40$	23
$40 < t \leq 50$	12



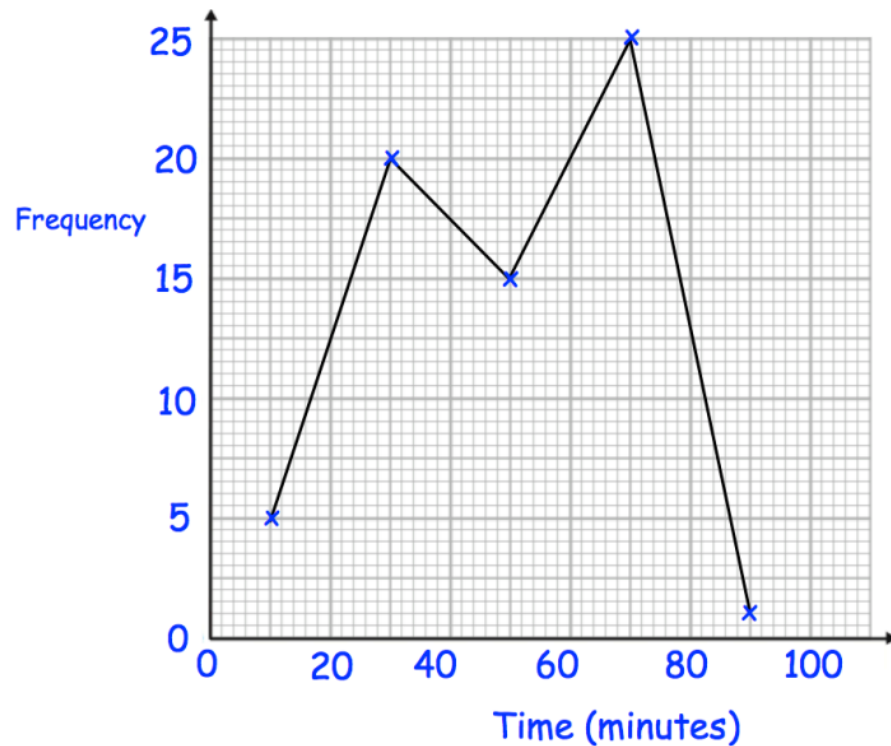
Worked example

Estimate the mean length:



Your turn

Estimate the mean time



49.09 minutes (2 dp)