




STATISTICAL DIAGRAMS

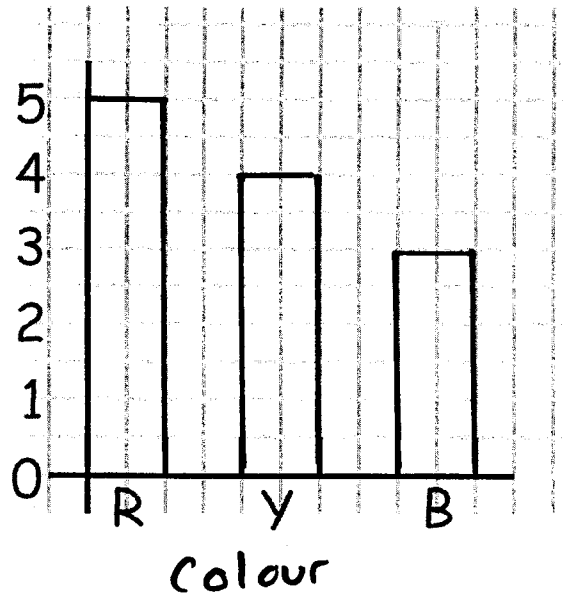
Page	Description
1	Tally chart, pictogram, bar chart and pie chart
2	Frequency Diagram and bar chart
3	Draw pie charts
4	Read pie charts
5	Scatter graphs
6	Box plots
7	Cumulative frequency
8	Cumulative frequency
9	Draw a histogram
10	Read from a Histogram

Favourite Colours




Favourite Colour

Colour	Tally	Total
Red		5
Yellow		4
Blue		3
		12

TOTAL



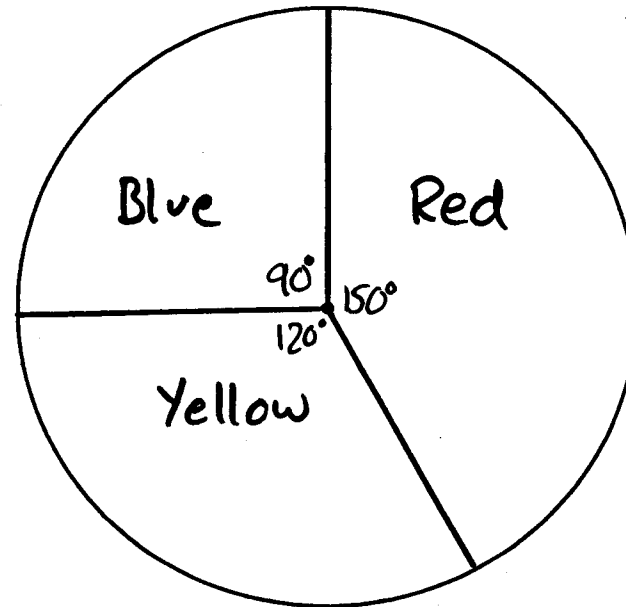
Pictogram

Colour	
Red	
Yellow	
Blue	



represents 2

Pie Chart



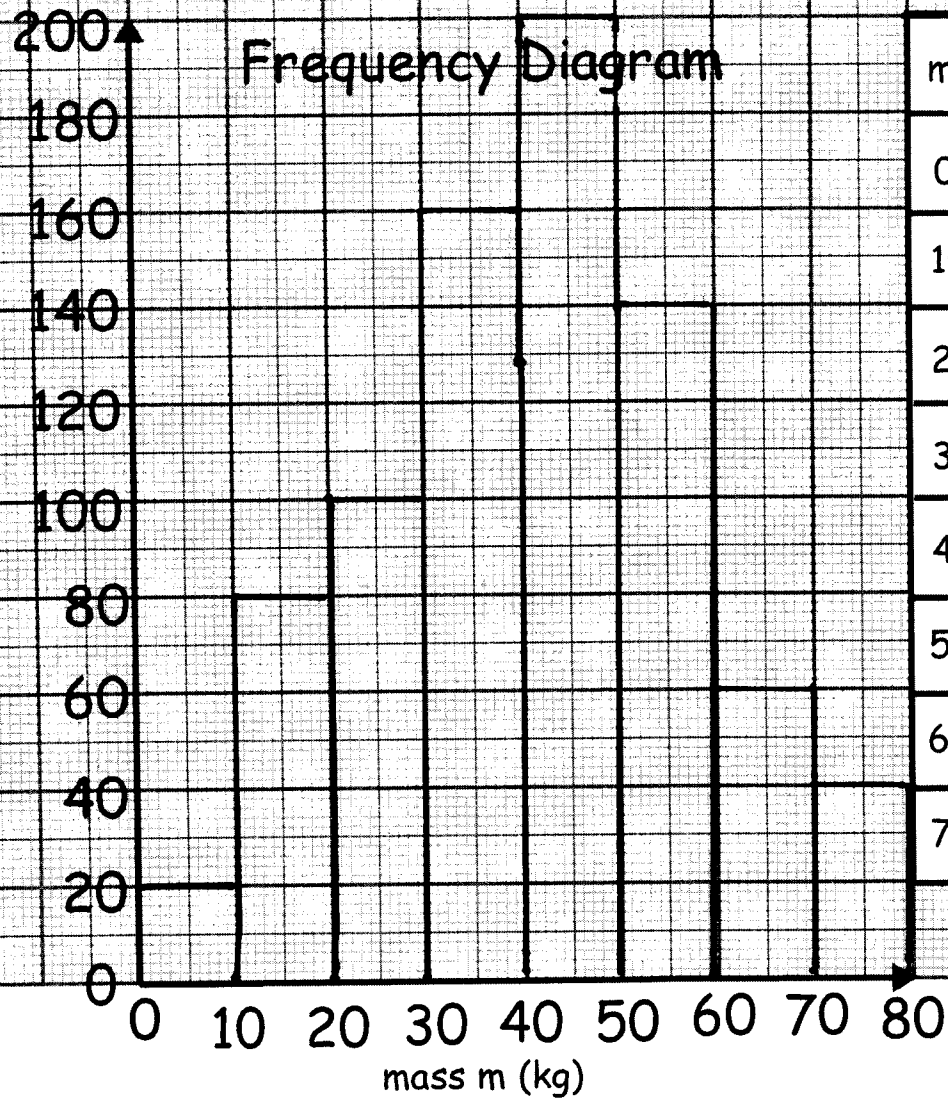
$$360 \div 12 = 30$$

$$\text{Red } 5 \times 30 = 150^\circ$$

$$\text{Yellow} = 4 \times 30 = 120^\circ$$

$$\text{Blue} = 3 \times 30 = 90^\circ$$

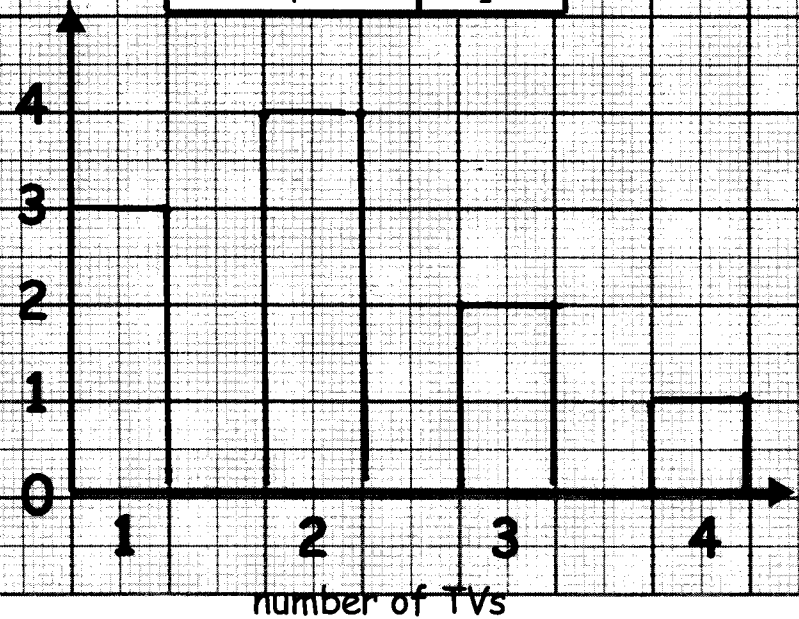
①



mass m (kg)	frequency
$0 \leq m < 10$	20
$10 \leq m < 20$	80
$20 \leq m < 30$	100
$30 \leq m < 40$	160
$40 \leq m < 50$	200
$50 \leq m < 60$	140
$60 \leq m < 70$	60
$70 \leq m < 80$	40

Bar Chart

number of TVs	frequency
1	3
2	4
3	2
4	1



Draw a bar chart for this information on number of TVs per household.

For continuous data

Draw a frequency diagram for this information on mass of a group of people.

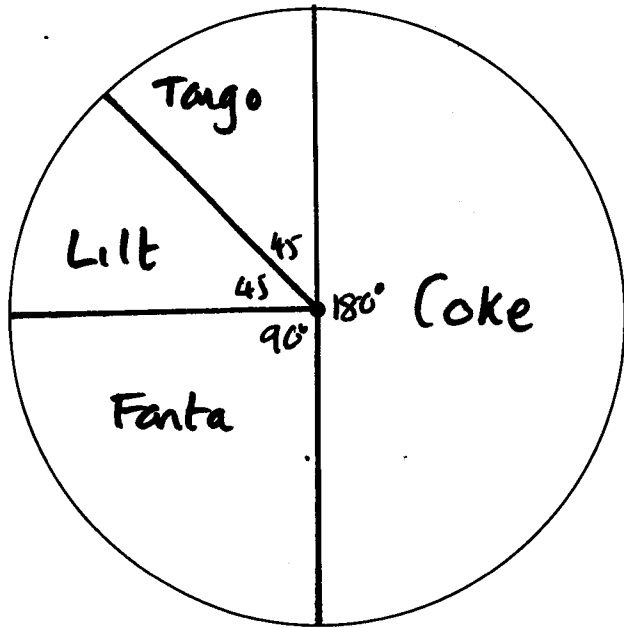
For discrete data

Tally Chart of favourite drinks in Year 7

Drink	Tally	Total
Coke		4
Fanta		2
Lilt		1
Tango		1

Total 8

Angle per vote is $360 \div 8 = 45^\circ$

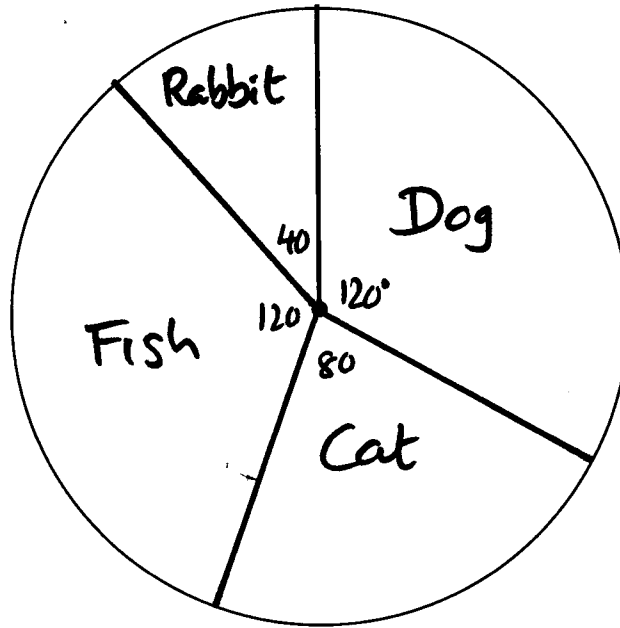


Tally Chart of favourite pet in Year 7

Drink	Tally	Total
Dog		3
Cat		2
Fish		3
Rabbit		1

Total 9

Angle per vote is $360 \div 9 = 40^\circ$

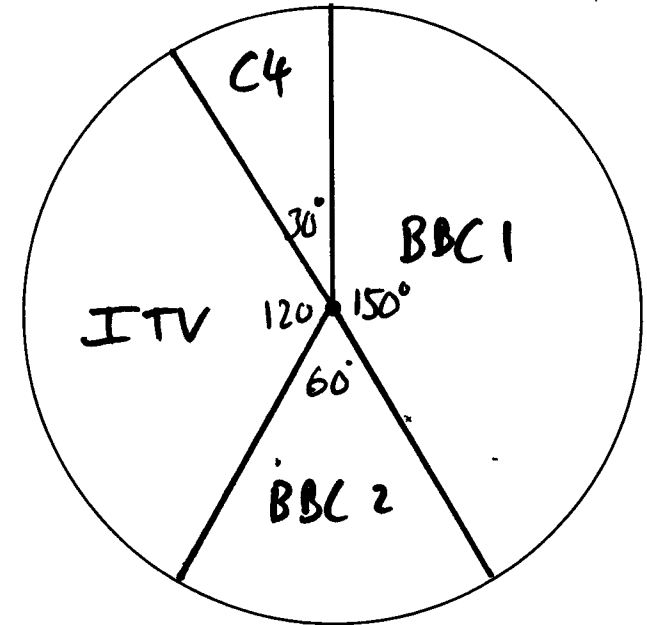


Tally Chart of favourite Channel in Year

Drink	Tally	Total
BBC 1		5
BBC 2		2
ITV		4
C4		1

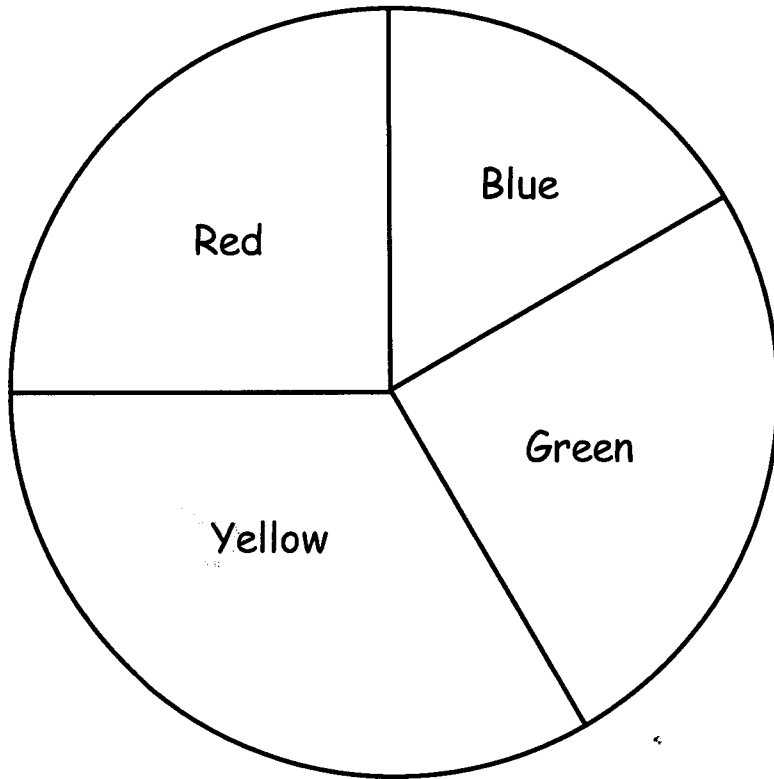
Total 12

Angle per vote is $360 \div 12 = 30^\circ$



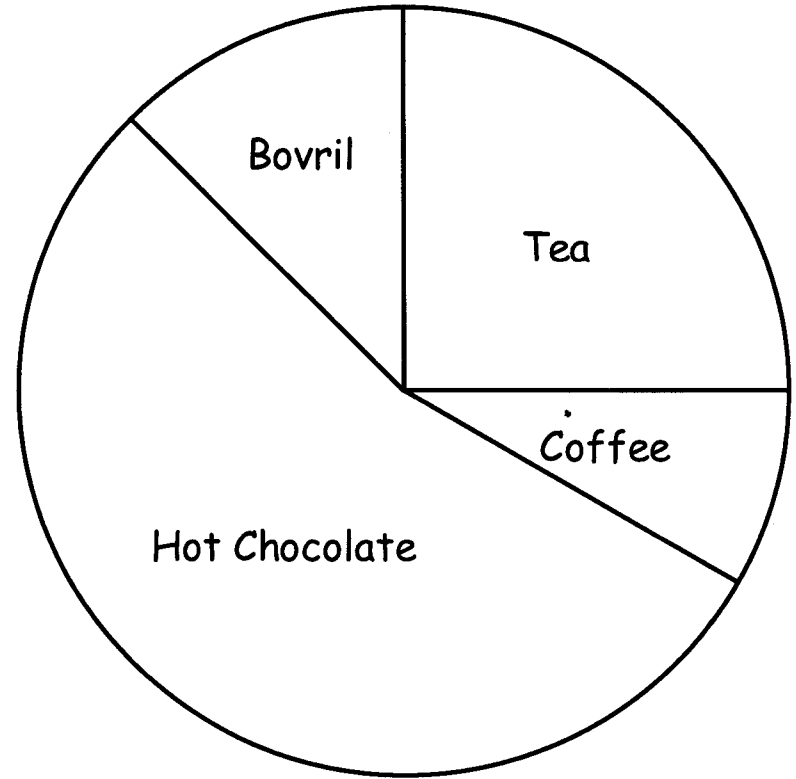
Interpreting a Pie Chart

60 people were asked about their favourite colour.



Colour	Angle	Frequency
Blue	60	$\frac{\text{Angle}}{360} \times 60 = 10$
Green	90	15
Yellow	120	20
Red	90	15

72 people were asked about their favourite hot drink.



Drink	Angle	Frequency
Tea	40	$\frac{\text{Angle}}{360} \times 72 = 18$
Coffee	30	6
H.C.	195	39
Bovril	45	9

Scatter graphs

Plot the points from each table on the axes below

Test scores out of 10.

Maths Paper 1	Maths Paper 2
1	2
2	3
4	2
5	3
5	5
6	4
7	6
8	3
9	7
10	6

Music	Art
1	9
2	7
2	8
4	6
4	7
5	5
6	5
7	4
8	3
10	1

Maths	French
1	5
2	3
2	8
5	1
5	5
5	8
6	7
8	1
8	6
9	4

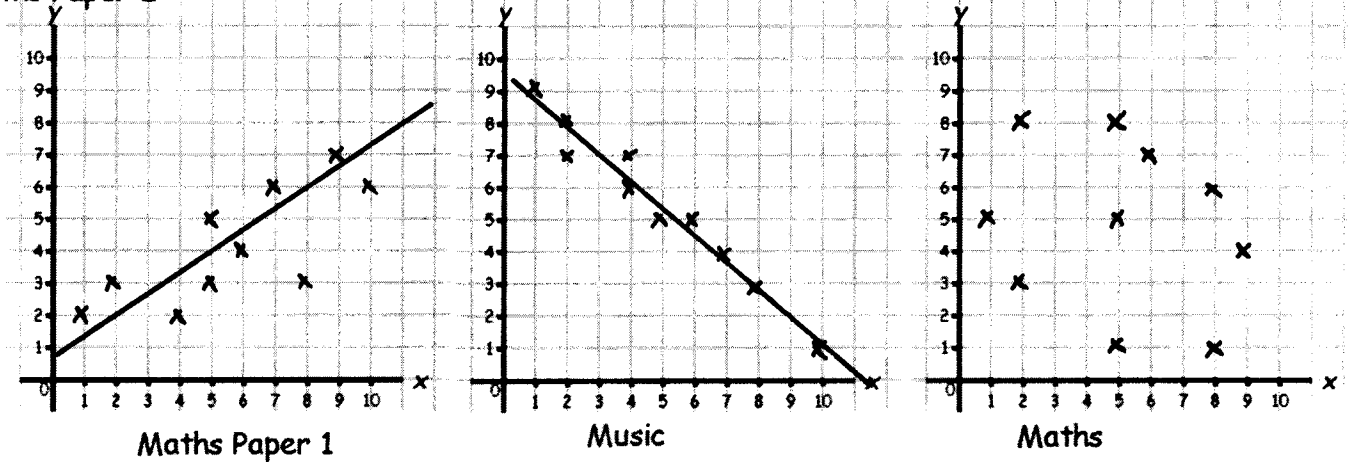
①

②

Maths Paper 2

Art

French



For each scatter graph describe the correlation and where possible draw a line of best fit.

① Positive correlation

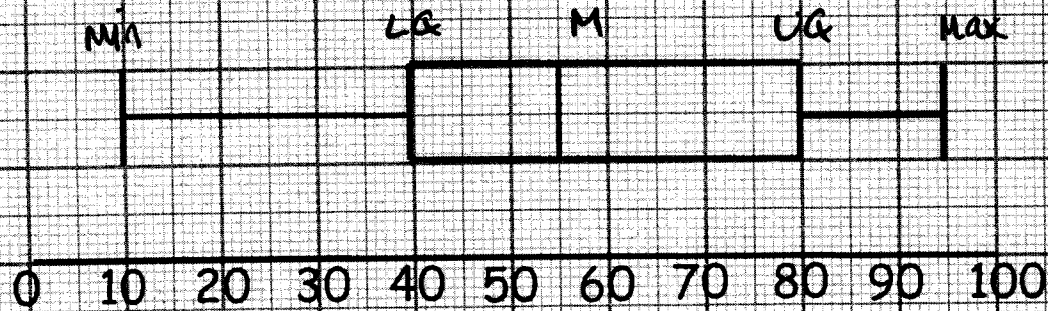
② Strong negative correlation

③ No correlation.

⑤

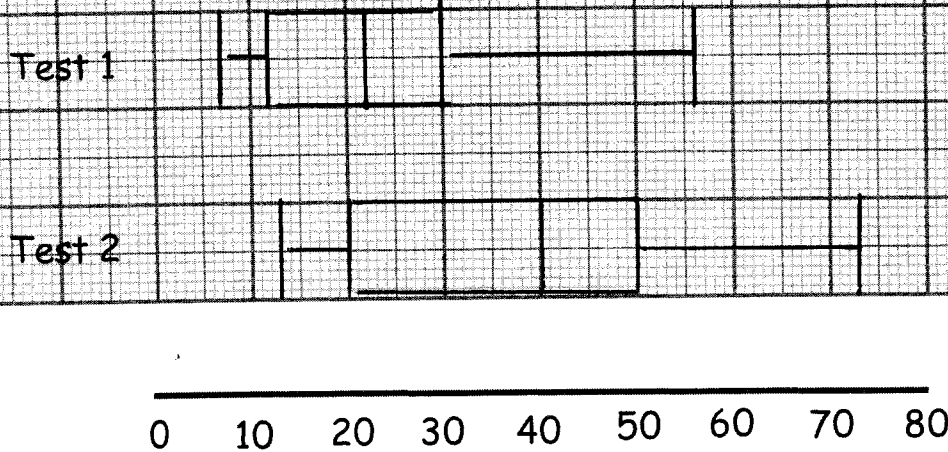
Box Plots

Using this box plot, fill in these values



min 10
 max 95
 LQ 40
 UQ 80
 Median 55

Draw box plots for tests 1 and 2 on the scale below

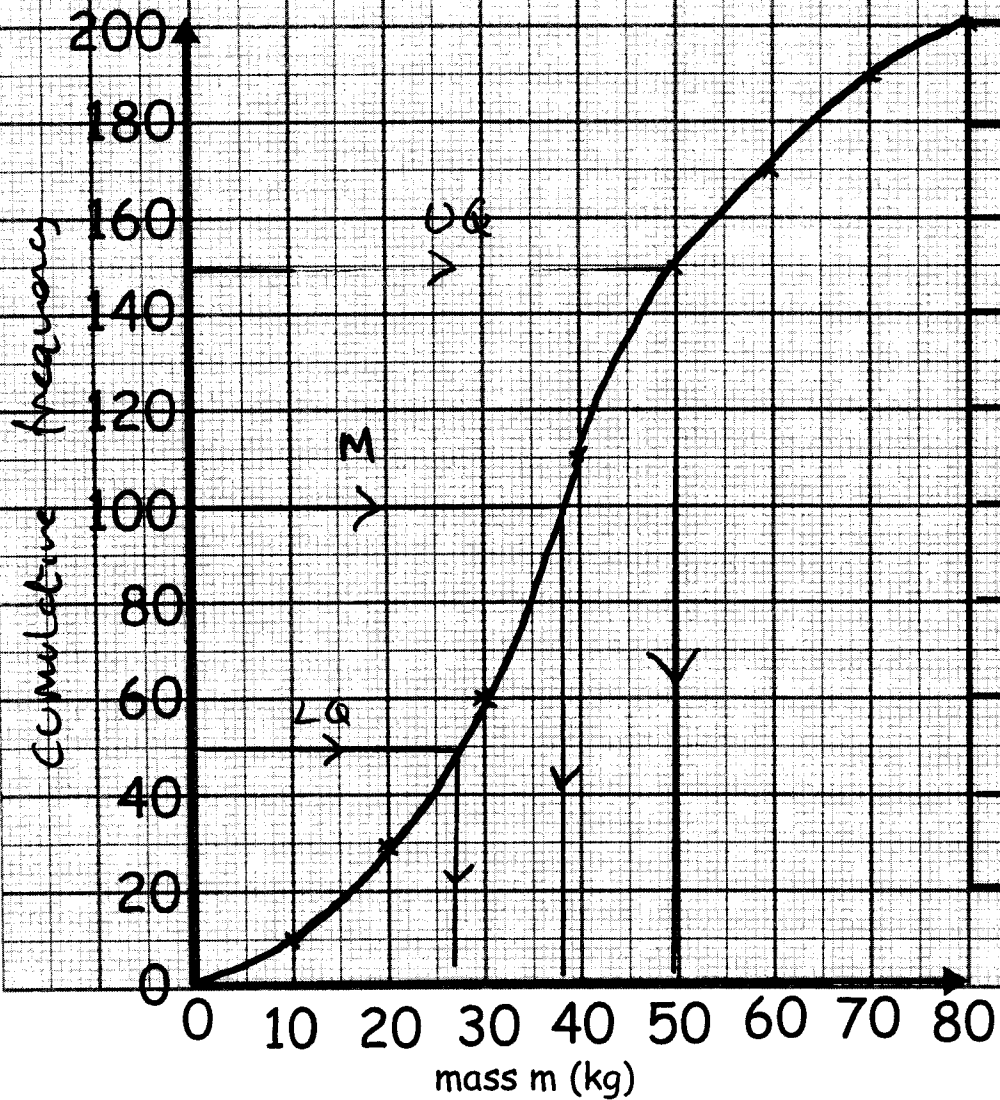


	Test 1	Test 2
min	7	13
max	56	73
LQ	12	20
UQ	30	50
Median	22	40
Range	49	60
I & R	18	30

Compare the results from the two tests

The scores for test 2 are more spread out. Range for test 2 = 60 for test 1 = 49.
 Median for test 2 = 40, for test 1 = 22. This average shows test 2 scores were higher

Cumulative frequency graph of a survey of the birth mass of 200 animals



mass m (kg)	frequency	cumulative frequency	point to plot
$0 \leq m < 10$	10	10	10, 10
$10 \leq m < 20$	20	30	20, 30
$20 \leq m < 30$	30	60	30, 60
$30 \leq m < 40$	50	110	40, 110
$40 \leq m < 50$	40	150	50, 150
$50 \leq m < 60$	20	170	60, 170
$60 \leq m < 70$	20	190	70, 190
$70 \leq m < 80$	10	200	80, 200

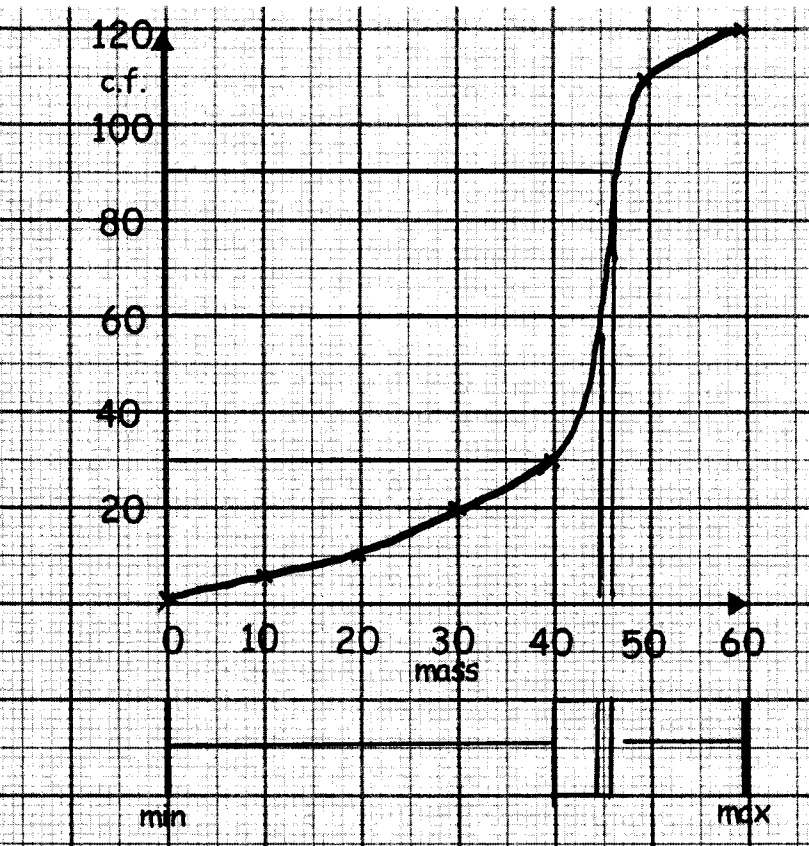
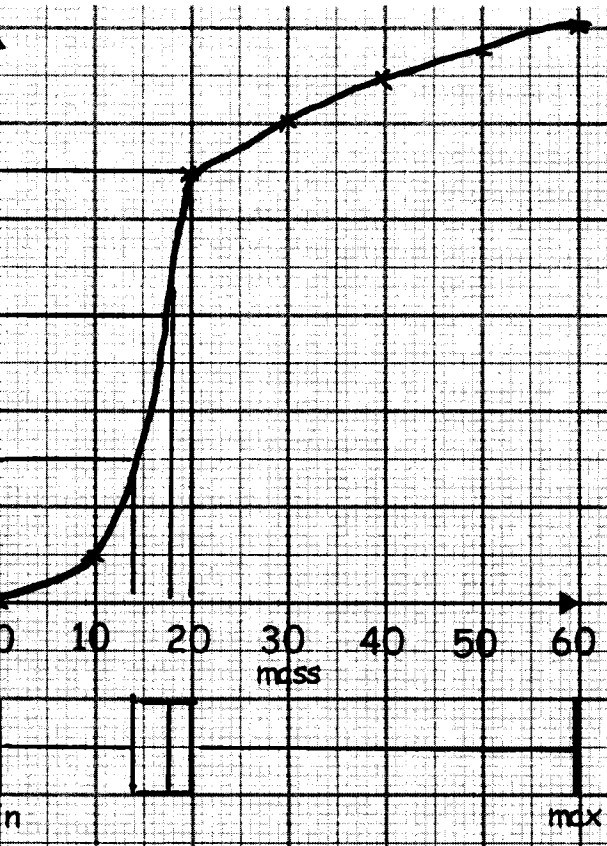
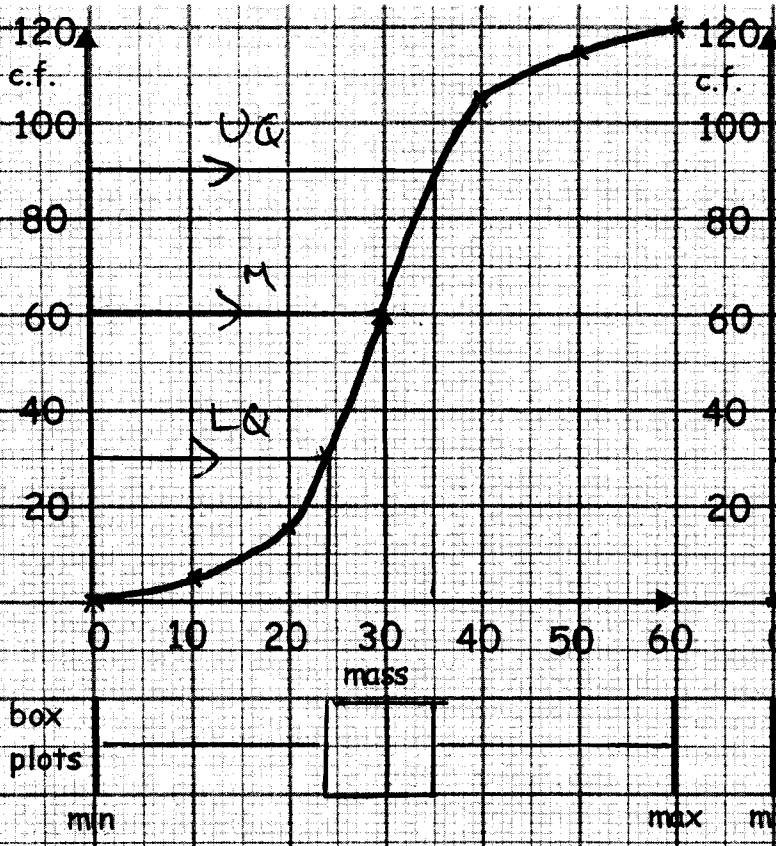
Median 50%, 50% of 200 = 100 the median is 38 kg

Lower Quartile 25%, 25% of 200 = 50, the Lower Quartile is 27kg

Upper Quartile 75%, 75% of 200 = 150, the Upper Quartile is 50kg

Inter-quartile range = Upper Quartile - Lower Quartile =

$$50 - 27 = 23 \text{ kg}$$



mass m	f	c.f.
$0 \leq m < 10$	5	5
$10 \leq m < 20$	10	15
$20 \leq m < 30$	45	60
$30 \leq m < 40$	45	105
$40 \leq m < 50$	10	115
$50 \leq m < 60$	5	120

mass m	f	c.f.
$0 \leq m < 10$	10	10
$10 \leq m < 20$	80	90
$20 \leq m < 30$	10	100
$30 \leq m < 40$	10	110
$40 \leq m < 50$	5	115
$50 \leq m < 60$	5	120

mass m	f	c.f.
$0 \leq m < 10$	5	5
$10 \leq m < 20$	5	10
$20 \leq m < 30$	10	20
$30 \leq m < 40$	10	30
$40 \leq m < 50$	80	110
$50 \leq m < 60$	10	120

data spread evenly, most in middle

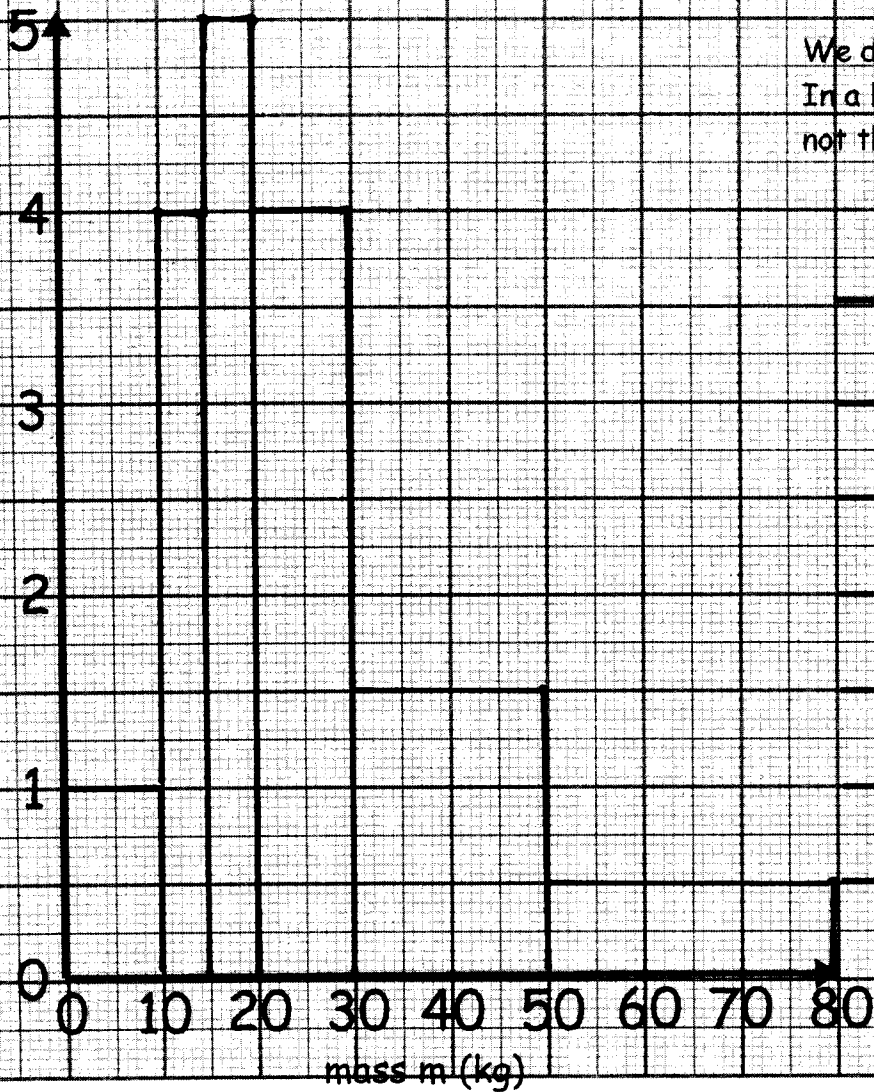
most data at the start

8

most data at the end

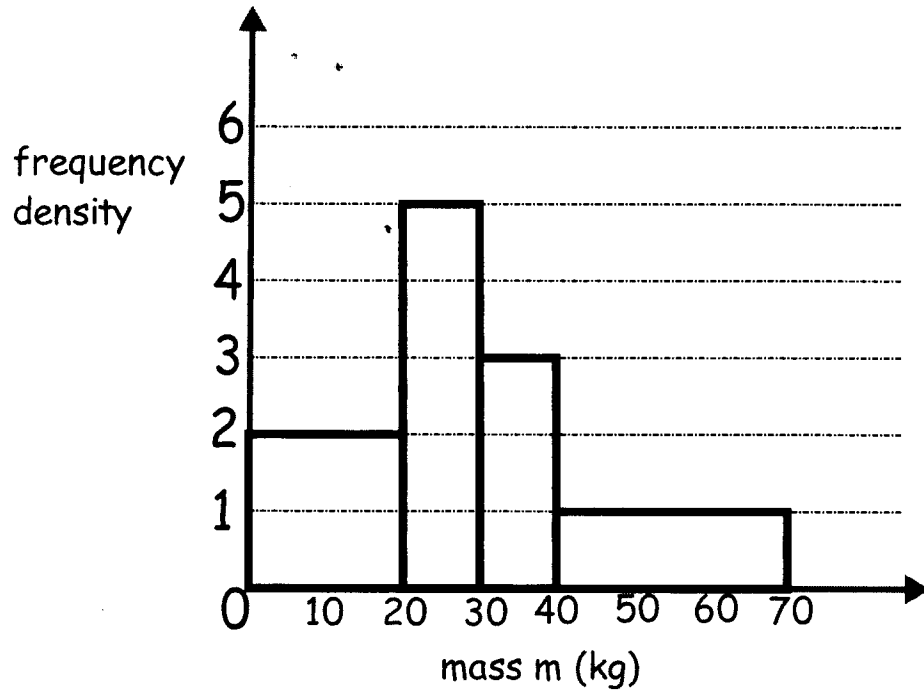
We draw a histogram if the groups are of unequal width.
 In a HISTOGRAM the area of the bar represents the frequency
 not the height of the bar.

frequency density



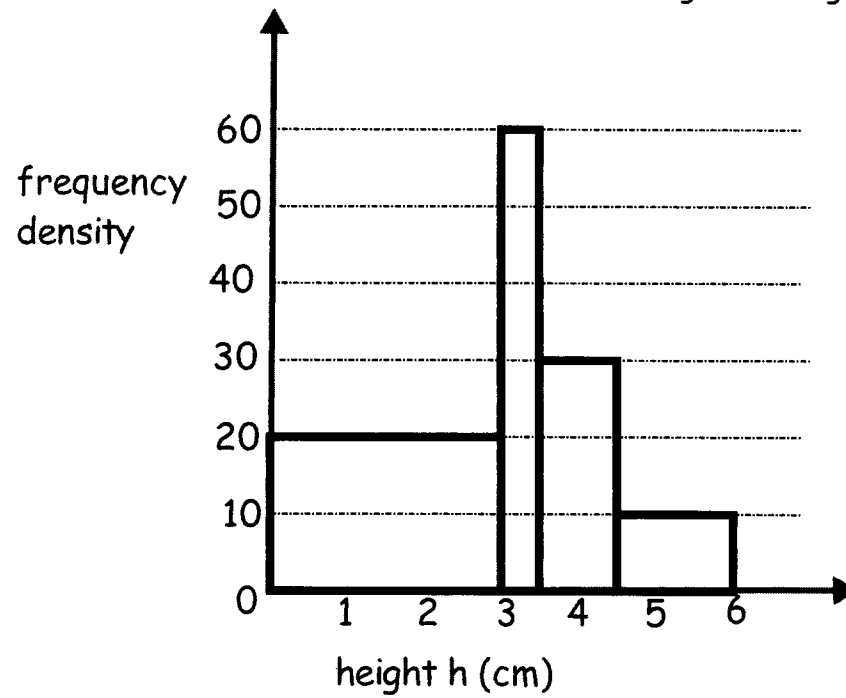
A frequency polygon can be drawn by joining the midpoints of the tops of the bars with straight lines

Fill in the table using the histogram



mass m (kg)	class width	frequency density	frequency
$0 \leq m < 20$	20	2	$20 \times 2 = 40$
$20 \leq m < 30$	10	5	50
$30 \leq m < 40$	10	3	30
$40 \leq m < 70$	30	1	30

Fill in the table using the histogram



height h (cm)	class width	frequency density	frequency
$0 \leq h < 3$	3	20	60
$3 \leq h < 3.5$	0.5	60	30
$3.5 \leq h < 4.5$	1	30	30
$4.5 \leq h < 6$	1.5	10	15