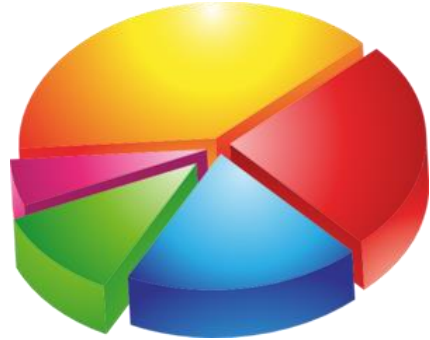


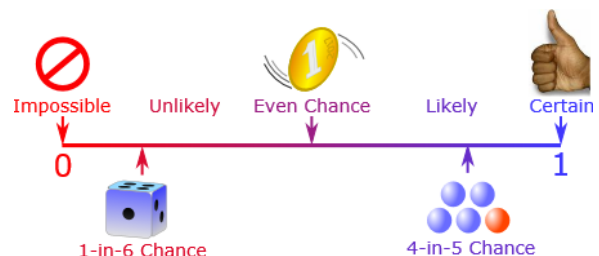


Level 1

Functional Skills

Content Area 3

Workbook



Name: _____

Contents

Represent discrete data in tables and charts including pie charts, bar charts and line graphs

Group discrete data and represent grouped data graphically

Find the mean and range of a set of quantities

Understand probability on scale from 0 (impossible) to 1 (certain) and use probabilities to compare the likelihood of events

Use equally likely outcomes to find the probabilities of simple events and express them as fractions

Two Way Tables

Two-way tables are a neat way of displaying two sets of data for the same population

They show the frequency of the two categories

Two way tables

- The make up of a police station is shown in the two-way table below.

	Male	Female	TOTAL
Constable	56	23	79
Sergeant	8	5	13
Inspector	2	4	6
Chief Inspector	1	1	2
TOTAL	67	33	100

- How many female Inspectors are there?
- How many male constables are there?
- What percentage of the police station are Sergeants?
- How many sergeants and chief inspectors are there?

question

	English	Maths	Science	Total
Girls	20	13		50
Boys		15		
Total	38		40	

Q1 - This table shows whether the girls and boys in a year 7 class own pets or not.

	Girls	Boys	Total
Pets	9	8	
No pets	5	7	
Total			

Complete the totals

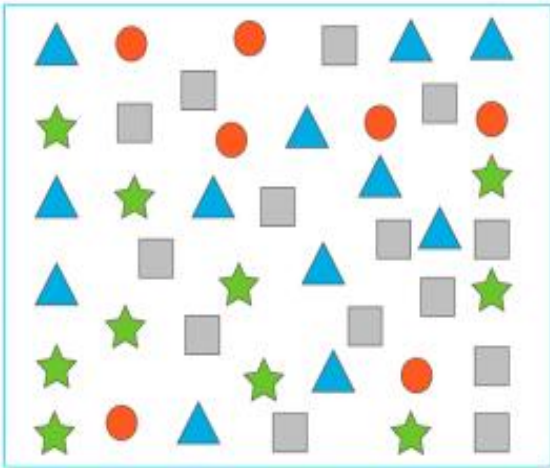
- How many girls are in the class?
- How many children own no pets?
- How many children are in the whole class?

Tally Charts and Bar Charts

Complete the Tally Chart Below

Favourite Animal	Tally	Frequency
Dog	II	
Cat		
Rabbit		4
Hamster		13
Other		6

Count the shapes and use the information to complete the tally chart.



Squares	
Circles	
Triangles	
Stars	

On a blank sheet of paper, complete the following:

Bar Charts:

Draw a bar chart for this set of data.

Favourite subject	Frequency
Maths	8
English	10
Science	9
Art	12
PE	14
History	7

Which subject was most popular?

Work out the difference between PE and History.

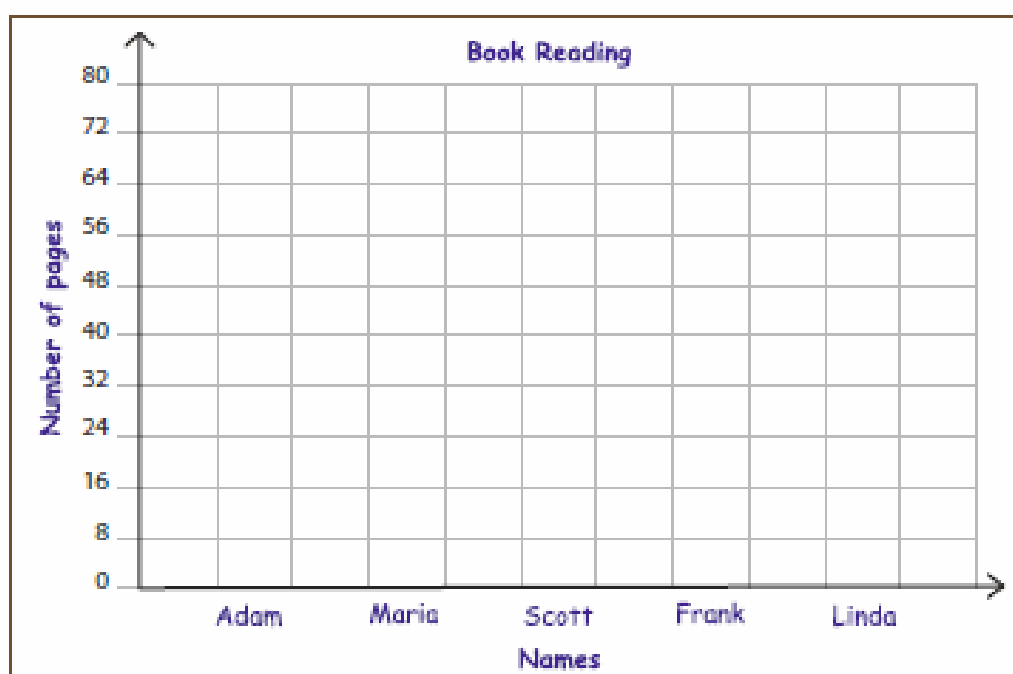
Name : _____

Score : _____

Bar Graph - Book Reading

Frank, Maria, Scott, Susan and Linda walk through the library and grabbed books on each of their interest. The data shows the number of pages read by each of them. Draw a bar graph to represent the data. Answer the questions.

Adam	Maria	Scott	Frank	Linda
				
40	24	64	32	56



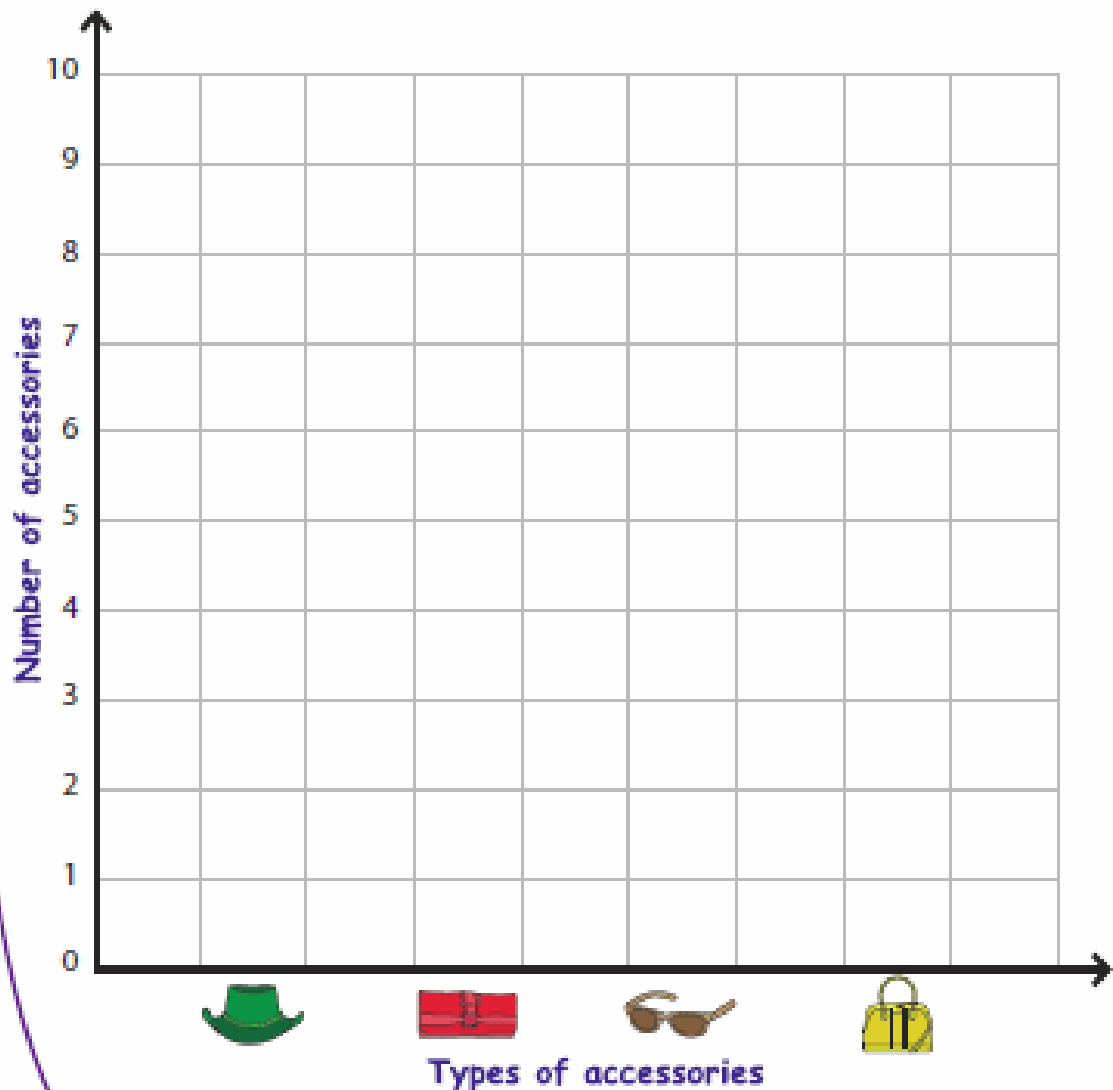
- 1) What unit of scale is used to display the number of pages read? _____
- 2) Write the names who have read less than 40 pages. _____
- 3) How many pages do Frank, Maria and Scott read in all? _____
- 4) If Adam and Linda read the same book, how many more pages does Adam read to reach Linda? _____

Name : _____

Score : _____

Count and Create Bar Graph

Count the accessories of each kind and complete the bar graph.

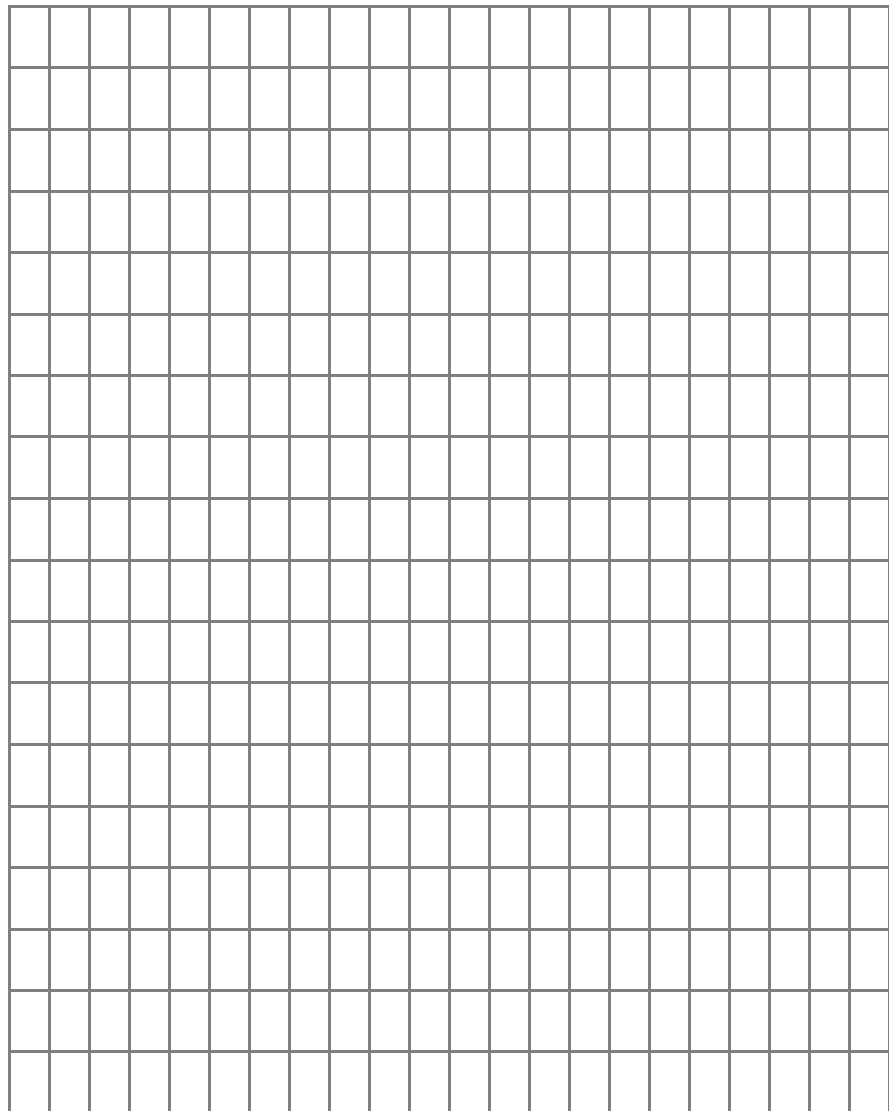


DRAWING MULTIPLE (COMPARISON) BAR CHARTS

1. The table shows the average monthly temperature (°C) for the UK and Malta.

	June	July	August	September
UK	68	70	72	62
Malta	75	82	86	79

Illustrate the data using a multiple bar chart.

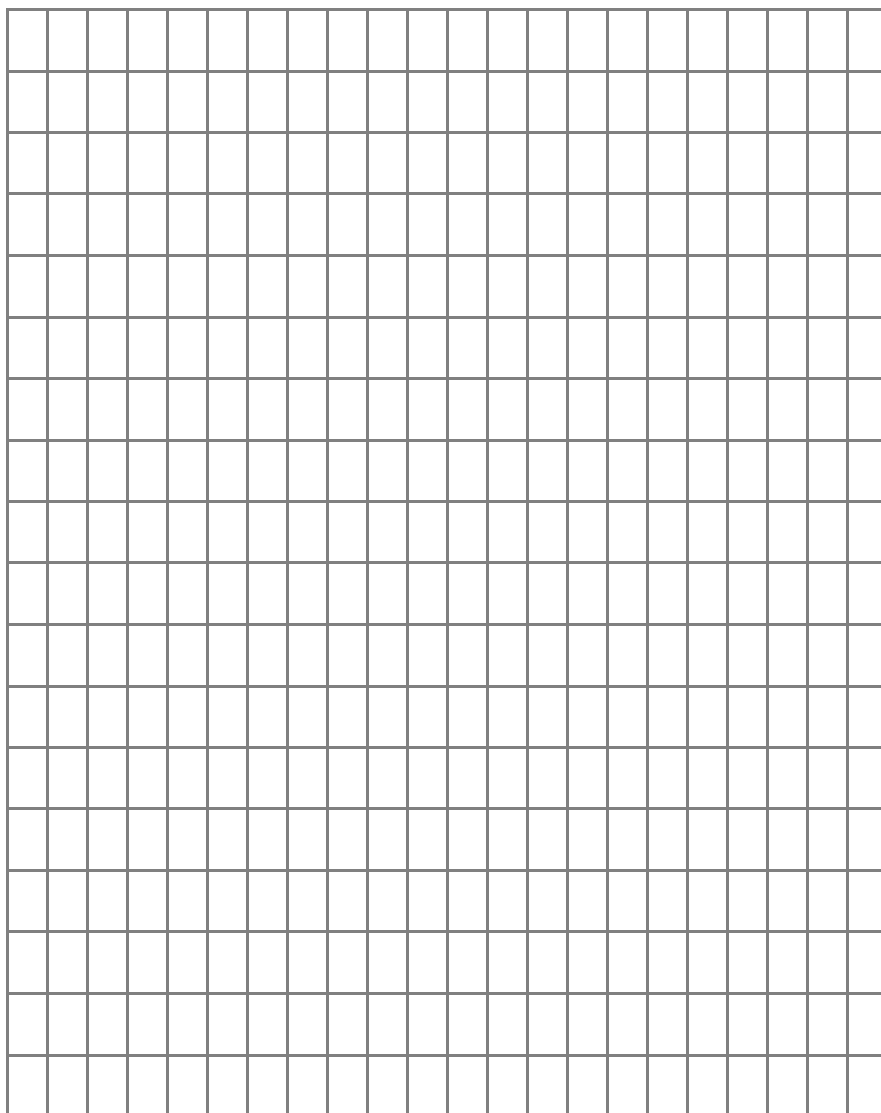


More Practice at dual bar charts

2. The number of boys and girls in each year at Eastbury school in KS3 is shown in this two-way table.

	Year 7	Year 8	Year 9
Boys	132	107	171
Girls	113	155	120

Illustrate the data using a multiple bar chart.



Reading a multiple bar chart

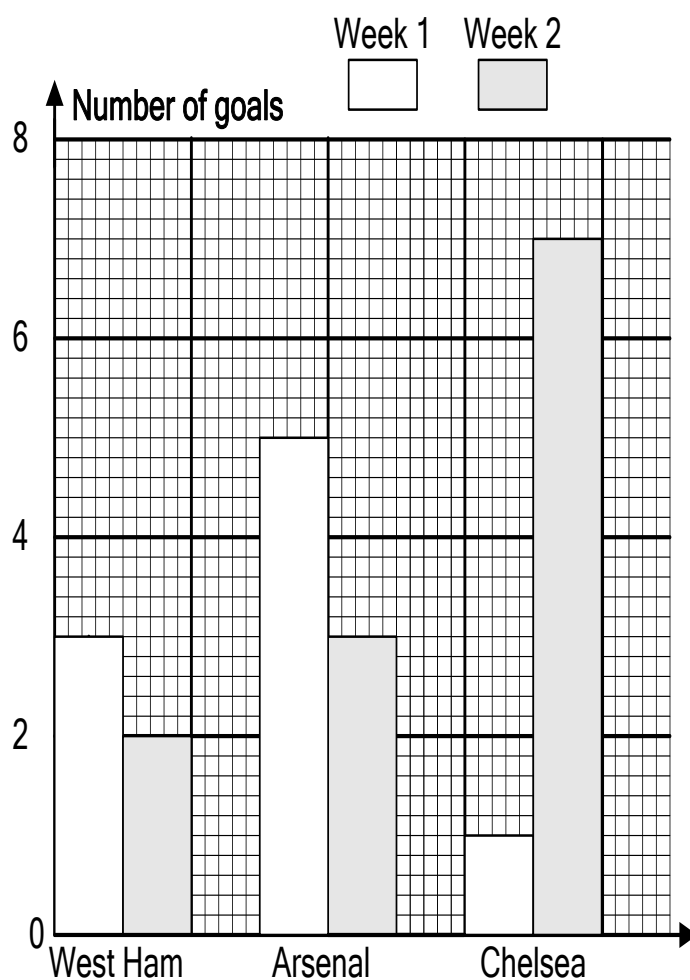
(a) How many goals did West Ham score in the first week?

(b) How many goals did Chelsea score in the second week?

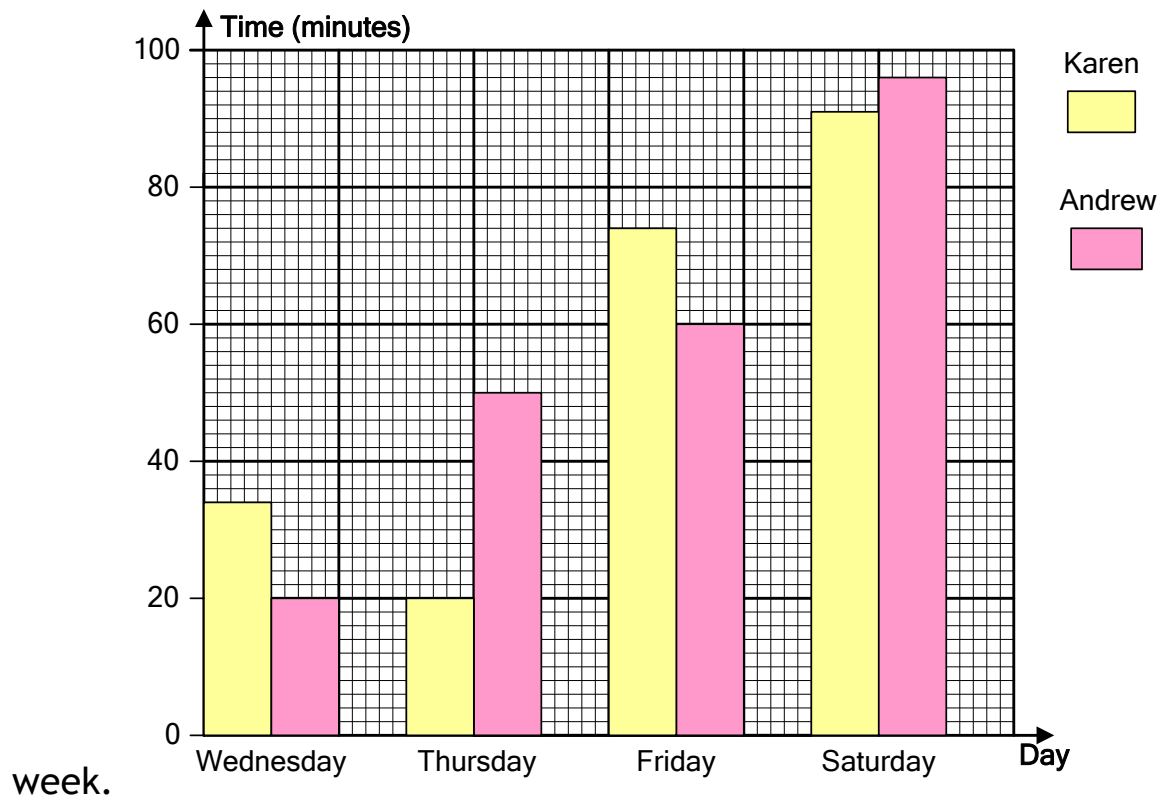
(c) How many goals were scored altogether in the second week?

(d) Which team scored the least number of goals over the two weeks?

(e) How many goals altogether were scored by the 3 teams over the two weeks?



The bar chart shows information about the amount of time, in minutes, that Andrew and Karen spent watching television on four days last



(a) How many minutes did Karen spend watching TV on Thursday?

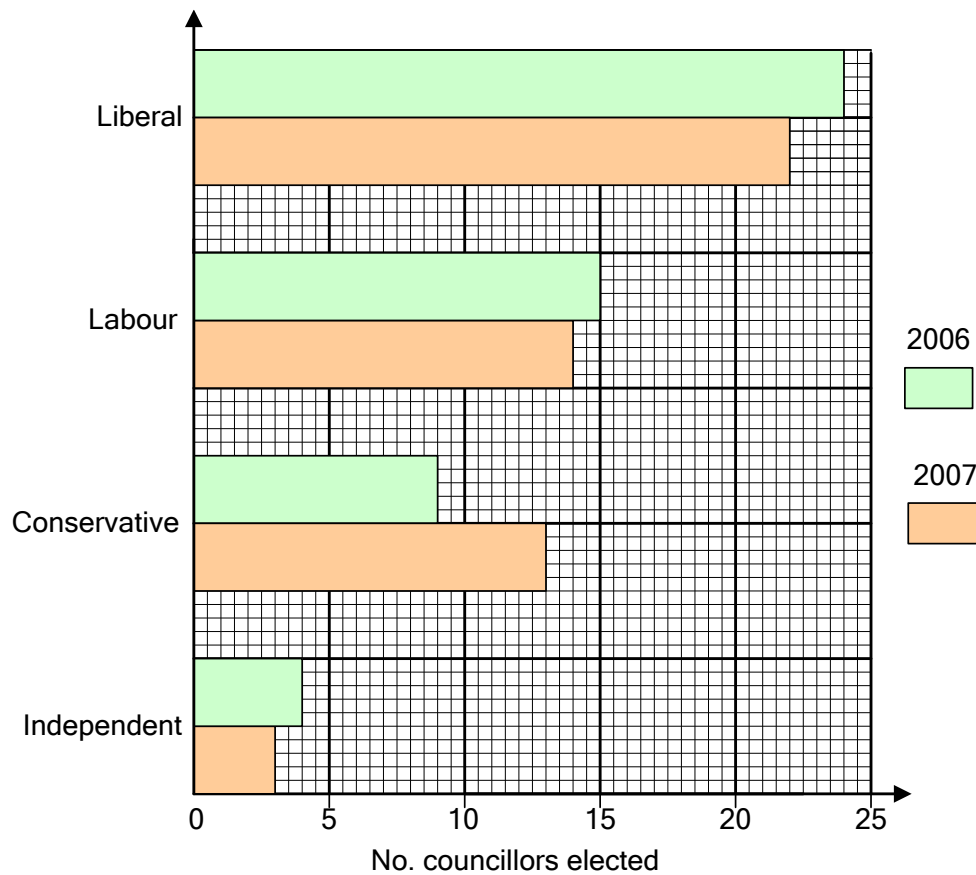
Karen spent more time watching television than Andrew on two of these four days.

(b) Write down these two days.

(c) Work out who spent more time watching TV over the four days.

(You must show your working)

3. The chart gives information about councillors elected to Stockport Council in 2006 and in 2007. It shows the number of councillors elected in each of the political groups.



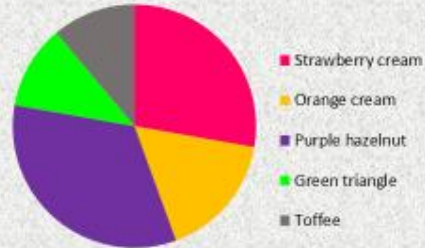
A.

- Write down the name of the political group with the highest number of councillors elected in 2006 and 2007.
- Write down the names of the **two** political groups with one less councillor being elected in 2007 than in 2006.
- Work out the total number of councillors elected in 2006 and the total number of councillors elected in 2007.
- Use the chart to comment on the changes to the political groups in Stockport Council over these two years.

Pie Charts "What is your favourite Quality Street?"

Sweet	Results	Degrees
Strawberry Cream	5	100°
Orange Cream	3	60°
Purple Hazelnut	6	120°
Green Triangle	2	40°
Other	2	40°
TOTAL	18	360°

My Results

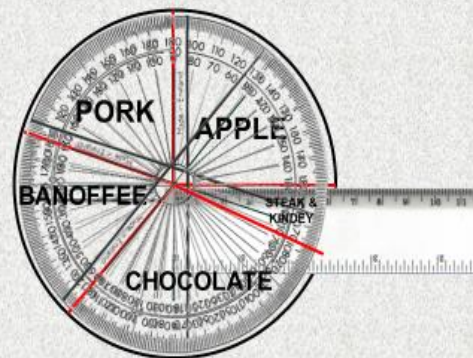


$$\frac{360}{18} = 20^\circ$$

In a survey, people were asked to indicate which one of the pies they liked the best. The information is given in the table. Display the information in a pie chart.

Types of pie	Frequency
Apple	15
Pork	12
Banoffee	11
Chocolate	18
Steak and kidney	4
TOTAL =	60

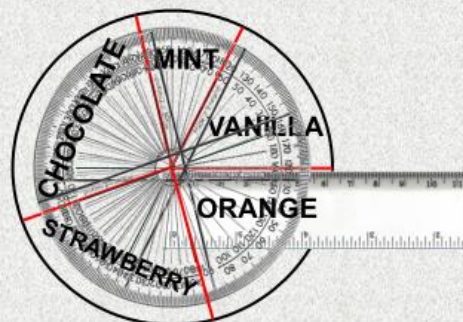
360° in a full turn



In a survey, people were asked to indicate which ice cream their liked the best. The information is given in the table. Display the information in a pie chart.

Ice Cream	Frequency
Vanilla	14
Mint	9
Chocolate	21
Strawberry	19
Orange	17
TOTAL =	80

360° in a full turn



Drawing Pie Charts

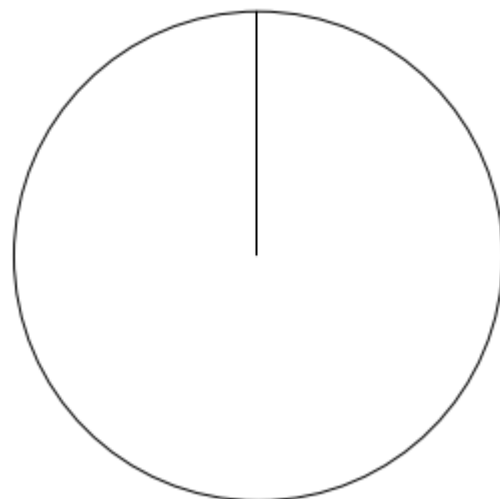
Every circle contains a total of degrees so in order to figure out how many degrees each person/vote is worth you $\div$ n where 'n' is the number of people/votes.

It is also key to remember that you measure each angle from the **end of the last section** of the pie chart, this will ensure the whole circle is used to represent something!

Questions – Use the tables provided to calculate the size of each section of the pie chart then draw it on the circle provided:

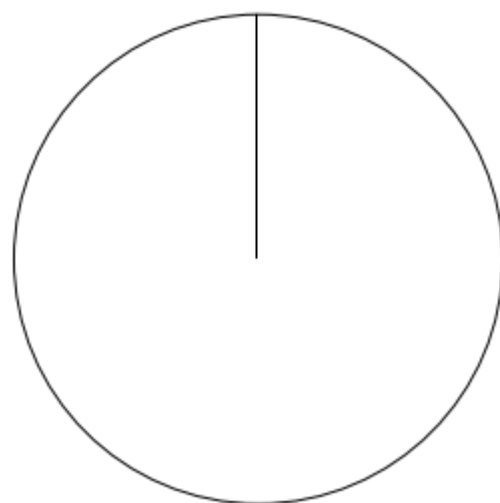
1)

Favourite football team	Number of people	Size of angle
Forest	10	
Derby	8	
County	3	
West Brom	15	
TOTALS		



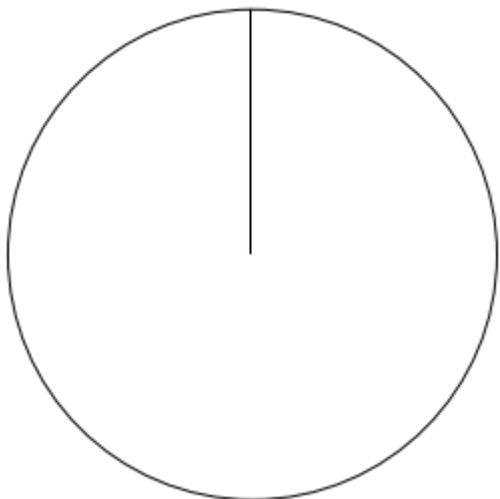
2)

Favourite Food	Number of people	Size of angle
Sunday Dinner	3	
Fast Food	10	
Soup	1	
Fish Fingers	6	
TOTALS		



3)

Favourite Lesson	Number of people	Size of angle
Art	3	
Drama	4	
PE	15	
English	4	
Maths	4	
TOTALS		



Line Graphs

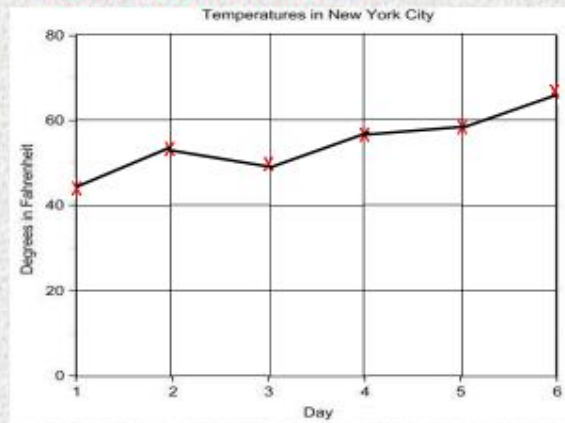
EXAMPLE

The table below shows daily temperatures for New York City, recorded for 6 days, in degrees Fahrenheit. **Draw a line graph for the data.**

Temperatures in NY City	
Day	Temperature
1	43
2	53
3	50
4	57
5	59
6	67

Describe the trend of the temperatures.

Temperature has increased over the six days. Only decrease was from day 2 to day 3.



Question 1

Value of Sarah's Car

Year	Value
2001	\$24,000
2002	\$22,500
2003	\$19,700
2004	\$17,500
2005	\$14,500
2006	\$10,000
2007	\$ 5,800

Question 2

Sam's Weight	
Month	Weight in kg
January	49
February	54
March	61
April	69
May	73

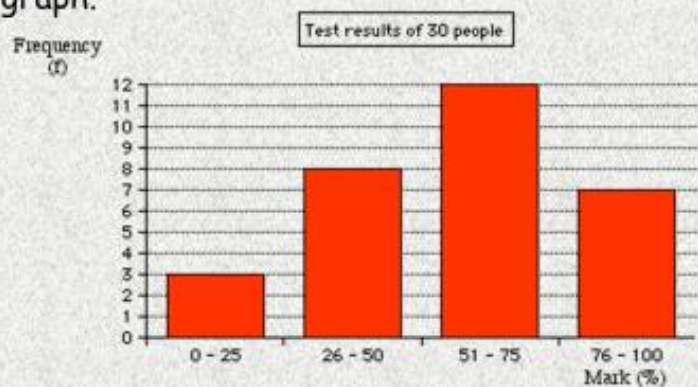
Grouped Discrete Data

Grouped data is used when each value is likely to be different and values are placed in groups or classes.

e.g. Test results (%) of 30 people

This data is best shown in a bar graph.

Score	Frequency
0 – 25	3
26 – 50	8
51 – 75	12
76 – 100	7



Question 1

An airline company records the weights of the bags that passengers check in (in kg to 1 dp).

7.3	8.2	9.1	9.0	6.2	6.1
7.0	8.4	4.9	5.4	6.4	7.9
10.8	11.2	13.4	11.2	7.8	4.3
7.9	12.4	11.6	9.4	9.0	6.7
10.5	9.5	4.7	5.6	7.1	8.2

1) Copy and complete the grouped frequency table.

Weight (Kg)	Tally	Frequency
$4 \leq w < 6$		
$6 \leq w < 8$		
$8 \leq w < 10$		
$10 \leq w < 12$		
$12 \leq w < 14$		

2) Put this data into a bar chart

Group discrete data

Question 1: The information shown displays the colour of 30 cars in the school car park. Complete the tally chart below.

Green	Grey	Yellow	Grey	Red	Black	Grey	Green	Red	Blue
Red	Blue	Grey	Grey	White	Green	Grey	Grey	Red	Grey
Black	Grey	White	Red	Grey	Grey	Blue	Black	Yellow	Green

Car Colour	Tally	Frequency (Total)
Green		
Grey		
Yellow		
Red		
Black		
Blue		
White		

Question 2: Using your Frequency table answer these questions.

- How many cars on the car park are Grey?
- How many more Red cars than White cars are there?
- Which is the most popular colour?
- draw bar chart to represent this data

How to Find the Mean

The mean is the most commonly used **average**.

It is easy to calculate: **add up** all the numbers, then **divide by how many** numbers there are.

In other words it is the **sum/total of the numbers** divided by the **count**/amount of numbers.

Example 1: What is the Mean of these numbers? 6, 11, 7

- Add the numbers: **$6 + 11 + 7 = 24$**
- Divide by *how many* numbers (there are 3 numbers): **$24 / 3 = 8$**

The Mean is 8

Example 2: Look at these numbers: 3, 7, 5, 13, 20, 23, 39, 23, 40, 23, 14, 12, 56, 23, 29

The sum of these numbers is 330 . There are fifteen numbers.

The mean is equal to $330 / 15 = 22$

The mean of the above numbers is 22

The Range (Statistics)

The Range is the difference between the lowest and highest values.

Example: In **{4, 6, 9, 3, 7}** the lowest value is 3, and the highest is 9.

So the range is $9 - 3 = 6$.

1. Find the mean of each of these sets of values.

- a 12, 4, 14, 3, 7 _____
- b 5 cm, 4 cm, 0 cm, 2 cm, 2 cm,
8 cm, 3 cm, 4 cm, 4 cm, 5 cm _____
- c £2.50, £1.24, £1.22, £1.60 _____

2. To help her budget, Ayako made a record of how much she spent each week for four weeks. What is the mean amount she spent per week?

Week 1	Week 2	Week 3	Week 4
£48	£50	£32	£20

3. The table below shows the normal number of hours of sunshine each day in the Algarve for the months of January to September.

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
5	7	8	9	10	11	12	10	9

What is the mean number of daily hours of sunshine for the months shown?

4. A parent researched the price of eight different drinks for children, four fizzy drinks and four fruit juices. His aim was to compare the mean price of fizzy drinks with fruit juices to see which was cheaper.

Fruit juice	Price per 300 ml	Fizzy drink	Price per 300 ml
A	45p	A	55p
B	65p	B	85p
C	70p	C	50p
D	60p	D	60p

- a What is the mean price of fruit juice per 300 ml?

- b What is the mean price of fizzy drink per 300 ml?

- c Which drink is more expensive, on average?

5. A cosmetics company offers a bonus to the sales team with the highest average weekly sales. Which team will win, based on the results of the first five weeks?

	Week 1	Week 2	Week 3	Week 4	Week 5
Team A sales (£)	1067	1258	2164	1775	2234
Team B sales (£)	1578	987	2430	1855	2032

Range

1. Find the range of each of these data sets.

a 9, 13, 1, 8, 2, 3

b 14 °C, 0 °C, 1 °C, 15 °C, 7 °C

c £3.00, £1.20, £4.50, £6.30, £2.00, £9.10

2. The table shows how many cars a salesman sold each month, over a six-month period.

April	May	June	July	August	September
12	10	6	12	6	8

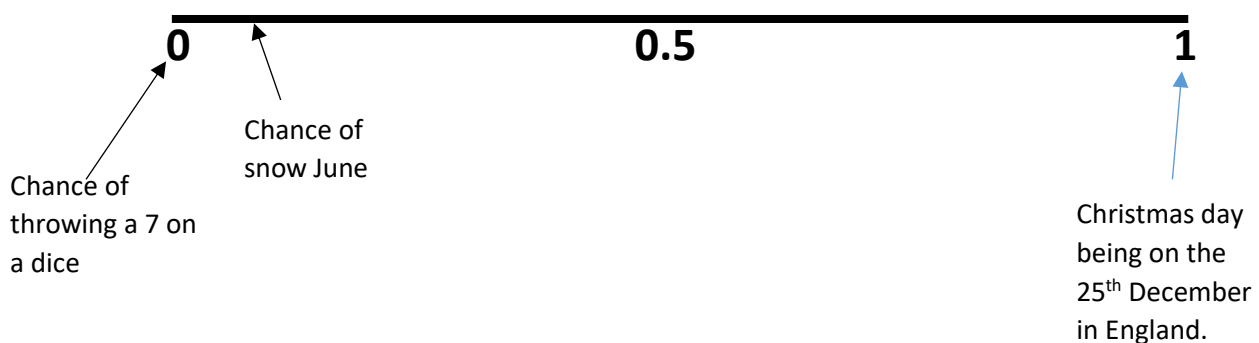
What is the range of the numbers of vehicles he has sold from April to September?

Probability is the chance of something happening. It can be represented on a scale. You must ensure you have a straight line with 0 at one end and 1 or 100% at the other

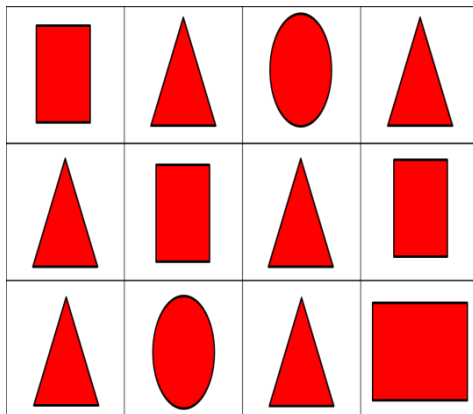
Here are the chances of throwing a 7. It is impossible.

Snow in June is very unlikely. Christmas day being on the 25th december is certain.

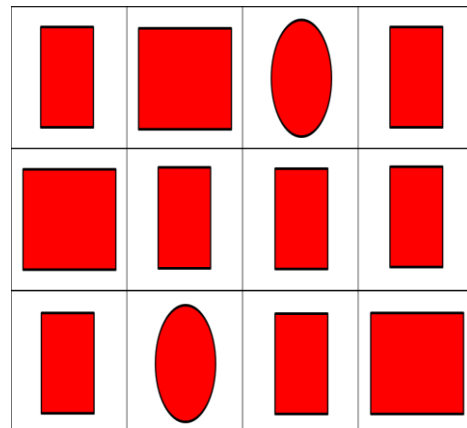
Probability Scale



GRID 1



GRID 2



A shape is picked at random.

Copy and complete the following sentences:

(a) Picking a from Grid is impossible.

(b) Picking a from Grid is likely.

(c) Picking a from Grid is unlikely.

(d) Picking a from Grid is highly unlikely.

(e) Picking a from Grid is fifty-fifty.