Handling data 1

contents

There are four lessons in this unit, **Handling data 1**.

objectives

The objectives covered in this unit are:

- Add several small numbers.
- Use vocabulary and ideas of probability, drawing on experience.
- Understand and use the probability scale from 0 to 1.
- Find and justify probabilities based on equally likely outcomes in simple contexts.
- Plan how to organise small sets of data.
- Construct frequency tables for discrete data.
- Construct graphs and diagrams, on paper and using a computer, to represent data.
- Solve a problem by extracting and interpreting data in tables, graphs and charts.
- Calculate statistics for small sets of discrete data:
  - find the mode, median and range;
  - calculate the mean in simple cases.

Using the lesson plans in this unit

These lesson plans supplement the *Springboard 7* materials for Key Stage 3 pupils working toward level 4 in mathematics. All the lessons are examples only. There is no requirement to use them. If you decide to use the lessons, you will need to prepare overhead projector transparencies (OHTs) and occasional resource sheets for pupils to use.

The lessons consolidate work at level 3 and extend into level 4. They are suitable for a group of pupils or a whole class. Whatever the size of the group, the pupils are referred to as 'the class'.

Each lesson will support about 30 to 40 minutes of direct teaching. To help match the time to your timetable, each plan refers to 'other tasks' for pupils, based on *Springboard 7* resources. Select from these, textbook exercises or your own materials, to provide practice and consolidation in the main part of a lesson and to set homework. Aim to choose tasks that vary in their level of demand, to suit pupils' knowledge, confidence and rate of progress.

Although the 'other tasks' are listed for convenience at the end of the main part of the lesson, they can be offered at any point, especially between the 'episodes' that form the main activity.

The lesson starters are of two kinds: practice starters and teaching starters. The former are opportunities to rehearse skills that will be needed later in the lesson. Teaching starters introduce an idea that is then developed in the main activity.

You will need to tell pupils what they will learn in the lesson, either in the starter or at the beginning of the main activity. Use the plenary to check pupils' learning against the lesson's objectives and to draw attention to the key points that pupils should remember.

D1.1 Introducing probability

objectives

- Use vocabulary and ideas of probability, drawing on experience.
- Understand and use the probability scale from 0 to 1.

starter

Vocabulary
chance
likelihood
possible, impossible
probable, improbable
certain, uncertain
likely, unlikely
equally likely
even chance
fifty-fifty chance
probability scale

Resources
OHT D1.1a

Discuss with the class *chance* and *likelihood*. Explain that some things never happen: they are *impossible*. Some things probably won't happen, but just might: they are *unlikely*. Some things probably will happen, but just might not: they are *likely*. Some things will definitely happen: they are *certain*.

Q What is impossible/unlikely/possible/likely/certain to happen in school this week?

Q What everyday events are certain to happen / are likely to happen / are unlikely to happen / will never happen this year?

Draw on the board a long line labelled as shown below.

Invite pupils to position the following words on the line and to write the word. Say that they may want to put more than one word in the same position. Read out the list one by one: possible, probable, uncertain, likely, unlikely, very likely, equally likely, even chance, good chance, poor chance, no chance, fifty-fifty chance.

When all the words are in place, point to one or two of them and ask pupils in pairs to think of an example to illustrate the meaning of the word.

Say that a line on which the probability of an event is indicated is called a *probability scale*. Show **OHT D1.1a**. Explain that the statements have to be arranged in order and positioned on the probability scale. Read through the statements and ask the class to consider in pairs:

Q Which of the statements is certain?

Take responses and invite a pupil to write the relevant letter in the appropriate place on the scale. Continue in a similar way by asking:

Q Which of the statements is impossible?
Q Where would the other statements go?

main activity

Vocabulary
probability scale

Resources
5 red cubes and 5 blue cubes
open box to hold the cubes

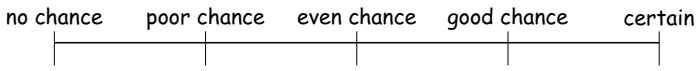
Secretly put five red and five blue cubes in an open box. Hold the box so that the class cannot see the contents and tell them that it contains ten cubes, some red and some blue.

Draw on the board a table to record the results of the experiment that you are about to do.

Red	
Blue	

Invite a pupil to the board to act as recorder. Take out one cube, show the class, and ask the pupil to make a tally mark in the correct row. Put the cube back, shake the box, take out another cube and record its colour. Do this ten times in all.

Put the box to one side and draw a probability scale on the board.



Ask pupils to look at the recorded findings of the experiment.

Q What do you think the probability is of taking out a red cube next time?

Agree a point on the line and mark it. Invite another pupil to act as recorder and repeat the experiment ten more times, drawing out a cube, recording its colour and putting it back.

Q What do you think the probability is now of taking out a red cube next time?

Agree a new point if necessary and mark it on the probability scale.

Empty out the cubes from the box and show the class that it had contained five red cubes and five blue cubes. Discuss what the probability was (in theory) of drawing out a red cube – it was a fifty-fifty chance, or an even chance.

Q Imagine taking a cube out of the box another ten times, so that we have removed a cube 30 times in all. What would you predict the results of our experiment to be? (15 red, 15 blue or something close to this)

Stress to the class that the more times they draw a cube from the box, the closer the match will be between the theoretical probability and the results of the experiment.

Q Imagine adding another ten cubes to the five red and five blue cubes already in the box. How could we fix it so that there is still an even chance of taking out a red cube? (add five more red cubes and five more blue cubes)

Q How could we change the contents of the box so that we have a good chance of getting a red cube? (take out some of the blue cubes and replace them with red cubes)

Q How could we change the contents of the box so that we are certain to get a red cube? (replace all the blue cubes with red cubes)

other tasks

Springboard 7
Unit 7

Unit 7 section 1: How likely?

plenary

Resources
OHTs D1.1b, D1.1c

Show **OHT D1.1b**.

Draw pupils' attention to the contents of each bag. Ask them to work in pairs and to study the statements. They should match each of the statements to one of the bags. Allow time for discussion and then invite different pupils to say which statement matches which bag.

Show **OHT D1.1c**.

Give the pairs time to discuss the first problem, then take responses. Stress that any number of black beads greater than five will satisfy the condition. Six black beads is the minimum number of beads that will do.

Read through the second problem and give the pairs time to discuss it. Take responses. Stress that if it is equally likely that a black bead or a white bead will be drawn, there must be equal numbers of them in the bag. Since there is a total of 20 beads, 10 must be black and 10 must be white.

Remember

- Probability is the way of measuring the chance or likelihood of the outcome of an event.
- The outcome of an actual event may not match the probability you have worked out.
- The more experiments that you do, the more the outcome will match the probability.

D1.2 The probability scale

objectives

- Understand and use the probability scale from 0 to 1.
- Find and justify probabilities based on equally likely outcomes in simple contexts.

starter

Vocabulary
equally likely
chance

Resources
a dice
mini-whiteboards

Hold up the dice. Tell the class that you are going to throw it 30 times and see how many times you get a one, a two, a three, a four, a five and a six. Ask pupils to use their whiteboards to answer your questions.

Q Make a guess. Which number do you think I will throw most often?

Q How many times in 30 throws do you think I will throw your number?

Draw this table on the board.

Dice	Tally	Total
1		
2		
3		
4		
5		
6		

Choose a pupil to record results, then throw the dice 30 times as quickly as is reasonable. Write in the totals, and discuss the results.

Q Which number had the most throws? Is this what you expected?

Q Imagine throwing the dice another 30 times. Would we get the same results?

Establish that when the dice is thrown, any of the six numbers is equally likely to appear. They all have the same chance. Because there are six numbers on the dice, each number should appear in about one sixth of the throws.

Q What is one sixth of 30? (5)

Stress that in 30 throws, we would expect each number to appear about 5 times.

main activity

Vocabulary
fair, unfair
biased

Resources
mini-whiteboards
dice and counters
OHT D1.2a

Draw this table on the board.

Dice	Tally	Total
odd		
even		

Say that this time you will see how many even numbers you throw.

Q Make a guess. Which do you think I will throw more often: odd numbers or even numbers?

Q Make another guess. How many times in 30 throws do you think that I will throw an even number?

Discuss some of the guesses. Establish that, as half of the numbers on the dice are even, one of them should appear in about one half of the throws.

Ask pupils to copy the table from the board. Give each pair of pupils a dice. Ask one of the pair to roll the dice 15 times and the other to tally the result as 'odd' or 'even'. Then swap over for another 15 throws. Finally, they should count the tally marks to find the total for each of 'odd' and 'even'.

Q How many times in 30 throws did you throw an even number?

Ask pupils what they think a *fair game* is. Establish that it is a game which each player has an equal chance of winning. Explain that a *fair dice* is one for which each number has an equal chance of being rolled, and that a *fair coin* is one that has an equal chance of landing heads up or tails up.

Ask the pairs to play this game three times and to record who wins.

- Each player starts with 9 counters.
- Players take turns to roll the dice.
- The first player wins odds and the second player wins evens.
- If 1 or 3 or 5 is rolled, evens has to give to odds that number of counters.
- If 2 or 4 or 6 is rolled, odds has to give to evens that number of counters.
- The winner is the first to gain all the counters.

Q How many games did odds win? How many games did evens win? Is this a fair game? Why not?

Establish that each number on the dice is equally likely to be rolled. In six throws, each number is likely to be rolled once. Odds would win three times, and would win 9 counters. Evens would win three times, and would win 12 counters. The game is *unfair* because it is *biased* in favour of evens.

Explain that, rather than having words on it, a probability scale is usually numbered with 0 at one end (impossible) and 1 at the other end (certain). A probability is usually written as a fraction (and sometimes as a decimal or percentage).

Show **OHT D1.2a**. With the class, complete the table. For example, in the first row, the possible numbers on the dice are 2, 4 and 6. There are 3 possible numbers, and the probability of throwing one of them is $\frac{3}{6}$ or $\frac{1}{2}$. Invite a pupil to the projector to locate the probability on the probability scale.

Repeat with the other rows.

Q Someone throws a dice 24 times. How many times would you expect them to get a 5? (1 in every 6, or 4 times)

Q How many times would you expect them to get an even number? (1 in every 2, or 12 times)

Q How many times would you expect them to get a number bigger than 4? (2 in every 6, or 8 times)

other tasks

Springboard 7
Unit 7

Unit 7 section 2: Measuring probability

Unit 7 section 3: Working out probabilities

plenary

Resources
OHTs D1.2b, D1.2c

Show **OHT D1.2b**. Discuss the bags of balls and the probability of choosing a black one.

Q **What is this probability as a fraction? As a decimal?**

Invite a pupil to mark the probability on the scale.

Show **OHT D1.2c**. Refer to the first problem and discuss the six faces of the dice.

Q **How many faces does the dice have altogether?** (6) **How many show a 2?** (4) **How many show a 5?** (2)

Q **What is the probability of rolling a 5?** ($\frac{2}{6}$ or $\frac{1}{3}$) **Of rolling a 2?** ($\frac{4}{6}$ or $\frac{2}{3}$)

Invite another pupil to mark this probability on the scale.

Refer to the second problem and discuss the sectors of the spinner. Point out that they are not all equal. Some have a better chance than others.

Q **What is the chance of the pointer landing in sector C?** (about 1 in 4, or $\frac{1}{4}$)

Invite another pupil to mark this probability on the scale.

Q **What is the chance of the pointer landing in sector E? Is it more than one half, or less than one half?** (less than one half)

Invite a pupil to mark this probability on the scale.

Repeat for sector A.

Remember

- Probability means how likely something is to happen.
- A probability scale has 0 at one end (impossible) and 1 at the other (certain).
- Probabilities are usually written as fractions or decimals, and sometimes as percentages. An even chance, or a one in two chance, is written as a probability of $\frac{1}{2}$, 0.5 or 50%.
- A fair game is one in which each player has an equal chance of winning.

D1.3 Bar charts and frequency tables

objectives

- Plan how to organise small sets of data.
- Construct frequency tables for discrete data.
- Construct bar charts, on paper and using a computer, to represent data.
- Solve a problem by extracting and interpreting data in tables and bar charts.

starter

Vocabulary
statistics
data
frequency
survey

Say that this lesson is about tables and charts and how to read and understand them.

Q What do you call the table that you would use:
- **to find times of buses or trains;**
- **to find out what eight nines are;**
- **to find out what lesson you should be at?**

Say that tables of *statistics* contain a lot of numbers or measurements: for example, measurements of length, area, height, weight or capacity. Sometimes we count things like the number of people or the number of times an event happens. In each case, the numerical information is called *data*.

Say that you will collect some information very quickly. Ask 12 different pupils what their favourite musical instrument is. Write the words randomly on the board:

guitar drums drums guitar flute piano
flute guitar drums guitar tin whistle accordian

Q How many different instruments did our group of pupils choose?

Q Which instrument is the most popular among them?

Say that it is not easy to understand information when it is jumbled up. It is much easier when the information is organised in a table. Construct this table, basing yours on the data you have collected from the class.

Instrument	Frequency
drums	3
tin whistle	1
guitar	4
flute	2
accordian	1
piano	1
TOTAL	12

Explain that the word *frequency* means ‘how many’ or ‘how often’. The table tells you how many pupils chose each instrument. It is called a *frequency table*.

Say that it is now easy to see what fraction of the pupils chose each instrument, especially as the frequency table shows the total number of pupils in your *survey*.

Q What fraction of the total chose the guitar? What fraction chose drums?

main activity

Vocabulary
bar chart
horizontal axis
vertical axis
label
title
scale
spreadsheet

Resources
OHT D1.3a
Resource D1.3b
computer with data projector and spreadsheet
rulers for pupils

Show **OHT D1.3a**. Say that this shows a jumble of 12 pupils' bus fares. They have then been tidied up into a table. Point out that the bars on the bar chart represent the frequencies.

Q Which fare appears most often in the data?

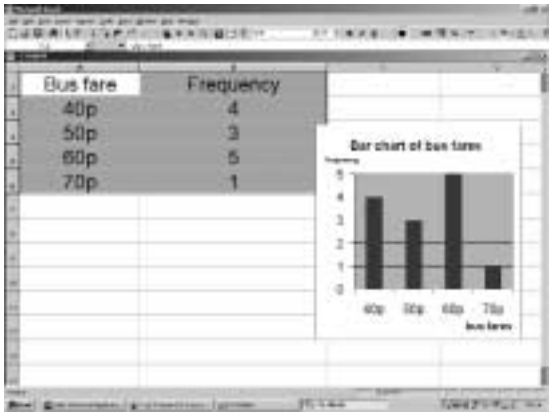
Q Which fare appears least often?

Q What fraction of the pupils pay a bus fare of 60p?

Q Which form of the data did you use to answer these questions: the jumbled data, the frequency table or the bar chart? (the graph is better for the first two questions and the table for the third)

Point out the features of the *bar chart*: the *horizontal axis*, the *vertical axis*, the *label* on each axis, and the *title* of the chart. Explain that the *scale* on the axis that shows the frequency has been chosen so that the maximum value of the data (the bus fare that the pupils pay the most often) will fit on the graph. Point out that each bar has its own label to show what it represents.

Before the lesson, prepare a simple spreadsheet based on the data. Show pupils how to use it to present different forms of bar charts.



Show the class that the bars may be horizontal or vertical but that each form represents the same data and gives the same information. Demonstrate how a change to one of the frequencies in the table produces a corresponding change to the height of the relevant bar.

Give out copies of **Resource D1.3b**.

Q What information does this bar chart show?

Discuss responses. Establish that the title and labels help to explain the meaning. Say that the data represent the colours of the cubes in a box.

Q How many red cubes are in the box? (25)
Q How many more red cubes than pink cubes are there? (20)
Q Estimate how many cubes there are altogether in the box. (93)
Q Estimate how many cubes are not pink. (88)

Refer to the frequency table below the bar chart. Say that this is another way of representing the same data. Remind them that *frequency* means 'how many'.

Q What do we need to add to the table so that it represents the same information as the bar chart? (the number of cubes of each colour)

Ask pupils to complete the table in pairs. Check answers by taking feedback.

Say that the second table gives information about another box of cubes.

Q How many brown cubes are in the box? (25)
Q How many more brown cubes than green cubes are there? (8)

Say that you want them to put the same information on a bar chart.

Q What will need to go on the horizontal axis? (the colours of the cubes)
Q How tall will the tallest bar be? (25 units)
Q How tall will the shortest bar be? (10 units)

Establish that the bars will range in height from 10 to 25.

Discuss how the vertical scale could be labelled: for example, if it were labelled in twos the highest division would be 10 – too small. If it were labelled in tens the highest division would be 50 – too big.

Ask pupils to work in pairs to agree their scale and to draw their bar chart, using their rulers to help. Remind them that they will need to estimate the height of some of the bars.

other tasks

Springboard 7
Units 4 and 12

Unit 4 section 1: Bar charts and line graphs

1 Lotta bottle page 145
2 The dice-rolling experiment page 146
Star challenge 1: Space probe page 147

Unit 12 section 2: Pie charts and bar graphs

1 The darts competition page 398
Star challenge 2: Tree planting page 399

plenary

Resources
OHT D1.3c
calculators
mini-whiteboards

Show **OHT D1.3c**, a bar chart showing how many people went to a school play.

Discuss with the class how to use the graph to make the estimates of the amounts raised on the two days. Ask pupils to do the calculation mentally and to write the answer on their whiteboards.

Discuss what information is needed to work out the cost and what kind of calculation to do. Remind pupils how to use their calculators to key in amounts of money and how to interpret the display.

Remember

- The bars of a bar chart show how many of each item there are. The axis for frequency will have a scale.
- A bar chart should have a title and each axis should be labelled.
- Each bar should have a label to show what it represents.
- A frequency table can contain the same information as a bar chart.
- A frequency table should have a title.
- The total of the count should be included in a frequency table.

D1.4 Calculating statistics

objectives

- Add several small numbers.
- Solve a problem by extracting and interpreting data in tables, graphs and charts.
- Calculate statistics for small sets of discrete data:
  - find the mode, median and range;
  - calculate the mean in simple cases.

starter

Vocabulary
add
plus
sum
total

Resources
OHT D1.4a
non-permanent OHP pen
six small counters
mini-whiteboards

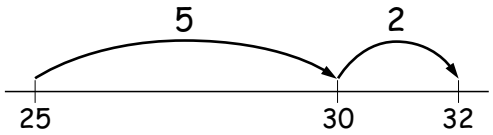
Ask pupils to say aloud the answers to these questions.

Q What is 2 plus 8? 10 plus 7? 17 plus 3? 20 plus 5?

Write 25 + 7 on the board.

Q Imagine that you have a friend who has forgotten the answer to this sum. How could your friend work out the answer?

Draw out that the answer can be worked out in two steps by bridging through the next multiple of 10. First work out how much of the 7 must be added to the 25 to make 30, then add on the remaining amount. Illustrate with an empty number line.



Write on the board a string of nine or ten single-digit numbers, such as:

7 5 3 6 9 4 1 2 5

Make sure that the list contains plenty of complements in 10 such as 7 and 3, keeping them well apart.

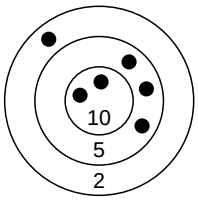
Say that you are going to point to the numbers one at a time. You want the class to keep a running total and to say it aloud each time that you point. Point to the numbers from left to right, slowly enough for everyone to keep up. Repeat from right to left.

Say that this time you will point to the numbers in any order, and cross them out as you go along. You still want the class to keep a running total. Point to 7, then 3; then 5, then 5; then 6, then 4; then 9, then 1; then the final number 2.

Q Why was it easier to keep a running total this time? (we paired up numbers with a sum of 10)

Stress that it isn't always possible to look for pairs of numbers with a total of 10 but, where it is possible, it is a useful strategy.

Show **OHT D1.4a**. Say that this is a target board. Write three numbers, such as 10, 5 and 2, in the rings. Say that these are the scores that you get when you land in that ring. Place six counters on the target board and ask pupils to calculate the total score and to write the answer on their whiteboards.



Q How did you work out the answer?

Stress that in calculations like these it is usually easier to deal with the larger numbers first. Redistribute the counters and ask pupils to calculate the total again. Change the numbers in the rings – for example, to 6, 5, 4 – and repeat several times.

main activity

Vocabulary
average
mean
median
mode
range

Resources
30 counters
OHT D1.4b

Put 20 counters in a bag. Choose four pupils. Ask the first to put their hand in the bag and take some of the counters, but not all of them. Ask two more pupils to do the same. Ask the fourth pupil to take the remaining counters.

Ask each pupil in turn:

Q How many counters do you have?

Record the four amounts on the board: for example, 6, 4, 3, 7.

Q How many counters are there altogether? (20)

Q How many counters would each pupil have if they had all taken the same number? (5)

Say that this represents the *average* or *mean* of 6, 4, 3, 7. It is what each would get if the total number were distributed equally among them all. Write on the board:

total = 6 + 4 + 3 + 7 = 20
mean = 20 ÷ 4 = 5

Place 30 counters in the bag. This time choose five pupils to repeat the process of each taking some of the counters.

Record the five amounts on the board: for example, 5, 4, 7, 8, 6.

Q How many counters are there altogether? (30)

Q How many counters would each pupil have if they had all taken the same number? (6)

Write on the board:

total = 5 + 4 + 7 + 8 + 6 = 30
mean = 30 ÷ 5 = 6

Show **OHT D1.4b**. Say that the numbers represent scores when a dice was rolled 15 times.

Q How can we find the total?

With the class, find the total (60) by looking for pairs or trios of numbers with a sum of 10 and crossing them out.

Q How do we find the mean score that was rolled? (divide by 15)

Q How many fifteens are there in 60? (4)

Write on the board: mean = 4.

Say that there is another way to think of an average, which is to find the *median*, the middle number when all the numbers are arranged in order.

Refer to the second row of numbers. Say that these represent the same scores on the dice but they are rearranged in order, from the smallest to the largest.

Explain that the median is 4, which for this set of numbers is the same as the mean, although that is not always the case.

Write on the board: median = 4.

Refer to the frequency table and bar chart on **OHT D1.4b**. Say that these represent the same data, with a mean of 4, and a median of 4.

Q Which number was rolled most often? (5)

Explain that the number that occurred the most often is called the *mode*.

Write on the board: mode = 5.

Q What is the difference between the largest and the smallest numbers in the set? (5)

Tell the class that this is called the *range* of scores on a dice.

Write on the board: range = 6 – 1 = 5.

other tasks

Springboard 7
Unit 4

Unit 4 section 3: Mode and range

plenary

Resources
OHT D1.4c
mini-whiteboards

Show **OHT D1.4c**.

Work through the questions with the class, asking pupils to answer using their whiteboards.

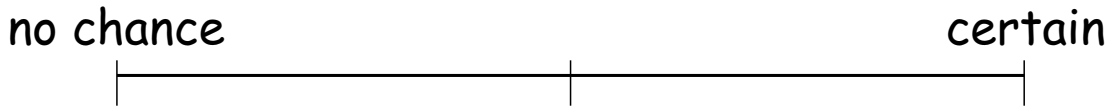
At each stage, ask pupils to explain how they worked out their answers.

Remember

- For a set of numbers:
  - the mean is the sum of all the numbers divided by the number of numbers;
  - the median is the middle number when all the numbers are put in order;
  - the mode is the number that occurs the most often;
  - the range is the difference between the biggest and smallest numbers.

OHT D1.1a

Here is a probability scale.



Arrange these statements in order on the scale.

A You will celebrate your tenth birthday tomorrow.

B Tomorrow you will have a cold.

C It will rain tomorrow.

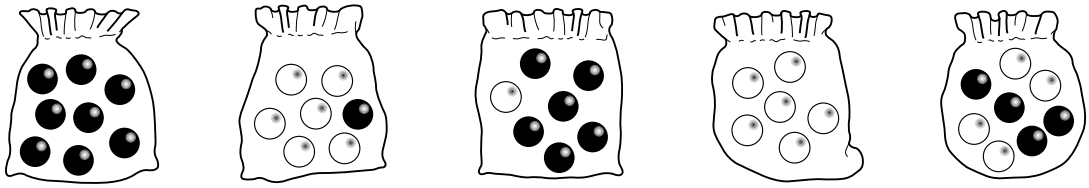
D You will have something to drink tomorrow.

E You will be struck by lightning tomorrow.

F Some time tomorrow you will watch television.

OHT D1.1b

Bryn is going to take a bead from each bag.
Match the pictures to the statements.



A B C D E

It is **impossible** that Bryn
will take a black bead from bag .....

It is **unlikely** that Bryn will
take a black bead from bag .....

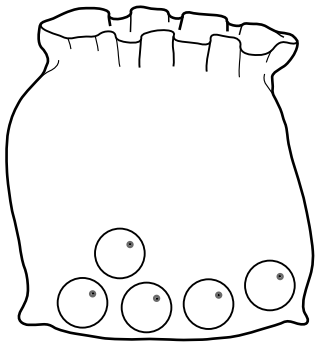
It is **equally likely** that Bryn will
take a black bead or a white bead from bag .....

It is **likely** that Bryn will
take a black bead from bag .....

It is **certain** that Bryn will
take a black bead from bag .....

OHT D1.1c

Bryn has 5 white beads in a bag.



He wants to make it more likely that he will take a black bead than a white bead out of the bag.

How many black beads should Bryn put into the bag? .....

There are 20 beads altogether in another bag.

All the beads are either black or white.

It is equally likely that Bryn will take a black bead or a white bead from the bag.

How many black beads and how many white beads are there in the bag?

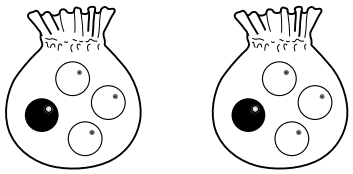
..... black beads and ..... white beads

OHT D1.2a

Type of number	Possible numbers on dice	Total out of 6	Probability
even			
odd			
prime			
multiple of 3			
less than 5			
square			

OHT D1.2b

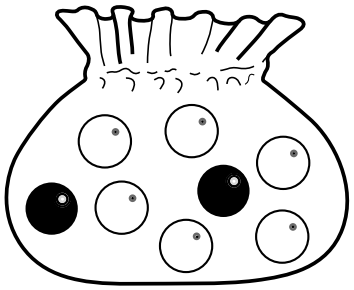
Each bag has three white balls and one black ball.



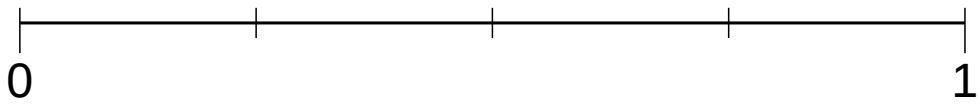
A ball is taken from one of the bags.

What is the probability that it is a black ball? .....

All the balls from both bags are mixed together in a new bag.

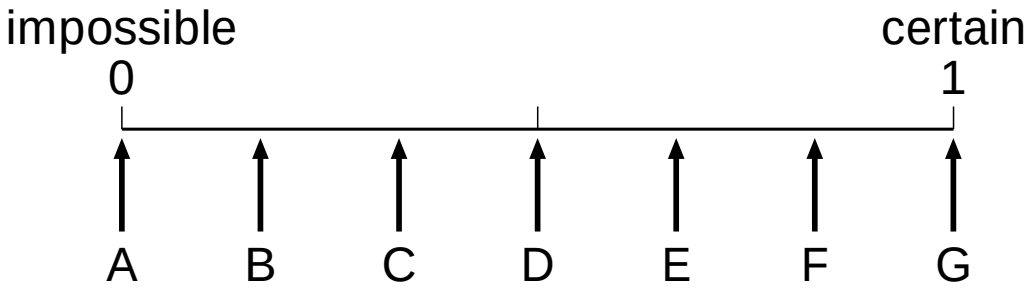


Put a cross (x) on this line to show the probability of taking out a black ball from the new bag.

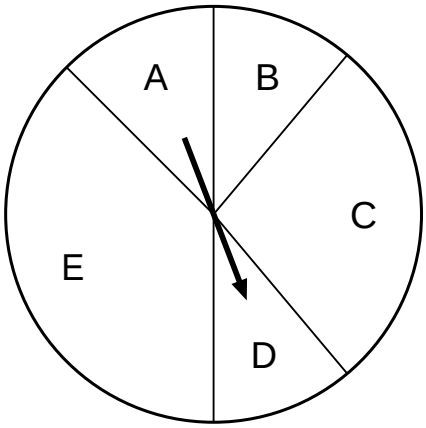


OHT D1.2c

A fair dice has the numbers 2, 2, 2, 2, 5 and 5 on it. Circle the arrow that shows the probability of rolling a 2.

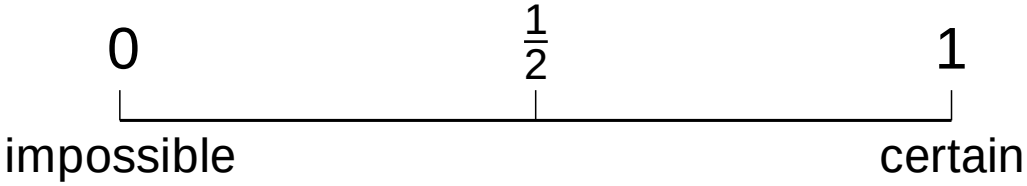


Here is a spinner.



What is the probability that the arrow stops in E?

Show this probability by putting a cross (x) on the probability line below.



Bus fares: jumbled data

50p 60p 40p 70p 60p

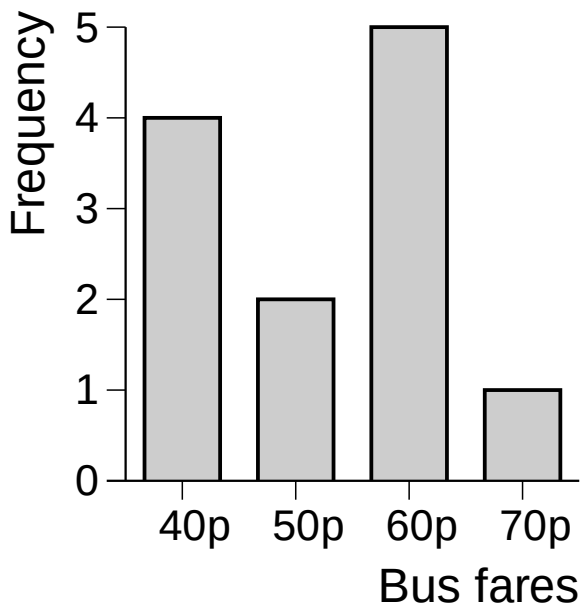
60p 40p 60p 50p 40p

60p 40p

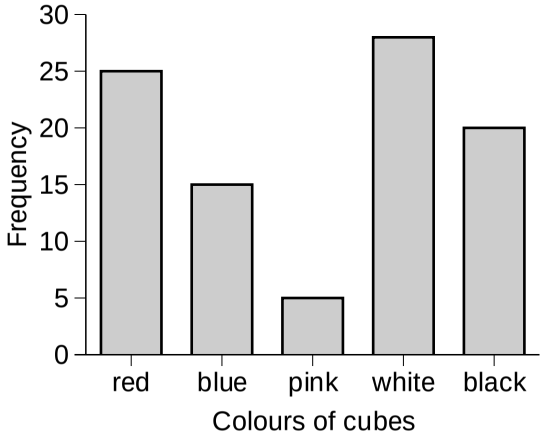
Table of bus fares

Bus fare	Frequency
40p	4
50p	2
60p	5
70p	1
TOTAL	12

Bar chart of bus fares

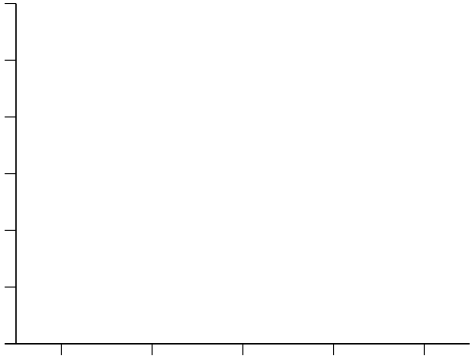


Colours of cubes in box 1



Colour	Frequency
red	
blue	
pink	
white	
black	
TOTAL	

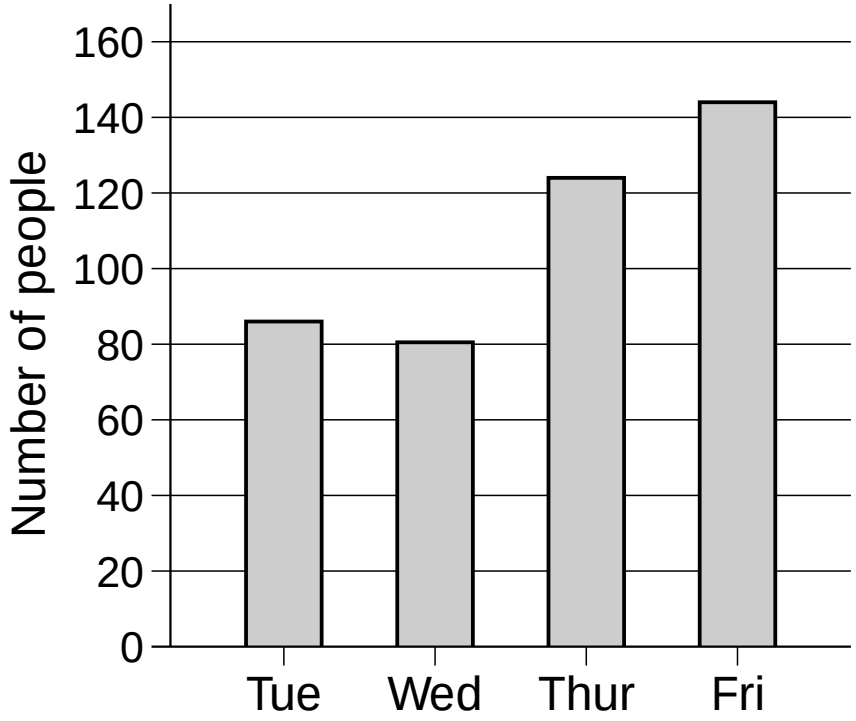
Colours of cubes in box 2



Colours	Frequency
grey	10
green	17
red	12
brown	25
blue	19
TOTAL	

OHT D1.3c

This bar chart shows how many people went to a school play.

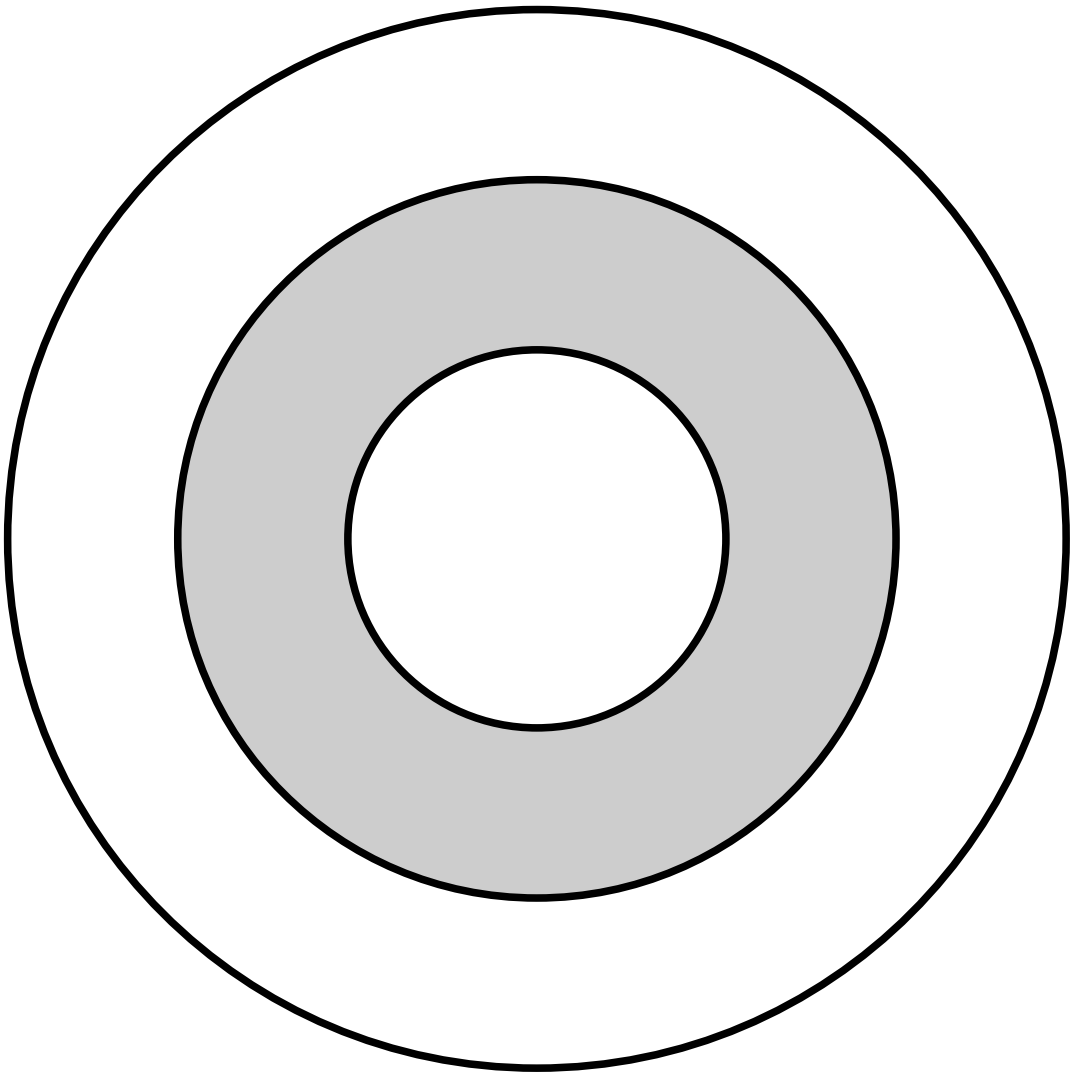


Estimate the number of people who went there on Thursday and Friday altogether.

Each person paid £2.25 for a ticket to get in.
How much ticket money was collected on Wednesday?

Show your working.

OHT D1.4a



Dice scores for 15 rolls

6 2 4 5 6 1 5 2 3 5 5 6 3 3 4

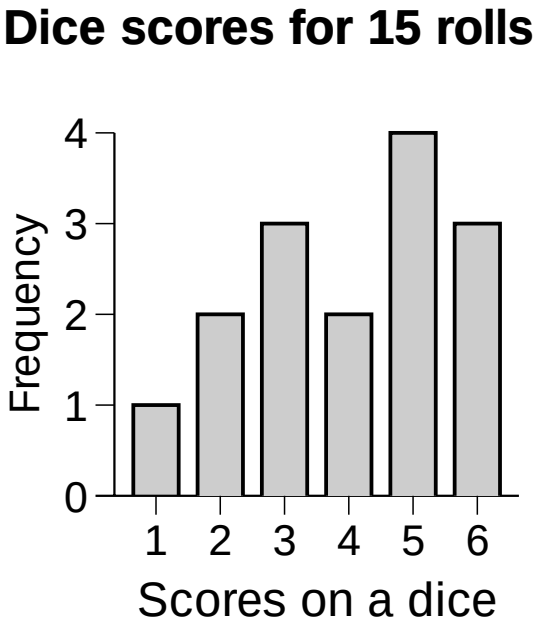
Scores arranged in order

1 2 2 3 3 3 4 4 5 5 5 5 6 6 6

Frequency table

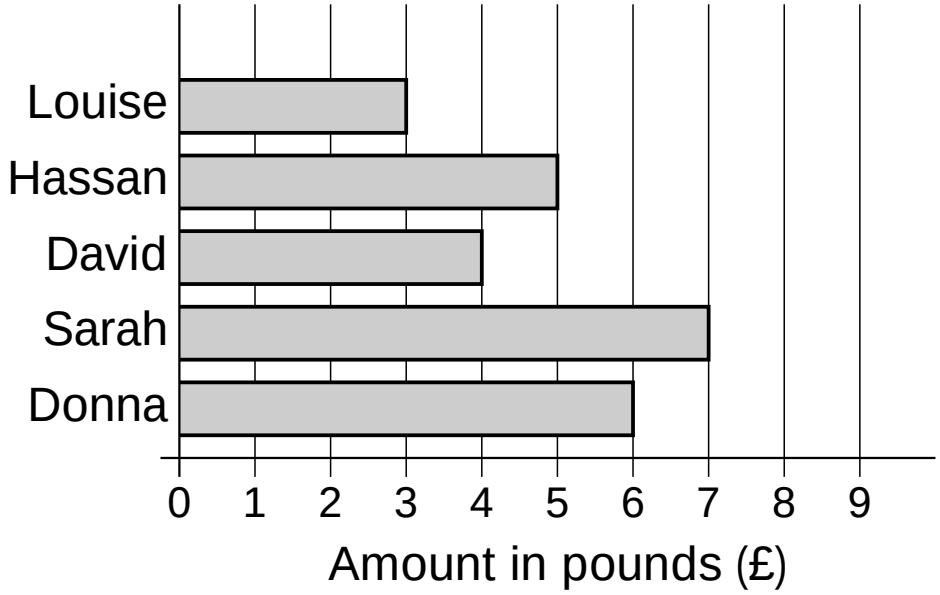
Dice score	Frequency
1	1
2	2
3	3
4	2
5	4
6	3
TOTAL	15

Bar chart



OHT D1.4c

Five children collect money to plant trees.
Here is a bar chart of the amounts they have raised so far.



What is the range of the amounts they have raised?

Who has raised the median amount?

What is the mean amount that the five children have raised so far?

Their target is £40 altogether.

How much more money do they need to reach the target?

£ .....