

Possible outcomes








Chance is the possibility of something happening. For example
Is there any chance of rain today?

Chance tells us how likely it is that some event will occur.

There is a good chance that it will rain because there are clouds in the sky.

1 List all the possible outcomes for each action described.

Picture	Action	Possible outcomes
	rolling a die	1, 2, 3, 4, 5, 6
	tossing a coin	heads or tails
	choosing a piece of fruit without looking	green apple, red apple, banana, orange
	taking a coloured lolly without looking	yellow, green, brown, purple, red, orange
	the result of a game of soccer	win, lose or tie

a Look at the fruit. Which piece of fruit is most likely to be picked?
Explain your answer. banana, there are more bananas than any other fruit.

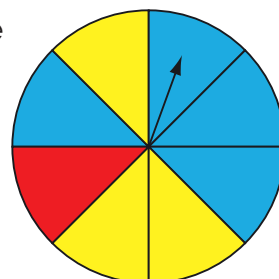
b Look at the coin. Is it more likely to throw a head or a tail?
Explain your answer. equally likely, the chances are even.

c Look at the coloured lollies. Is it possible to choose a blue lolly?
Explain your answer. no - there are no blue lollies

2 Colour the spinner so that the possible outcomes are blue, red and yellow.

Make blue the most likely colour and red the least likely to be spun.

Yellow has 3 chances of being spun.



Predicting outcomes

1 Look at the picture of the clothes pegs hanging on the line.

a How many pegs are there altogether? 14

b If you were to pull one peg off the line randomly, list the colours that it could be.



green

blue

red

yellow

'Randomly' means without any pattern or plan.

2 How many of each coloured peg are there?
Record your answers in the table.

Colour	Number of pegs
green	5
yellow	1
blue	6
red	2

3 If you take a peg off the line without looking:

a what colour is it **most likely** to be? blue Explain your answer. There are more blue pegs than any other colour

b what colour is it **least likely** to be? yellow Explain your answer. There is only one yellow peg out of the 14 pegs.

c If two pegs were to be taken off the line randomly, what are all the possible combinations? Draw all your predictions in the box.

Heads or tails

1 At the beginning of a game of cricket the umpire will toss a coin. The side that 'wins the toss' decides which team is to bat.

a If you toss one coin, what are the possible outcomes?

heads or tails

b If you toss two coins, what are the possible outcomes?

Two heads, two tails, one head-one tail

c If you toss two coins 20 times, what do you think the result will be?

Students' answers will vary.

d Toss two coins 20 times. Record your results in the box.

Was your prediction correct? _____



Talk about your prediction and results with a partner. Are your results similar? Talk about head/tail and tail/head combinations. Do they mean the same thing?



If you look at a set of traffic lights, what are the 3 possible outcomes for a particular colour being lit? Are all outcomes equally likely? Justify your answer.



MIB 2
Card 67

Most likely and least likely

1 Think about the actions below. Colour the event in each pair that you are more likely to do. *Students' answers will vary.*



a	Eat fruit for a snack.	Eat a biscuit for a snack.
b	Drink water.	Drink juice.
c	Swim in a pool.	Swim at the beach.


2

a 

The elephant will fly.

b 

The ice will melt.

c 

The boy will fall off his bike.

Which event is most likely to happen? The ice will melt

Which event is least likely to happen? The elephant will fly

3 Order from least likely to most likely using the numbers 1 to 4.

3 

The boy will toss a head.

2 

The girl will roll a six.

4 

The ball will fall to the ground.

1 

The girl will lift the car.

4 List 2 things that are more likely to happen today than tomorrow.
Students' answers will vary.

5 Kani wrote this statement about chance: 'I am more likely to throw a 1 than a 4 when I roll a die'. Is his statement correct?

Explain your answer. No - he is equally likely to roll a 1 as a 4.

Most, least and equally likely

1 How many lollies are

red? 2 brown? 2

green? 2 orange? 1

pink? 2 purple? 2

yellow? 3



a If a lolly is chosen at random, which colour is

i most likely to be chosen? yellow Explain your answer.

There are 3 yellow lollies

ii least likely to be chosen? orange Explain your answer.

There is only 1 orange lolly

b i Which colours are equally likely to be chosen?

red, brown, green, purple, pink

ii Explain your answer. all have 2 lollies each per colour,

so have equal chances.

2 Hugo picks a chocolate from this box at random.

a Is it more likely that he picks a dark chocolate or a milk chocolate? Why?

Milk, as there are more milk than dark chocolates

b Is it less likely that he picks a square chocolate than a hexagonal one?

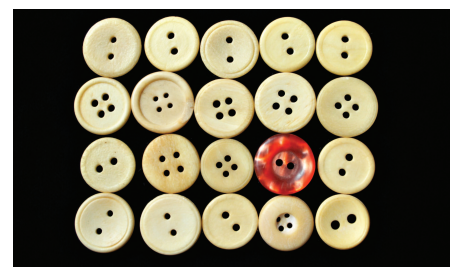
Why? No, he is less likely to pick a hexagonal

one as there fewer of these than square ones.



3 Mimi chooses a button at random. Write two chance questions based on the button array.

Students' answers will vary.



Certain and uncertain events

In describing chance we use words like 'certain', 'uncertain' and 'impossible'. Certain means it will definitely happen. If something is not certain, it is uncertain. Impossible means it will definitely not happen.

1 Use the word **certain**, **uncertain** or **impossible** to explain each event. The first one has been done for you.



6 will be rolled.

uncertain



A head or a tail will be tossed.

certain



The cookie will tell you that you will become rich.

uncertain



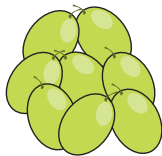
The green key will open the front door.

uncertain



It will be sunny tomorrow.

uncertain



The grapes will have seeds.

uncertain



You will pick \$20.

impossible



The flower will die without water.

certain

2 One card is chosen at random from the cards below. Use the word **certain**, **uncertain** or **impossible** to explain each event.



- a An ace is chosen. *certain*
- b A red card is chosen. *uncertain*
- c A diamond is chosen. *uncertain*
- d A king is chosen. *impossible*
- e The background of the card will be white. *certain*

3 List 2 things that are certain to happen today.

 The sun will rise in the east

 You will eat dinner

Is it likely?

1 Write certain, uncertain or impossible next to each event.

- a You will eat an ice cream today. uncertain
- b The day after Monday is Tuesday. certain
- c You will watch television after school. uncertain
- d It will be dark at midday. impossible
- e Winter is colder than summer. certain
- f There will be 29 February every year. impossible

2 Look at the picture of the fish. One is caught at random. Use the word 'certain', 'uncertain' or 'impossible' to explain each event.

- a The fish will be yellow.
uncertain
- b The fish will have a white tail.
impossible
- c The fish will flap when out of the water.
uncertain
- d A frog will be caught.
impossible



3 Is it more likely that the fish will be black or orange?

black



4 One cake is picked at random. Write three sentences about the cakes and the idea of chance. Make sure you use words like certain, uncertain, impossible, more likely, less likely or equally likely in each sentence.

Students' answers will vary.

Surveys

A survey is a list of questions used to collect information or data.

- 1 Tara conducted a survey about food. Write your answers to the survey.

TARA'S Food Survey		
	Survey question	Your response
1	What is your favourite vegetable?	<i>Students' answers will vary.</i>
2	What is your favourite fruit?	
3	What is your favourite snack?	
4	What is your least favourite food?	
5	What do you usually eat for lunch?	
6	Do you drink milk?	
7	How many glasses of water do you drink each day?	
8	Do you eat your dinner at a table?	
9	Do you assist your parents with the grocery shopping?	
10	How often do you eat breakfast?	every day
		most days
		once a week
		rarely

Make up a question of your own. _____

Students' answers will vary.

- 2 Ask 12 students in your class to give their answer to Question 1.

1		7	
2		8	
3		9	
4		10	
5		11	
6		12	

- 3 Write 3 sentences about your findings.

Tally marks

- 1 Complete these tables by tallying the marks. The first one has been done for you.

Did you eat dessert after dinner last night?		
Yes		22
No		14

Who made your lunch today?		
Mum		10
Dad		8
yourself		7
brother or sister		11

Tally marks are used to help counting. They are drawn in bundles of five

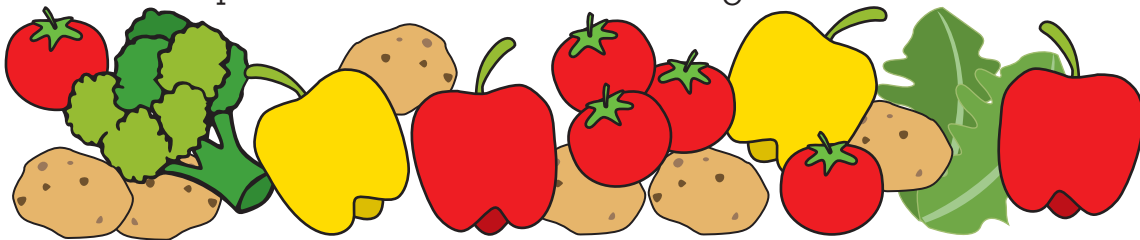


So for the number 17



= 17

- 2 Look at the picture. Create a table using the information.



Vegetable	Tally	Total number
broccoli		1
potato		6
capsicum		4
lettuce		1
tomato		5

- a What is the largest group in the survey? potatoes
- b How many capsicums are there? 4
- c Are there more capsicums or tomatoes? tomatoes
- d Mentally calculate the total number of vegetables. 17
- e How did you work this out? Students' answers will vary.
- f Check your calculation with a calculator.



Create a simple table

1 Australian Aborigines hunt, fish and gather food from the environment. Complete the missing information in the table about the food source that members of the Kadigal tribe gathered.

Food	Tally	Total
witchetty grubs		8
goanna		17
bunya (fruit)		25
bungaa (blackberries)		18
kangaroo		12



- a How many goannas were gathered? 17
- b How many more goannas than kangaroos were gathered? 5
- c Which food source was most gathered? bunya
- d How many animals were gathered altogether? 37

2 Conduct a survey among your classmates about the times that each of them started eating their breakfast this morning.

- a Record a tally mark for each classmate's response. *Students' answers will vary.*
- b At the end of the survey add the tally marks and write the total number in the last column.

Before 6 a.m.		
6:00 a.m.–6:30 a.m.		
6:30 a.m.–7:00 a.m.		
7:00 a.m.–7:30 a.m.		
7:30 a.m.–8:00 a.m.		
after 8 a.m.		
didn't eat breakfast		

- 3 a How many students in your class did you survey? _____
- b How many students started eating breakfast before 6 o'clock? _____
- c How many students are in the biggest group in your survey? _____
- d How many students started breakfast between 7 and 8 o'clock? _____
- e Did more students start breakfast before or after 7 o'clock? _____

Conduct a survey

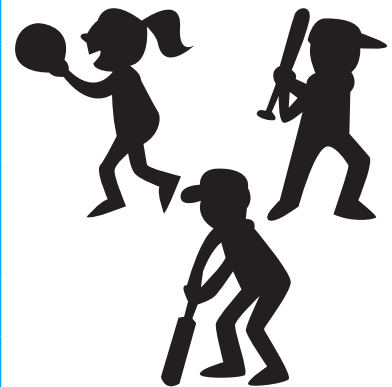
1 Conduct a survey about favourite sports. *Students' answers will vary.*

a Which 6 sports do you think should be included in the table?

b Predict which sport you think will be the most popular. _____

c Fill in the headings on the table and the names of 6 different sports you have chosen. Include a row called 'Other'. Record a tally mark for each classmate's response. At the end of the survey, add the tally marks and write the total number in the last column.

Other		



d Why was it important to include the group 'Other'?

Was your prediction correct? _____

e Use the information in your table to write 3 sentences about the favourite sports of children in your class.



The Australian Census is administered by the Australian Bureau of Statistics every 5 years. The most recent census was conducted on 9 August 2011. Investigate what kind of information is gathered from the Australian Census. In which years will the next three censuses take place?

Tables

- 1 Elephants eat up to 150 kg of vegetation per day. They can drink up to 200 litres of water every day. This table gives data about what elephants eat each day. Use it to answer the questions.

Food	Amount in kilograms (kg)
grass	55
leaves	37
fruit	12
farm crops	25
bark	21



- a How many kilograms of grass do elephants eat each day? 55
- b Do elephants eat more fruit or bark each day? bark
- c Mentally calculate the number kilograms of food elephants eat off a tree each day. How did you work this out?

70kg. Leaves, fruit and bark can all come from trees.

- 2 The table below shows the medals won by Australia at each Olympic Games between 1988 and 2004.

Year	Gold	Silver	Bronze
1988	3	6	5
1992	7	9	11
1996	9	9	23
2000	16	25	17
2004	17	16	16

How many medals were won by Australia at the 2008 Olympic Games? Which Olympiad were the 2008 Olympic Games?

- a Mentally calculate the total number of medals won in 1992. 27
Which 2 numbers made the calculation easier for you? 11, 9
Explain why. You can use the bridging strategy.
- b Fill in the missing information: In 1988 Australia won 3 gold medals. Australia won 11 Bronze medals in 1992. Australia won its most gold medals in 2004 with a tally of 17, 1 more than the number of gold medals it won in 2000. Australia won an equal number of gold and silver medals in 1996. Australia's best medal tally from 1988 to 2004 was at the 2000 Olympic Games.








Picture graphs

Picture graphs use pictures to represent data. A key is used to interpret the pictures.



1

Brown Bear is a travelling bear and has visited many countries around the world several times. Study the picture graph and answer the questions.

Country	Number of times Brown Bear has visited each country
Argentina	 14
Canada	 11
Japan	 6
New Zealand	 18
Thailand	 12
Zambia	 3
Key  = 1 visit	

- a Which country has Brown Bear visited the most? NZ
- b Which country has Brown Bear visited the least? Zambia
- c How many times has Brown Bear visited Canada? 11
- d How many countries has Brown Bear visited? 6
- e Which two countries has Brown Bear visited the same number of times as the total number of visits he has made to New Zealand? Japan Thailand
- f Brown Bear returns to Australia after each trip. Calculate how many times he has returned to Australia. 64
How did you work this out?

Total visits

Column graphs

Column graphs represent data in a series of columns. The columns can be horizontal or vertical.

1 This graph shows the different modes of transport Brown Bear uses as he travels around the world.

a Which mode of transport has Brown Bear used the most?

_____ *Plane* _____

b Which mode of transport has Brown Bear used the least?

_____ *Taxi* _____

c How many times has Brown Bear been on a plane? 20

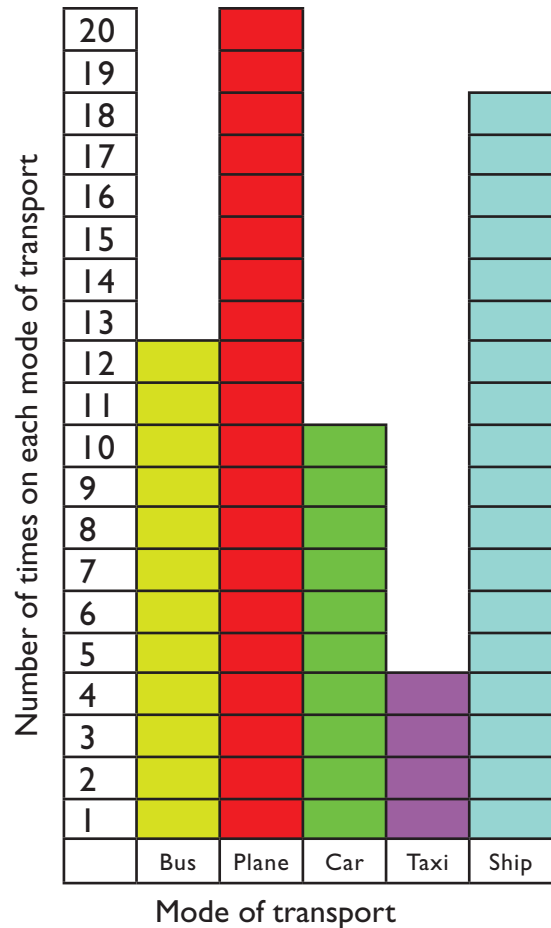
d How many different modes of transport has Brown Bear used?

_____ 5 _____

e On which mode of transport has Brown Bear used twice the number of times he has travelled in a car? Plane

f Which mode of transport has Brown Bear used triple the number of times he has travelled in a taxi? Bus

Different modes of transport for Brown Bear



2 Fill in the missing information in both the table and the graph if the total number of flights that Brown Bear has taken is 20.

10				
9				
8				
7				
6				
5				
4				
3				
2				
1				
	Qantas	Cathay Pacific	Thai Airways	Air New Zealand

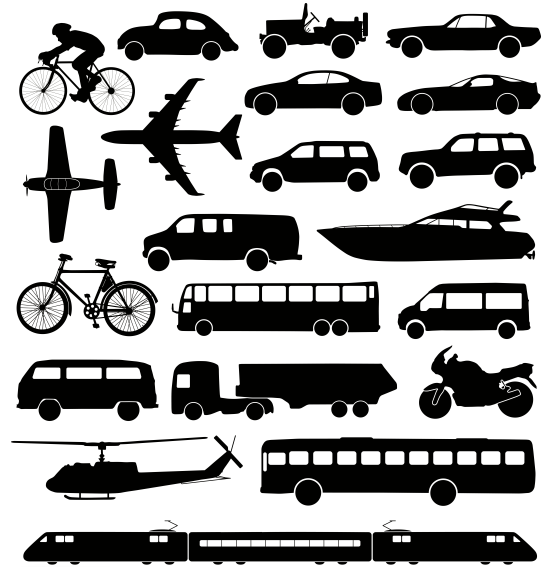
Airline flown	Number of times
Qantas	8
Cathay Pacific	3
Thai Airways	5
Air New Zealand	4



Construct a picture graph

- 1 Look at the picture of the different modes of transport. Use tally marks to fill in the table.

Where does it travel?	Tally	Total
land	 	17
air		3
water		1



- 2 Create a picture graph to record the different modes of transport represented in the picture.

What is the title of your graph? What picture will you use to represent the data? Don't forget to include a key.

Students' answers will vary.

Construct a horizontal column graph

Column graphs have a horizontal and vertical axis. They are labelled to tell you information. The plural of axis is axes.

1 Look at the picture of the Christmas decorations.

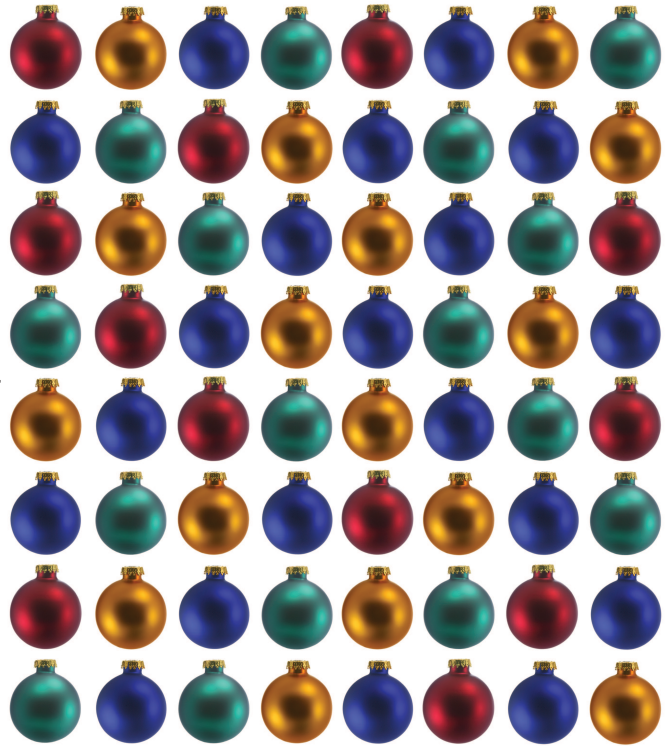
- a** How many different colours are there? 4
- b** What are the different colours?

Red

Blue

Green

Yellow



2 Construct a horizontal column graph to represent the information.

Don't forget to

- include a title
- label your axes.

Title Number of Christmas decorations

Colour	Red																				
	Blue																				
	Green																				
	Yellow																				
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20

Number of Christmas decorations

3 Use your graph to write three facts about the decorations.

Students' answers will vary.

Construct a vertical column graph

- 1 Bev and Chris are flying to Ireland to visit their relatives. To know what to pack they looked up the 7-day weather forecast.

Mon	Tues	Wed	Thurs	Fri	Sat	Sun
13°C	15°C	19°C	18°C	15°C	12°C	16°C

- 2 Construct a vertical column graph to show the forecast temperatures.

Don't forget to

- include a title
- label your axes.

Is 20 degrees Celsius a hot or cold day?
Are weather forecasts usually accurate?

Title Ireland 7 day forecast

Degrees

19							
18							
17							
16							
15							
14							
13							
12							
11							
10							
9							
8							
7							
6							
5							
4							
3							
2							
1							
	Mon	Tues	Wed	Thurs	Fri	Sat	Sun

Days

- a What does °C mean? Degrees celsius
- b What is the highest forecast temperature? 19°
- c What is the lowest forecast temperature? 12°
- d Mentally calculate the difference between the highest and lowest forecast temperature. 7°
- e Which 2 days have the same temperature forecast?
Tuesday Friday
- f What should Bev and Chris pack? _____
Students' answers will vary.

MIB 2
Card 80

Graphing survey results

1 Conduct a survey about the different ways students travelled to school today. Record a tally mark for each classmate's response. At the end of the survey add the tally marks and write the total number in the last column.

Students' answers will vary.

How did you get to school today?	Tally	Total number
bike		
bus		
car		
train		
walk		
other		

2 Use the space below to construct a graph to represent your data. It could be a vertical or horizontal column graph, or a picture graph.

- What title will you give your graph?
- How will you label the axes?
- How many columns and rows will you need?
- Remember to leave enough space for the largest group!

3 Write three questions about your graph for one of your classmates to answer.

- a** _____
- b** _____
- c** _____