



# Adult Literacy Support Materials

## Core Skills — Access 3

### Communication/Numeracy

Published date: September 2006  
Publication code: BB3191

Published by the Scottish Qualifications Authority  
The Optima Building, 58 Robertson Street, Glasgow G2 8DQ  
Ironmills Road, Dalkeith, Midlothian EH22 1LE

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# Introduction

This support pack has been produced to assist those delivering and assessing the Communication Core Skills National Unit D01B 09 and/or Numeracy Core Skills National Unit D01C 09. It is mainly aimed at those delivering Adult Literacy programmes in community-based setting, but it can be used more widely.

The intention is not to be prescriptive but to give examples of activities that illustrate the appropriate level candidates should be working at to achieve the Core Skills Communication Unit and/or Numeracy at Access 3 level. The pack contains guidance on learning and teaching, as well as examples of activities referenced against the Outcomes of the National Unit.

## Planning

The important thing to bear in mind when delivering the Core Skills Units is to consider how the learners might feel about their individual levels of communication and/or numeracy.

Before they begin any work, you should ask learners if there are any areas in reading, writing or using numbers that they may have had difficulty with in the past. These difficulties may have created a barrier to them taking advantage of previous opportunities, eg in other areas of learning, in the workplace, or in the community.

You should handle this with sensitivity, and encourage learners to respond positively. It is important that they can see the relevance of the work being proposed, so you should highlight the link between their individual needs, the materials that are developed, and the range of approaches you have selected. This may mean that your learners are working at different levels and on different pieces of work at the same time.

**Core Skills — Access 3**  
**Communication**

# Communication — Access 3

## Introducing learners to the Unit

As a way of introducing learners to this Unit, you could begin with a discussion of the various means of communication and the different circumstances in which each might be used. The following activity can be used as part of this discussion.

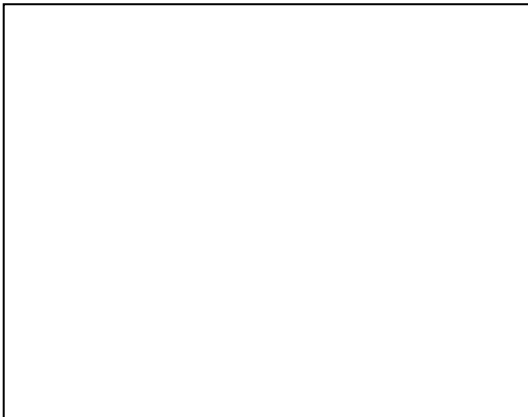
### Introductory activity

In a group, discuss the various means by which people communicate, for example: mobile phone, text, e-mail, letters, speaking to each other, etc.

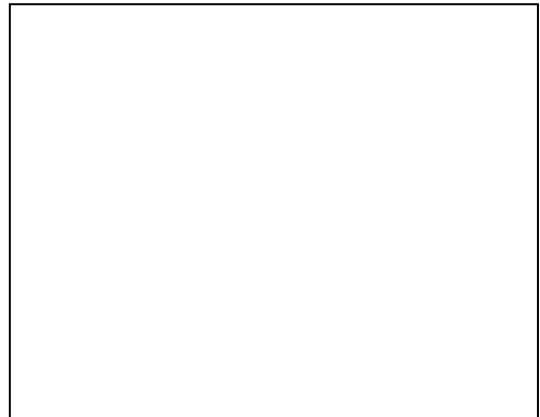
At the end of the discussion each learner should be asked to complete the following task:

Think of all the things you have done in the past week that involved communication, and add them to the boxes under each of the headings below. For example, you may have **read** a bus time-table, **written** a note to a friend, **talked** on the phone or **listened** to what a doctor had to say.

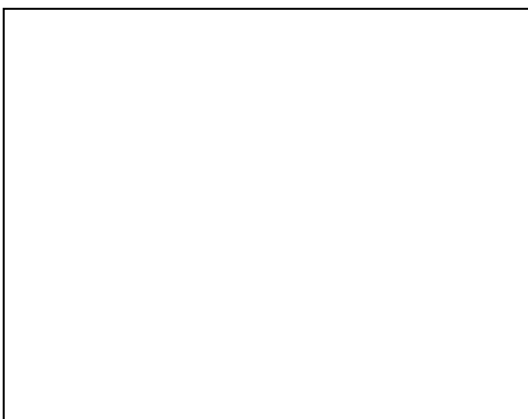
READ



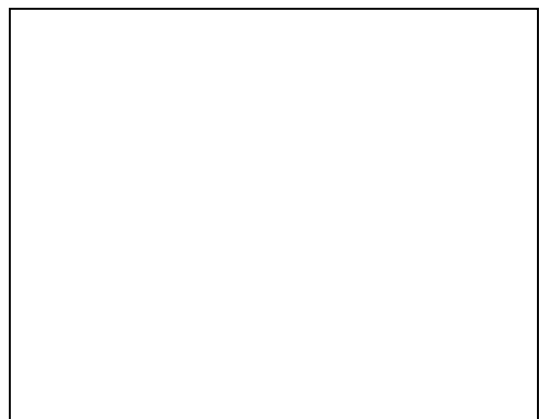
TALK



WRITE



LISTEN



# Outcome 1 — Reading

## ‘Respond to simple written communication’

The skills being assessed in Outcome 1 are:

- ◆ The ability to identify the purpose of a communication.
- ◆ The ability to identify significant ideas or main points in pieces of simple written communication.
- ◆ The ability to provide a basic evaluation of simple written communication

Further information:

Reading material should be familiar to candidates and routine to their situation. Texts with a practical purpose are most suitable — these could include images as well as words. Vocabulary should be familiar to learners. The pieces of communication used should be brief and the key points should be expressed in a direct, uncomplicated way.

What the learner must be able to do to achieve this Outcome:

- ◆ Read a brief written communication (text) which conveys several items of information. The text must be non-fiction.
- ◆ Extract the most important ideas/key points of information from that text.
- ◆ Say whether the text achieved its purpose, and give a reason.

A range of materials should be used when looking at reading, for example: newspapers, health leaflets, advertising posters, letters, postcards, washing machine instructions, the highway code, recipes, car manuals, etc.

Discuss with the group what kinds of things they read, giving them some examples to start the discussion, eg magazines, recipe books, newspapers.

You should discuss with each student individually how he/she feels about his/her reading abilities and use areas of interest to encourage reading simple texts.

This could be undertaken as part of a group discussion following the introductory activity, or it could be done on an individual basis with discussion between tutor and learner. You will need to provide a variety of short passages of writing for this activity.

## Activity 1.1

When we read something, we should be able to answer a number of questions about it. Read the pieces of writing provided by your tutor and answer the following questions for each piece:

- ◆ What type of writing is it?
- ◆ Where does it come from?
- ◆ Who is it written for?
- ◆ Why was it written?

Again, either individually or as part of the group, learners can be asked to undertake an activity that examines the purpose of various passages of writing. It is important for the tutor to lead the discussion in this activity and prompt learners where necessary. You should explain to learners that sometimes one piece of writing can have more than one purpose.

## Activity 1.2

What is the purpose of a piece of writing?

Discuss with your group examples of a variety of pieces of writing using the table below to help the discussion. Try to add at least two further examples in the box against each purpose.

PURPOSE	EXAMPLE
<b>to explain</b> tells you how something works	leaflet explaining how to open a bank account car manual
<b>to persuade</b> to change or influence your thinking	advert/poster junk mail magazines
<b>to describe</b> when a person, place or object are described	travel brochure family letter
<b>to entertain</b> for enjoyment	books/comics jokes

<b>to inform</b> when you are given the facts	newspaper formal letter
<b>to instruct</b> how to do something	recipe medicine bottle directions to the bus station

### Activity 1.3

For each learner, make up a large envelope containing a number of pieces of paper with one from the following list written on each piece:

newspaper article	tv guide	poem	safety notice
house for sale	wordsearch	joke	advert
recipe	health leaflet	ingredient list	manual
story	play	wedding invitation	e-mail
memo	postcard	letter of complaint	poster
course leaflet	report	football programme	fire instructions

Give each learner six **different coloured** cards with one of the following words on each:

PERSUADE	ENTERTAIN	INFORM
DESCRIBE	EXPLAIN	INSTRUCT

Ask the learner to sort the content of their envelopes under each of the headings.

### Additional Activity

Once they have decided what goes where, ask learners to complete the table below showing what was in their envelope.

PERSUADE	ENTERTAIN	INFORM	DESCRIBE	EXPLAIN	INSTRUCT

Once they have completed this, you should discuss whether or not certain pieces of writing may have had more than one purpose.

## Activity 1.4

In this activity, learners are asked to imagine themselves in the position of the parent of a school child. The parent receives the following letter about a school trip and must read and extract the key information from it.

Crawley Primary School  
London Road  
Edinburgh  
EH7 9PQ

3 May 2004

Mrs J Gordon  
123 Drystone Place  
Edinburgh  
EH7 1AB

Dear Mrs Gordon

### **Trip to Aberfeldy**

Your son's class is planning a residential trip to Aberfeldy on Monday 21 June 2004 for four nights. We will be staying on a farm in a self-catering bunkhouse.

Depending on the weather we are planning to go horse riding and cycling as well as doing some walking in the countryside. If the weather is too bad we will go swimming at the local pool.

The cost of this will be £50 which can be paid in instalments of £10.

I would be grateful if you could complete the tear-off slip below and return by Friday 21 May.

Yours sincerely

Mrs V Singh  
Class teacher

----- ✂ -----

I give permission for my son/daughter..... to attend.

I do not give permission for my son/daughter..... to attend.

Signature of parent/guardian: .....

Date: .....

Learners should be asked to answer the following questions in relation to the above letter:

1. Why do you think this letter was written?
2. Why was this trip planned?
3. What activities will the pupils be doing while they are away?
4. Does this letter tell you everything you need to know?  
Give a reason for your answer.

### **Activity 1.5**

For this activity, learners are asked to read the article below and answer the questions that follow.

**TENORCA** is a beautiful resort which has something for all the family. Hotel Cala is situated in a quiet part of the resort — ideal for those seeking a relaxing holiday lazing around on the beach which is a few metres from the hotel. The beach is a natural paradise of palm trees, golden sands and clear blue waters and is rarely crowded.

When you've had enough of sea, sand and sun, there are several bars and restaurants nearby to sample the local food and wine. Grilled fish is a local speciality.

A short bus journey will take you into Tenorca itself where you will find a more lively atmosphere. Here you can shop till you drop in the many shops or bargain with the locals in the markets in the old town to get the best deal on your souvenirs. Later you can dance the night away to the latest music in the local bars, discos and night clubs.

Whether your idea of a holiday is sunning yourself on the beach or doing a spot of sightseeing, Tenorca promises you an unforgettable holiday experience.

Now answer the following questions about the article on Tenorca:

1. What is the purpose of this piece of writing?
2. What does the resort of Tenorca have to offer the holidaymaker?
3. Who is the holiday suitable for?
4. Would this piece of writing persuade you to go on this holiday?  
Give a reason for your answer.

## Outcome 2 — Writing

### ‘Produce simple written communication’

The skills being assessed in Outcome 2 are:

- ◆ The ability to use techniques that are appropriate for the writer’s purpose and audience.
- ◆ The ability to present all essential ideas/information.
- ◆ The ability to use a discernible structure.
- ◆ The ability to use spelling, punctuation and sentence structures which are sufficiently accurate to convey meaning.

Further information:

Tasks used for assessment should be familiar and routine for the learner. Texts produced may include short letters, articles, diaries, log books, etc. The texts may also include images such as simple maps, sketches, diagrams or photographs in support of the written text. These images may be selected by the learner from a bank of images or created by the learner.

What the learner must be able to do to achieve this Outcome:

- ◆ Produce one brief written communication or thematically linked pieces (of 100 words) which convey several items of information and/or a discernible personal opinion.
- ◆ Use a format, layout and word choice which are appropriate to the purpose and target readership.
- ◆ Use simple vocabulary and sentence structures — errors may be present, but these should not prevent the reader from grasping the meaning.

The purpose of any writing session should be to motivate learners to write for a **variety of purposes** relevant to their own **personal experience** and contexts.

Learners might be encouraged to work on some of the following activities as part of a class activity, depending upon their individual preference:

- ◆ Filling in simple forms, such as: registering at a health centre, job application, holiday booking form, bank account form.
- ◆ Letter to school to explain absence or to request information.
- ◆ Letter of complaint to local council complaining about litter for example.
- ◆ Report — eg an entry in an accident book at work.
- ◆ Postcard — from a holiday destination, or for a competition entry for example.
- ◆ Memo — this could relate to a communication in a work setting.

Learners should also be encouraged to consider the different reasons there may be for writing things down. Activity 2.1 below may be used for this purpose.

## **Activity 2.1**

In this activity, you should explain to learners that although people write less and less these days, writing is still an important form of communication.

Discuss with the group the reasons for writing.

Your discussion should consider a variety of reasons. Consider the following list as part of your discussion and try to add to the list:

- ◆ Help to remember — appointments, e-mail address, phone number.
- ◆ Permanent record — holiday booking confirmation, bank account form.
- ◆ Personal — diary, letter to family abroad.
- ◆ Formal communication — wedding invitation, job application letter.

## **Activity 2.2**

Writing a note.

Learners should be asked to write a note based on one of the following:

- ◆ Note to teacher explaining your son/daughter's absence from school.
- ◆ Note to a member of the family explaining you will be late home from work.
- ◆ Note about a telephone message for your boss.
- ◆ Note to a friend to say you cannot babysit on Saturday night.

Remember that you should start your note with a capital letter and end with a full-stop.

Make sure you have included all the information!

Who? What? Where? When?

## Activity 2.3

Writing a letter.

A letter is more formal than a note and requires a certain layout. The letter can be used for a variety of purposes, eg a letter of complaint, a letter of application, a letter to give information, or a letter to persuade.

Here are some pointers:

- ◆ Start with your own address in the top right hand corner of your page.
- ◆ Put the date below.
- ◆ Begin your letter with ‘Dear \_\_\_\_\_’ (put in the name), or ‘Dear Sir, Madam’.
- ◆ Begin your letter on the next line.
- ◆ Start a new line each time you change the subject.
- ◆ End your letter ‘Yours sincerely’ (if you know the person’s name) or ‘Yours faithfully’ (if you do not know the name).
- ◆ Now sign your name.
- ◆ Print your name under your signature.

Now check out the letter below. Has it been written correctly?

45 Hill Green  
Glasgow  
GA2 9PW  
29 May 2004

Dear Mrs Jones

I am writing to ask if Mary can be allowed time off school next month.

I would like to take her on holiday for 2 weeks from Friday 18 June. I know this is not the school holidays but it is the only time I can get off work.

I hope she can be excused classes. I will make sure she catches up on her school work.

Yours sincerely

Mrs Amy Reid

Now try writing a formal letter of your own. The letter you write could be about one of the following:

- ◆ An application for a job.
- ◆ A complaint to the council about the litter in your area.
- ◆ A letter to school explaining your son/daughter's absence.
- ◆ A letter to your local college asking for information about a course.

## Activity 2.4

Writing to persuade.

Remember we looked at the article on the holiday resort of Tenorca? This was written to persuade people to go there on holiday.

Look back at the article. Discuss with your group how the writer tried to persuade readers. You might consider the words used, the layout, audience, and graphics.

Now you try!

Design a leaflet for a tourist attraction in your town.

Or

Design your own holiday advert for a magazine.

Or

Design a poster advertising a service.

Or

Design a poster for a pressure group.

Once you have completed your poster, share your ideas with the rest of the group and see how successful you have been. Were you able to **persuade**? Did you include all the information?

(This will require the learner to think carefully about the purpose and the audience. It will involve making sure all the information needed is presented in a way which can be understood and making sure that the meaning is clear.)

## Outcome 3 — Speaking

### ‘Produce and respond to simple oral communication’

The specific skills being assessed in Outcome 3 are:

- ◆ The ability to use an appropriate range of spoken language structures.
- ◆ The ability to convey simple information, opinions or ideas.
- ◆ The ability to attempt to sequence and link information, opinions or ideas.
- ◆ The ability to take account of the situation and audience during delivery.
- ◆ The ability to respond to others, taking account of their contributions.

What the learner must be able to do to achieve this Outcome:

- ◆ Take part in one simple interaction with one or more people – this will usually be a discussion on a simple topic.
- ◆ Convey information, opinions or ideas at a simple level.
- ◆ Sequence and link to present information clearly and in order (eg giving directions in the correct order).
- ◆ Use simple vocabulary in an appropriate register. Vocabulary and sentence structures will allow the speaker’s meaning to be conveyed.
- ◆ Speak loudly enough for listeners to hear.
- ◆ Use appropriate non-verbal conventions (eg making appropriate eye contact or gestures, pausing at appropriate points).
- ◆ Respond to others appropriately (eg by repeating information, or asking/answering questions).
- ◆ The individual presentation should last for a minimum of two minutes with additional time for questions.

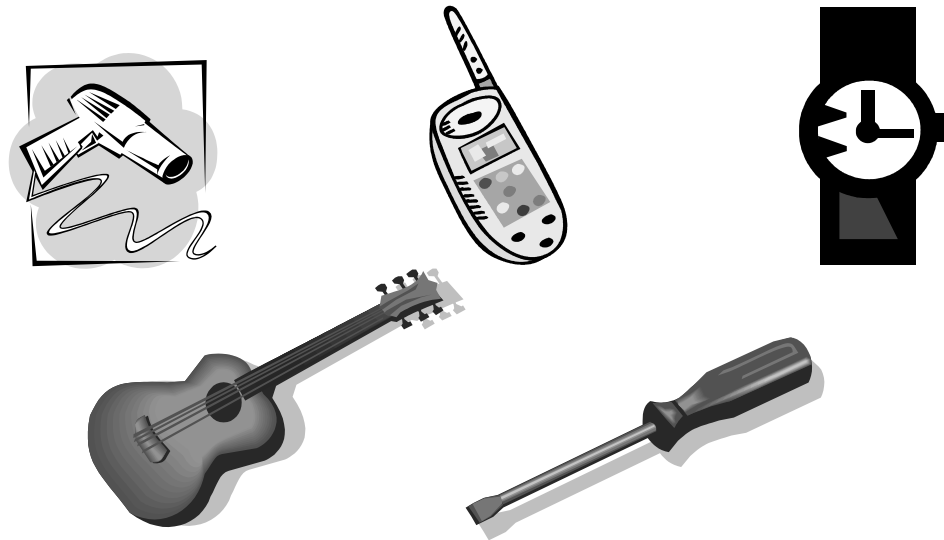
Speaking (or oral communication) is an area which many students find difficult, particularly in a group situation. Reading, Writing and Talking can and should be integrated where possible. For example, the group discussions about Tenorca could be used here to provide evidence of Talking.

However, additional simple activities such as those over the page can help increase confidence.

### Activity 3.1

Picture cards.

In this activity you should create a selection of cards showing pictures of everyday items which are clearly recognisable. Learners should be asked to choose one at random and describe it to a partner.



### Activity 3.2

On the spot game.

Each learner draws a piece of paper out of the hat. Each piece of paper has a situation on it which they must explain to the others in the group, eg:

- ◆ give directions to a tourist to get to the centre of town
- ◆ persuade a friend to take part in a charity event
- ◆ explain to a child how to cross the road safely
- ◆ give instructions on how to operate a piece of equipment, eg washing machine, photocopier, gas boiler

### Activity 3.3

Are you listening?

For this activity, you should prepare a series of taped short announcements, eg train destinations, flight information, cinema listings, football scores, top ten records, television adverts.

Learners should be chosen one at a time and asked to listen to the taped announcement and then relay the messages heard to their classmates.

### Activity 3.4

Role play.

Learners should work in pairs for this activity. They should be asked to act out some of the following common scenarios:

- ◆ Making a doctor's appointment for yourself, or for your partner, or for your child.
- ◆ Phoning for a plumber to fix a leak.
- ◆ Dealing with an customer in a shop who is returning a faulty item.
- ◆ Going for an interview for a job.
- ◆ Ordering a carry out Chinese meal.
- ◆ Phoning to make an appointment at the hairdresser.
- ◆ Making enquiries about joining a local sports centre.

### Activity 3.5

Making a telephone call.

Learners should be asked to discuss in their group what makes an effective phone call. In their discussion they should consider the following:

<b>Stage</b>	<b>Remember</b>
Preparing to make a call	Think what you want to say and make sure you have a pen and a piece of paper. If you are using a mobile phone, remember to make sure there is enough credit.
Making the call	Dial the number carefully, say who you are and who you would like to speak to (you may get through to a receptionist).
Continuing the call	Repeat who you are. Say why you are phoning. Make sure you get all the details you require. Write them down so that you don't forget anything.
Ending the call	Thank the person politely and say goodbye.

### Activity 3.6

Learners should be asked to practise making a phone call to a partner for this activity. They can choose from the following role-play situations:

- ◆ Telephone 999 to report an accident.
- ◆ Telephone a travel agent to ask for a brochure to be sent.
- ◆ Telephone the doctor to make an appointment.
- ◆ Telephone your work to say you will not be in today.
- ◆ Telephone the cinema to find out what film is on next Friday evening.
- ◆ Telephone the airport to check the arrival time of the flight from Paris.

(Remind the learners that they have to say who, what and where.)

### Activity 3.7

This activity relies on the previous activities relating to Tenorca. As a group, the learners should be encouraged to discuss:

- a) a holiday a student has experienced
- or
- b) a dream holiday they would like to go on should they win the lottery

They should be encouraged to build a talk using simple sentences. The talk should last for a minimum of two minutes, and they should be prepared to answer questions the group might have about what they have just heard.

Learners should be encouraged to think about:

- ◆ WHERE they went/would go
- ◆ WHEN they went/would go
- ◆ WHO they went/would go with
- ◆ HOW they got/would get there
- ◆ WHAT they did /would do when they got there

They should plan the talk and think about the order in which they would say things. They should also try to anticipate the questions they might get at the end.

**Core Skills — Access 3**  
**Numeracy**

# Numeracy — Access 3

## Introducing learners to the Unit

As a way of introducing learners to this Unit, it may be helpful to begin with a discussion about the importance of numbers and the role they play in everyday life.

### Introductory activity

This exercise can be done as a group, or it might be done on an individual basis with discussion taking place between tutor and learner.

Ask the group or the individual to think of a variety of important facts and figures and why it might be useful or important to know the numbers involved in each case. The following examples could be used to help the discussion:

#### **Fact 1**

Your waist measurement is 70 centimetres and your shoe size is 9.

Why is this useful to know? If you want to buy a new pair of trousers or a skirt or a new pair of shoes you need to know what size you are.

#### **Fact 2**

The distance between Glasgow and Edinburgh is 45 miles, and the distance between Glasgow and Aberdeen is 141 miles.

Why is this useful to know? If you are travelling between two places it helps to know the distance between them as it allows you to estimate the time it will take to travel. It also helps if you can compare the distance to a journey you have done before.

#### **Fact 3**

Cooking instructions for the temperature settings in a gas oven and an electric oven are different.

Why is this useful to know? If you are cooking by gas or electricity it is important to choose the correct setting/temperature to ensure that the food you put in the oven is cooked properly.

## Outcomes 1, 2 and 3 — Using graphical information

**‘ Interpret and communicate simple graphical information in everyday contexts’**

The specific skills being assessed in Outcomes 1, 2 and 3 are:

- ◆ The ability to read and use a simple scale.
- ◆ The ability to extract information from three of the following: simple tables, graphs, charts or diagrams.
- ◆ The ability to communicate information in simple tables, graphs, charts or diagrams as appropriate.

Further information:

Timetables or schedules, catalogue or brochure tables, or distance/time graphs would provide suitable contexts.

Tables, graphs, charts and diagrams should be selected and designed for the candidate to complete. In the case of a graph involving a scale, the scale should be given. Communication in simple diagrams should only involve two dimensional shapes.

What the learner must be able to do to achieve these Outcomes:

- ◆ Read and use a simple scale on which the unnumbered divisions are clear (eg a scale with 0 and 10 labelled and five subdivisions).
- ◆ Use the scale on a measuring instrument to measure to the nearest marked number or use the scale on a graph to determine quantities to the nearest marked number.
- ◆ Extract information from three of the following:
  - A simple table containing two categories of information.
  - A simple chart (eg a bar or pie chart).
  - A simple graph (eg a line graph with a simple scale).
  - A simple diagram (eg a diagram of a 2D shape, a 2D representation of a familiar 3D shape, nets of cube and cuboid).
- ◆ Communicate information by inserting information to complete partially completed tables, graphs, charts or diagrams.

# Outcome 1

## ‘Read and use a simple scale’.

The following exercises are examples of activities that might be used for the first Outcome.

### Activity 1.1

Provide the learner with a ruler which clearly shows a division for each centimetre. Time should be taken here to explain to learners how to use the ruler, starting their measurement from the zero mark rather than the edge of the ruler.

Now provide each learner with a sheet of paper displaying lines of varying length (as in the example below). Ask each learner to measure each line and write beside it how many centimetres long it is, to the nearest centimetre.

1.	_____
2.	_____
3.	_____
4.	_____

Now provide the learners with a blank page and ask them to use their rulers to draw a number of straight lines of specified lengths, writing the length beside each.

## Activity 1.2

This exercise involves measuring quantities in a simple recipe for pancakes. The learners should be given a note of the quantity of each ingredient required for the recipe (as shown below) and should be asked to measure each quantity using the appropriate measuring tool. This should be done as a practical exercise (and might be integrated with a Home Economics Unit where appropriate).

### **Ingredients**

75g of plain four

1 egg

125 ml of milk

Oil for frying

## Outcome 2

‘Extract simple graphical information’

### Activity 2.1

The table below shows the finishing position of a football team over the past five seasons.

Season	Finishing position	Points for season
2000/01	4 <sup>th</sup>	63
2001/02	3 <sup>rd</sup>	75
2002/03	5 <sup>th</sup>	65
2003/04	6 <sup>th</sup>	61
2004/05	6 <sup>th</sup>	64

Now, use the information in the table to answer the following questions:

- What was their finishing position in 2002/03?
- In which season did they win their lowest number of points?
- In which season did they have their best finishing position?
- How many points did they have in season 2004/05?

The next table gives the finishing positions in the top half of the Scottish Premier League in season 2004/05.

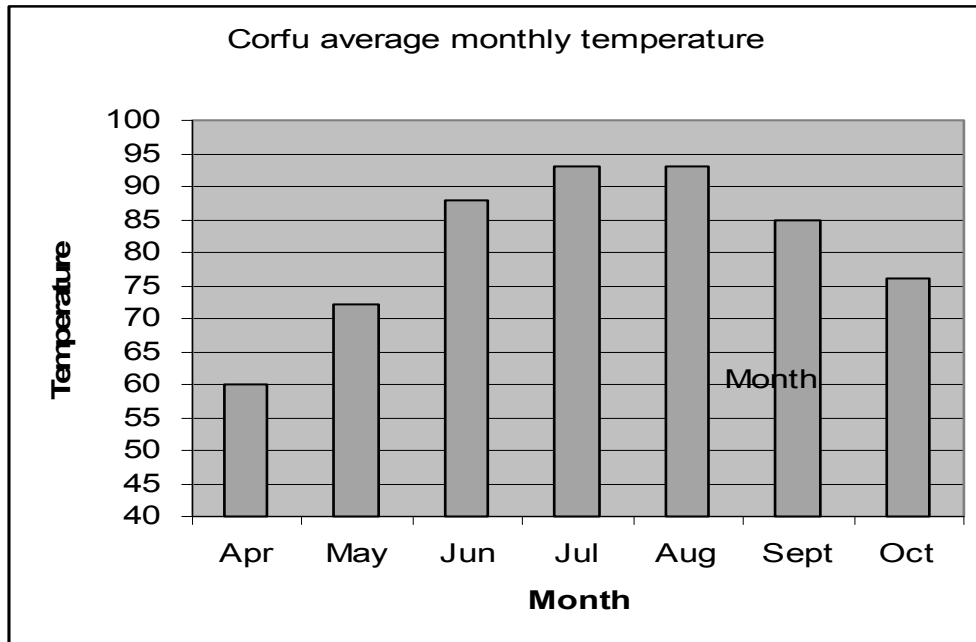
Team	Played	Points
Rangers	38	93
Celtic	38	92
Hibernian	38	61
Aberdeen	38	61
Hearts	38	50
Motherwell	38	48

Use the information in the table to answer the following questions:

- Which team had the lowest number of points?
- Which two teams had the same number of points?
- How many more points did Celtic score than Hearts?
- Which team finished with 93 points?

## Activity 2.2

The bar chart below gives the average temperature each month in Corfu between April and October.



Using the information in the chart above, answer the following questions:

- If you like the temperature to be over 90 degrees, in which months should you go to Corfu on holiday?
- If you like the temperature to be less than 80 degrees, in which months should you go to Corfu on holiday?
- What month has the lowest temperature?
- What is the average temperature in September?

## Activity 2.3

The timetable shown below gives the departure and arrival times on Sundays for the train journey between Aberdeen and Inverness.

Aberdeen	1000	1312	1523	1714	2100
Dyce	1009	1322	1532	1727	2109
Inverurie	1021	1334	1547	1739	2121
Insch	1033	1346	1559	1751	2133
Huntly	1049	1402	1615	1807	2149
Keith	1105	1416	1633	1823	2203
Elgin	1127	1441	1657	1847	2227
Forres	1141	1455	1711	1901	2241
Nairn	1152	1506	1730	1912	2252
Inverness	1210	1523	1750	1930	2310

Using the information in the timetable on the previous page, answer the following questions:

- a) What time does the train that leaves Aberdeen at 1312 arrive in Inverness?
- b) If you get on the train in Huntly at 1807, what time will you arrive in Nairn?
- c) What station will the train arrive in at 1141?
- d) How long does it take the train to travel from Inverurie to Insch?

## Outcome 3

**‘Communicate simple graphical information’**

### Activity 3.1

A car’s overall stopping distance can be calculated by adding the driver’s thinking distance to the car’s braking distance. The faster a car is travelling the further the stopping distance will be.

Can you complete the chart below by filling in the column titled overall stopping distance?

<b>Speed</b>	<b>Thinking distance</b>	<b>Braking distance</b>	<b>Overall stopping distance</b>
<b>20 miles per hour</b>	6 metres	6 metres	
<b>30 miles per hour</b>	9 metres	14 metres	
<b>40 miles per hour</b>	12 metres	24 metres	
<b>50 miles per hour</b>	15 metres	38 metres	
<b>60 miles per hour</b>	18 metres	55 metres	
<b>70 miles per hour</b>	21 metres	75 metres	

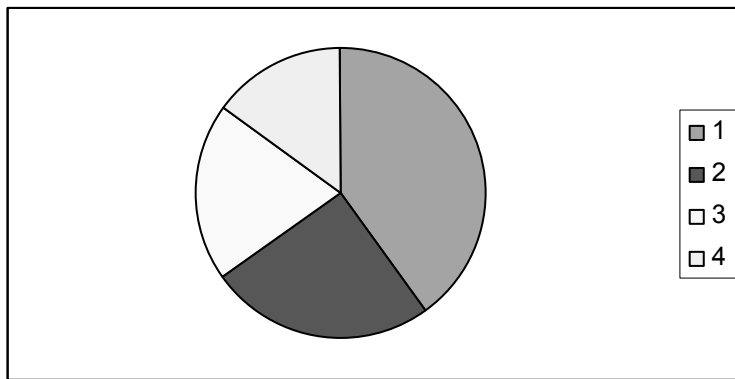
You may also want to ask candidates to measure and draw these distances on a large sheet of paper using a scale of one centimetre per metre.

### Activity 3.2

Four people stand for election as the local councillor for your ward. The percentage of the votes won by each candidate is as follows:

Mr Jones	40%
Miss Smith	25%
Mr James	20%
Mrs Brown	15%

Can you label the pie chart below to show which segment relates to each candidate?



## Outcome 4 — Using number

**‘Apply a range of basic numerical skills in everyday contexts’**

The specific skills being assessed in Outcome 4 are:

- ◆ The ability to work with basic numerical notation.
- ◆ The ability to decide on the numerical operations to be carried out.
- ◆ The ability to carry out simple numerical calculations.

Further information on the general skill:

Contexts might involve money, time, length, weight, area, volume, or temperature. Tasks will be familiar and will involve only a small number of obvious variables.

Calculations will be carried out mentally, in writing or by calculator. Candidates may give exact or approximate answers as appropriate. Candidates should check their answers although evidence of checking is not required.

What the learner must be able to do to achieve this Outcome:

- ◆ Use notations for all of the following: whole numbers, decimals, percentages, fractions, simple ratios (eg 1:3, 5:1).
- ◆ Decide which operations are to be carried out (eg add and multiply) and the order in which to carry them out. At this level, candidates must show that they can carry out calculations involving two operations.
- ◆ Carry out all of the following calculations: addition, subtraction, multiplication, division.
- ◆ Carry out calculations involving one of the following: whole number percentages, unitary fractions (eg  $\frac{1}{4}$ ), simple formulae in words.

### Activity 4.1 (addition and subtraction)

- a) If you buy three items in a newsagent's shop costing 46p, 20p and 29p, how much will you have to pay in total?
- b) If you buy four items from the chemist, two from the baker, and 16 from the grocer, how many items would you have to carry home?
- c) A concert was attended by 256 women, 178 men and 43 children. How many people attended the concert in total?
- d) In a pub quiz, Alan got 24 questions correct, 14 questions wrong and there were two questions he didn't answer. How many questions was Alan asked all together?
- e) There are three different fruit loaves in the baker's shop. Loaf A costs £1.30, loaf B costs £1.05 and loaf C costs £1.11. Put the loaves in order of cost, most expensive first, and then find out the difference between the most expensive and the cheapest.
- f) If you buy an item from the baker's shop that costs £1.35 and you give the shop assistant a £2 coin, how much change will you get back?
- g) There is a special offer on bread in the baker's shop. Normally one loaf will cost 65p but under the special offer you can buy two loafs for 90p. How much will you save if you pay the special offer price compared to the normal price for two loaves?
- h) You buy 24 rolls at the baker's and on the way home you deliver six of the rolls to a neighbour and another eight to a friend. How many rolls do you have left when you get home?

### Activity 4.2 (multiplication and division)

- a) There are 24 hours in one day. How many hours are there in one week?
- b) If you buy six strawberry tarts costing 30p each, how much will you have to pay?
- c) Four friends go to the cinema and they pay £3.50 each for their tickets. How much do they have to pay altogether?
- d) For Christmas, John bought a 250g box of chocolates for his mother. He then bought the same for his grandmother, his sister, his cousin, his girlfriend and an aunt. What was the total weight of the chocolates he bought?
- e) If a car travelled 180 miles in four hours, how far did it travel in one hour?
- f) Susan baked 48 sausage rolls for her party and they were all eaten. If the eight people at the party all ate the same number of sausage rolls, how many did each person eat?
- g) Street lights are placed 12 metres apart along a street. How many street lights will there be on a street that is 192 metres long?
- h) If 56 tickets are sold at the cinema in one night and a total of £280 is collected by the ticket office, how much did each ticket cost?

### Activity 4.3 (simple fractions and percentages)

- a) Fruit scones normally cost 25p each. A local baker's shop is selling packets of six fruit scones at 10% off their normal price. How much will the packet of six cost?
- b) If you take 525 empty cans to the recycling point and find that only 60% of them are made of the correct type of metal, how many cans will be recycled?
- c) You buy 500g of frozen prawns but they lose 25% of their weight when they are defrosted. How much do the defrosted prawns weigh?
- d) Shade  $\frac{3}{4}$  of the following shape:


- e) Shade  $\frac{5}{8}$  of the following shape:


- f) Shade  $\frac{5}{16}$  of the following shape:


## Additional activities

### Activity 1

You are leaving for a holiday in Europe and have decided to take money in Pounds Sterling and Euros. However, you also hope to visit Prague (Czech Republic) and Budapest (Hungary).

1. Fill in the conversion table below using the following exchange rates:

1 UK Pound = 1.5 Euros (€)

1 Euro = 30 Czech Koruna (CZK)

1 Euro = 250 Hungarian Forints (HUF)

UK Pounds (£)	Euros (€)	Czech Koruna (CZK)	Hungarian Forints (HUF)
5			
10			
20			
50			
100			
200			

2. You are told the average tip in Prague is 10%. Look at these two bills and work out how big a tip you should leave.

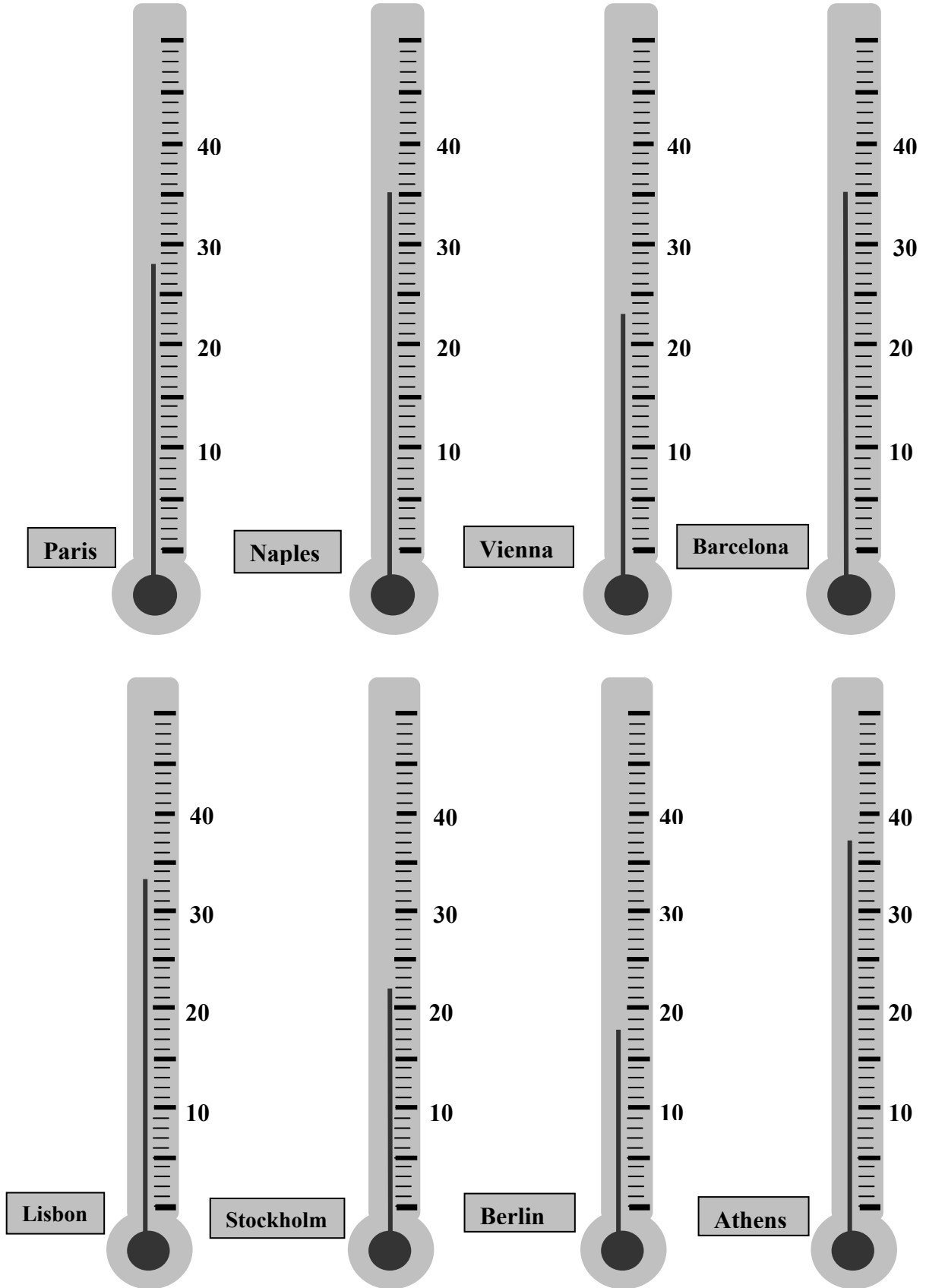
Bar Schwek	
<b>Pilsner</b>	<b>50</b>
Pilsner	50
Café	40
Coke	30
Coke	30
200CZK	

Wenceslas	
TOT 1100 CZK	

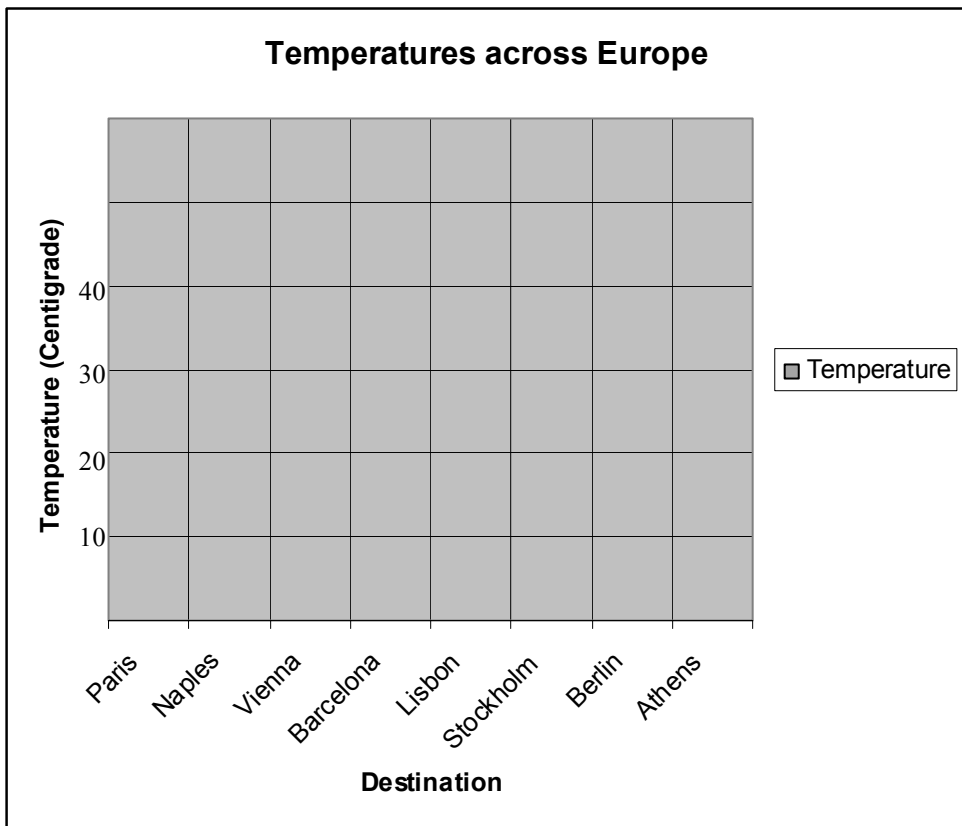
10% tip would be

10% tip would be

3. Look at the temperature readings for each of the cities below. Fill in the table and complete the bar chart over the page.



Destination	Temperature (Centigrade)
Paris	
Naples	
Vienna	
Barcelona	
Lisbon	
Stockholm	
Berlin	
Athens	



## Activity 1 — Answers

You are leaving for a holiday in Europe and have decided to take money as Pounds Sterling and Euros. However, you also hope to visit Prague (Czech Republic) and Budapest (Hungary).

- Fill in the conversion table below using the following exchange rates:

1 UK Pound = 1.5 Euros (€)

1 Euro = 30 Czech Koruna (CZK)

1 Euro = 250 Hungarian Forints (HUF)

UK Pounds (£)	Euros (€)	Czech Koruna (CZK)	Hungarian Forints (HUF)
5	7.5	225	1875
10	15	450	3750
20	30	900	7500
50	75	2250	18750
100	150	4500	37500
200	300	9000	75000

- You are told the average tip in Prague is 10%. Look at these two bills and work out how big a tip you should leave.

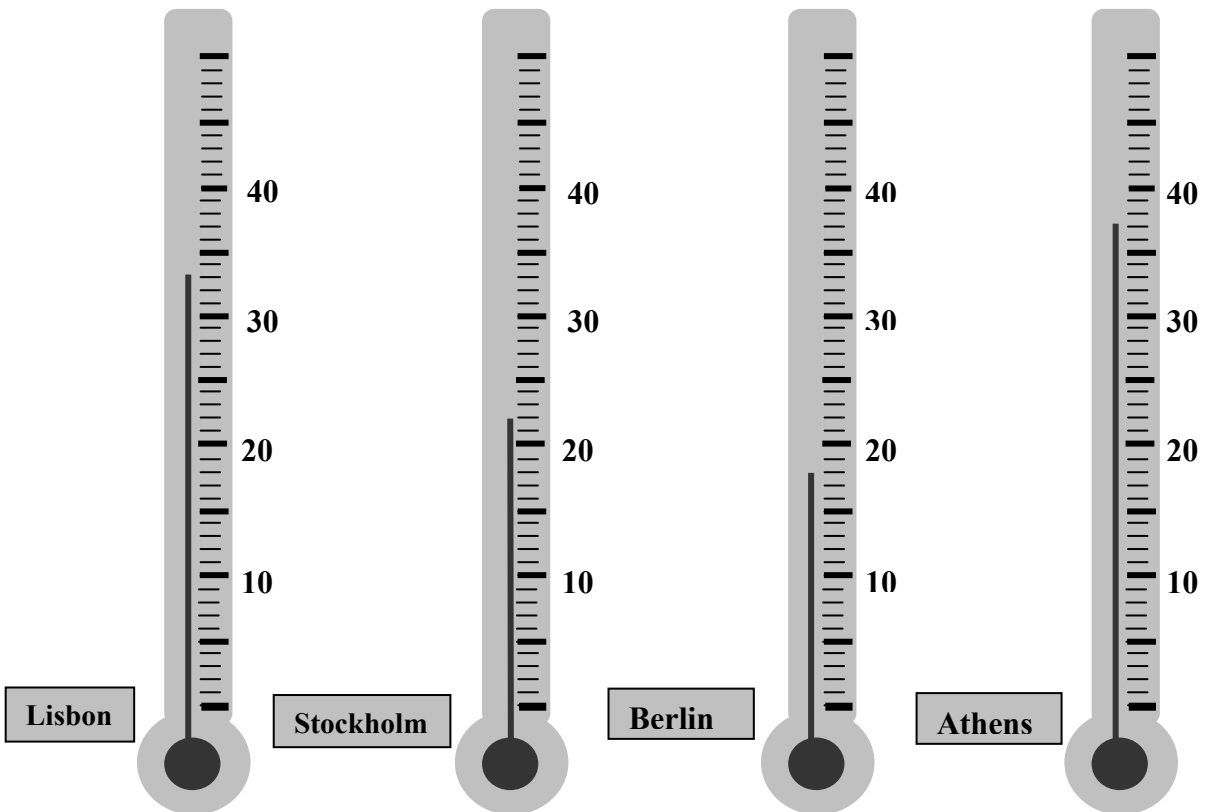
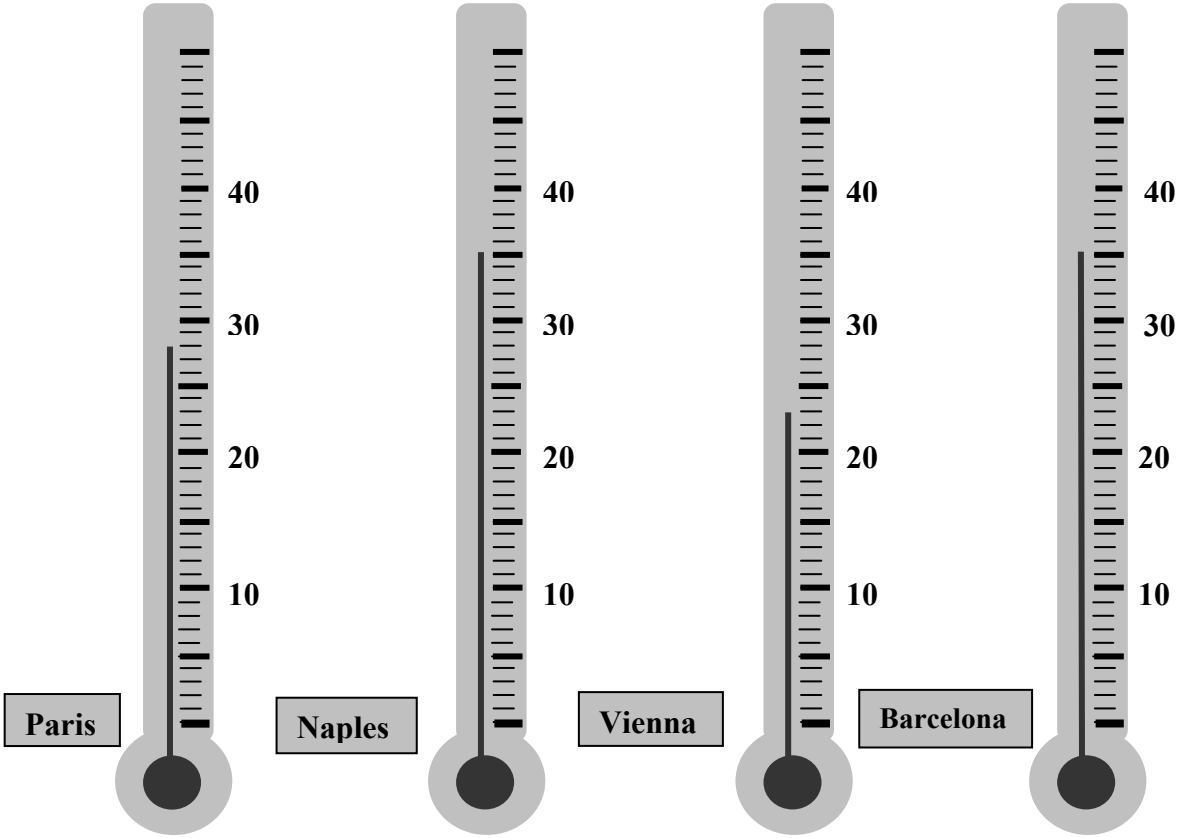
Bar Schwek	
<b>Pilsner</b>	<b>50</b>
Pilsner	50
Café	40
Coke	30
Coke	30
200CZK	

Wenceslas	
TOT 1100 CZK	

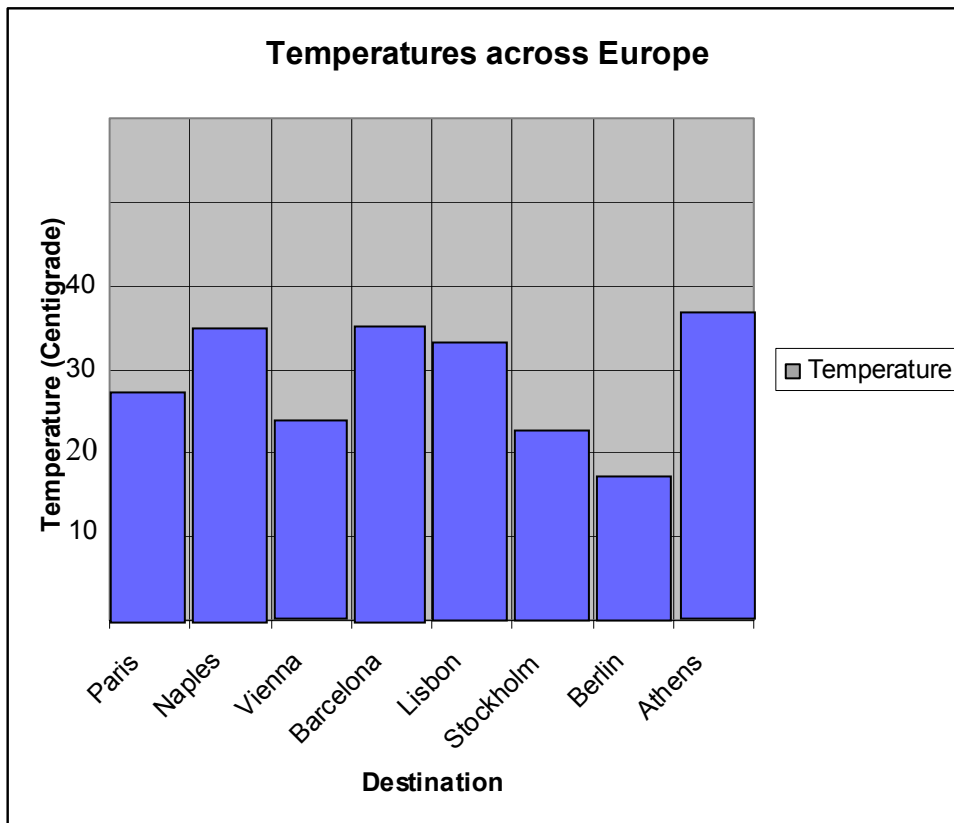
<b>10% tip would be</b>
20 CZK

<b>10% tip would be</b>
110 CZK

3. Look at the temperature readings for each of the cities below. Fill in the table and complete the bar chart over the page.



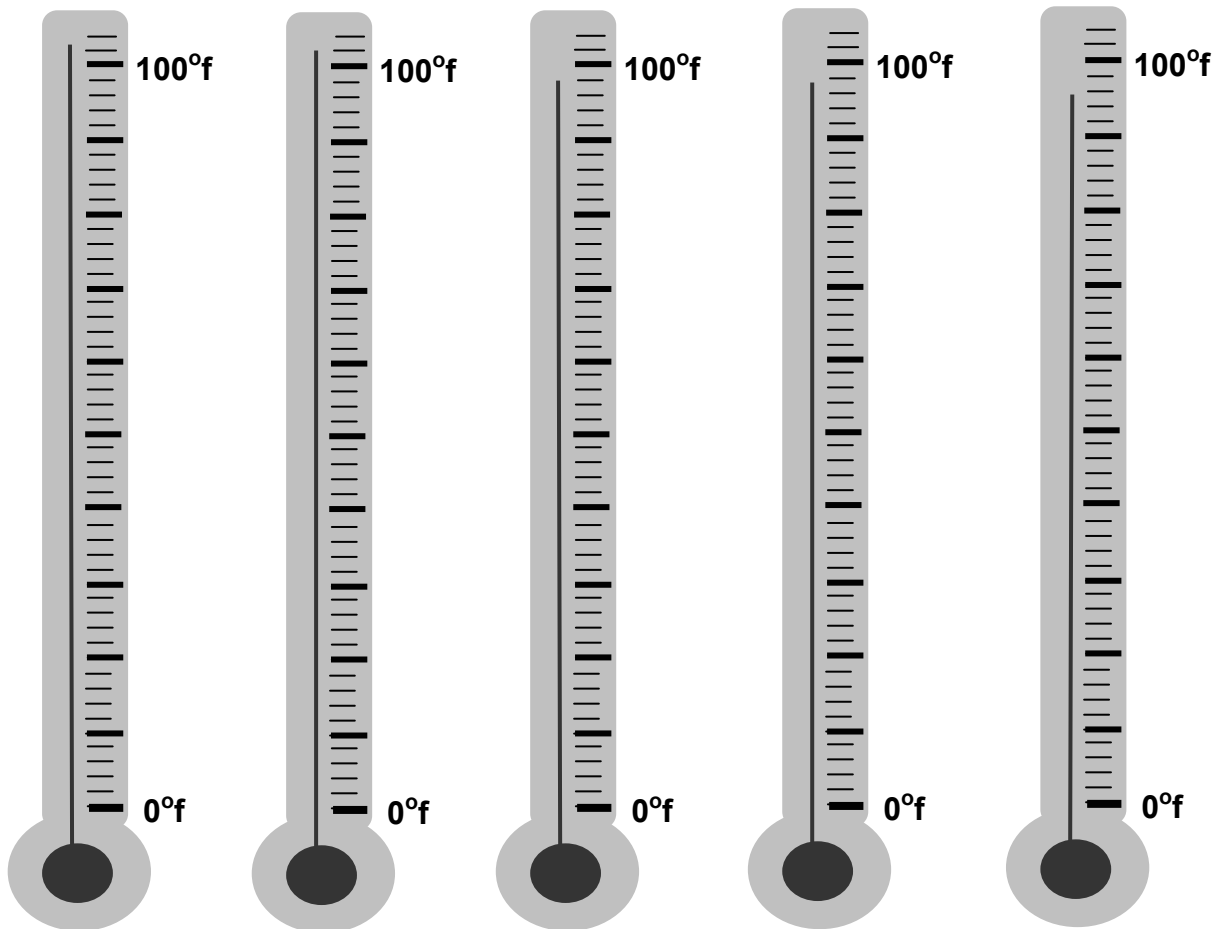
Destination	Temperature (Centigrade)
Paris	28
Naples	35
Vienna	23
Barcelona	35
Lisbon	33
Stockholm	22
Berlin	18
Athens	37



## Activity 2

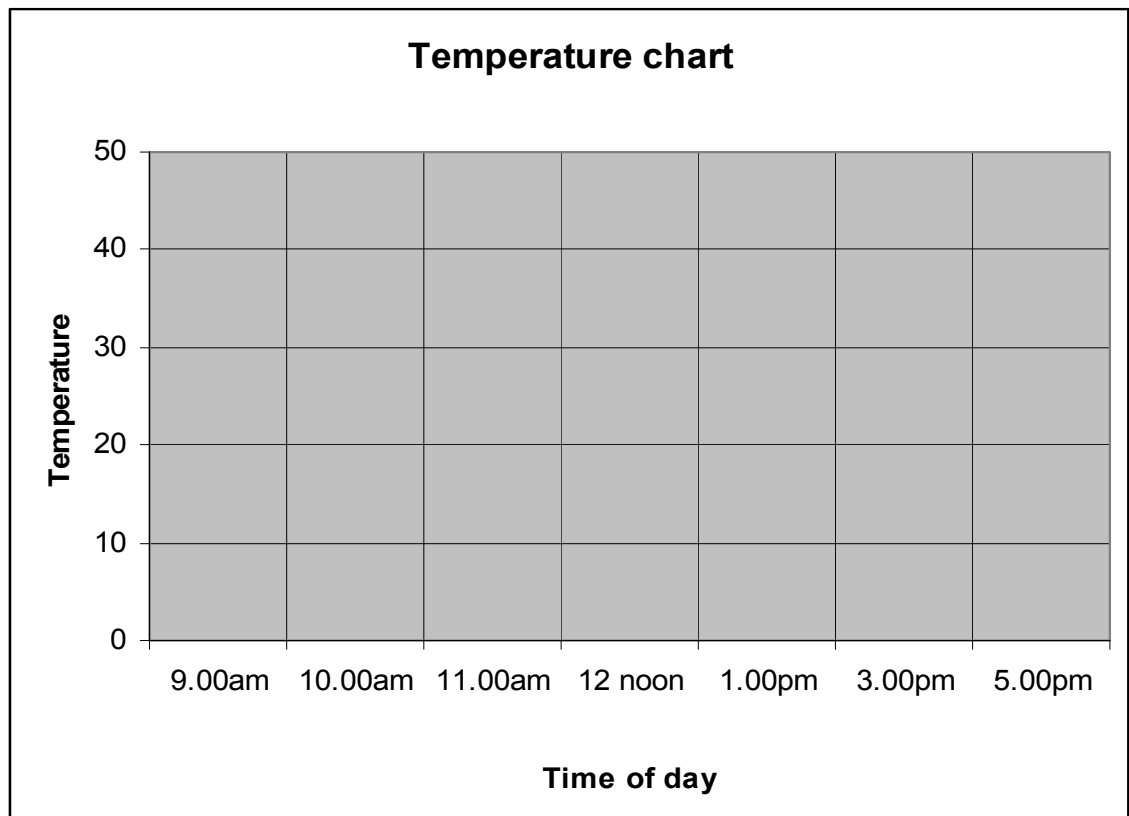
Your child is unwell and the doctor asks you to keep a record of their temperature every hour, through the day until they call back. The doctor gives you a blank graph to record the temperatures on and says to call if the temperature goes above 37° Centigrade.

1. Read off the five thermometer readings shown below.



<b>9.00 am</b>	<b>11.00 am</b>	<b>1.00 pm</b>	<b>3.00 pm</b>	<b>5.00 pm</b>
.....°f	.....°f	.....°f	.....°f	.....°f

2. Unfortunately the graph only has a temperature scale in Centigrade. Convert these readings to Centigrade by (show your working):
- a) subtracting 32 from the Fahrenheit reading
  - b) multiplying by 5
  - c) dividing your answer by 9
3. Plot these points on the graph below.



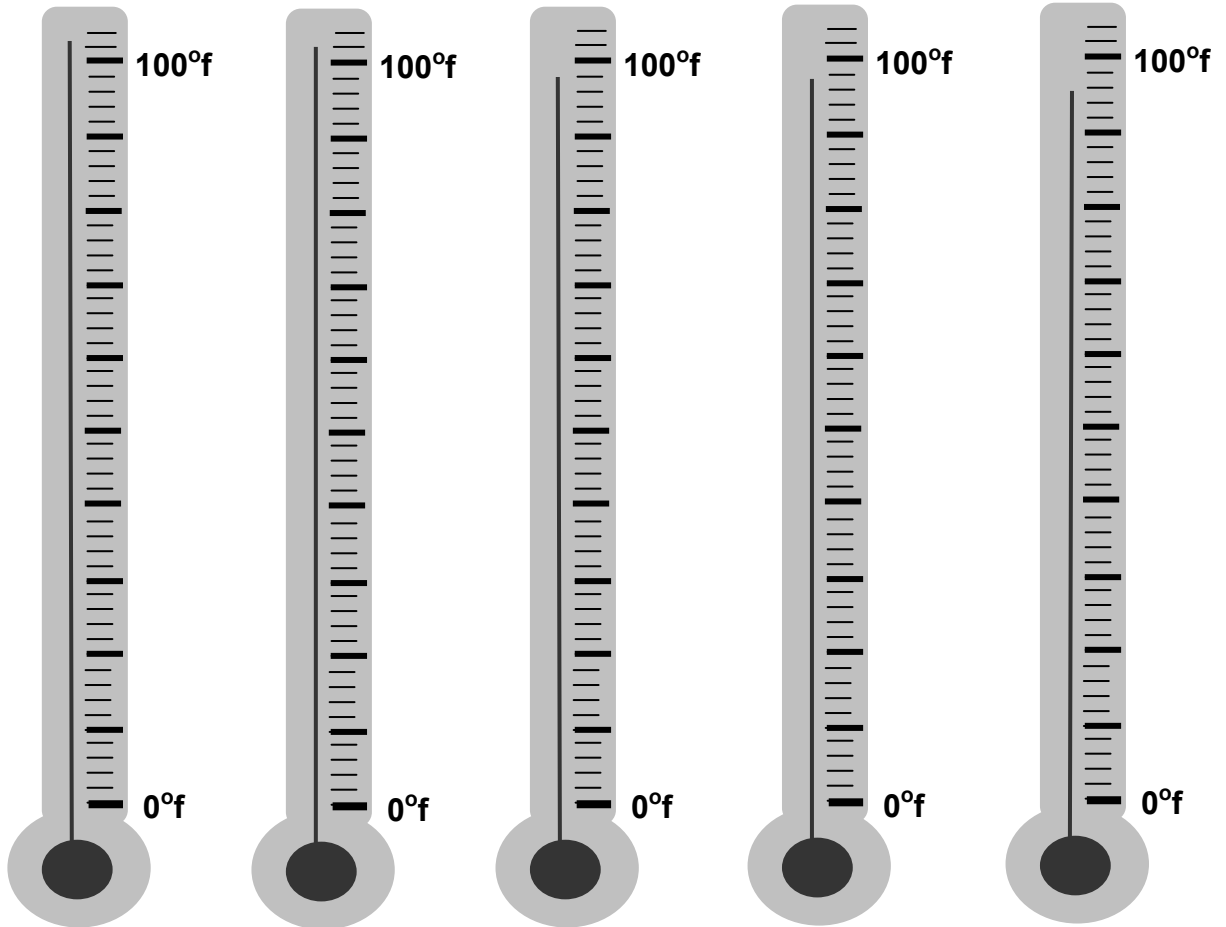
4. Use the same method to complete the gaps in the chart below.

Celsius °C	Fahrenheit °F
0 °C	32.0 °F
1 °C	33.8 °F
2 °C	35.6 °F
3 °C	37.4 °F
4 °C	39.2 °F
	41.0 °F
6 °C	42.8 °F
7 °C	44.6 °F
8 °C	46.4 °F
9 °C	48.2 °F
	50.0 °F
15 °C	59.0 °F
20 °C	68.0 °F
25 °C	77.0 °F
	86.0 °F
40 °C	104 °F
50 °C	122 °F
60 °C	140 °F

## Activity 2 — Answers

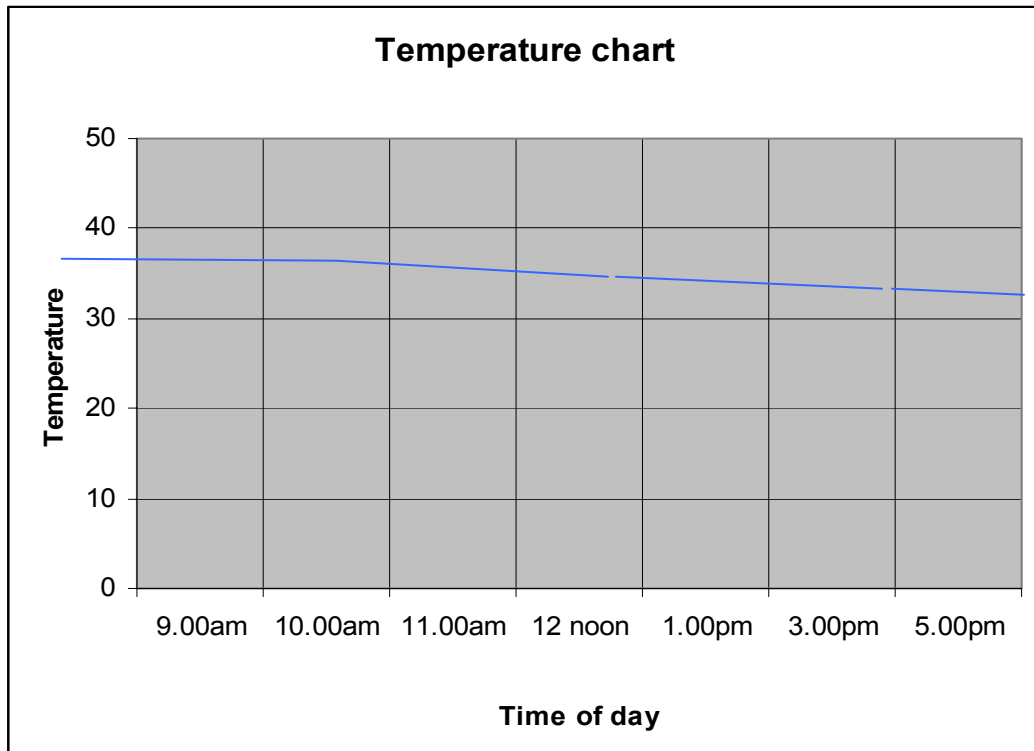
Your child is unwell and the doctor asks you to keep a record of their temperature every hour, through the day until they call back. The doctor gives you a blank graph to record the temperatures on and says to call if the temperature goes above 37° Centigrade.

1. Read off the five thermometer readings shown below.



<b>9.00 am</b>	<b>11.00 am</b>	<b>1.00 pm</b>	<b>3.00 pm</b>	<b>5.00 pm</b>
103 .....°f	102 .....°f	98 .....°f	97 .....°f	96 .....°f

2. Unfortunately the graph only has a temperature scale in Centigrade. Convert these readings to Centigrade by (show your working):
- a) subtracting 32 from the Fahrenheit reading
  - b) multiplying by 5
  - c) dividing your answer by 9
3. Plot these points on the graph below.

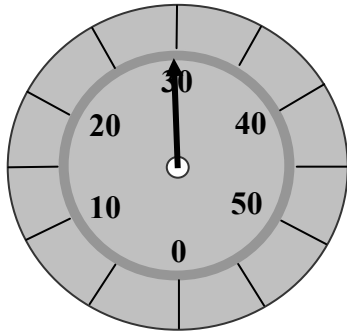


4. Use the same method to complete the gaps in the chart below.

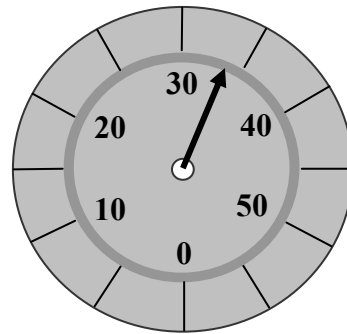
Celsius °C	Fahrenheit °F
0 °C	32.0 °F
1 °C	33.8 °F
2 °C	35.6 °F
3 °C	37.4 °F
4 °C	39.2 °F
5	41.0 °F
6 °C	42.8 °F
7 °C	44.6 °F
8 °C	46.4 °F
9 °C	48.2 °F
10	50.0 °F
15 °C	59.0 °F
20 °C	68.0 °F
25 °C	77.0 °F
30	86.0 °F
40 °C	104 °F
50 °C	122 °F
60 °C	140 °F

### Activity 3

- You have decided to check your tyres at the local garage. Here are the pressure gauge readings for each of your tyres. Write down the readings in the table below.

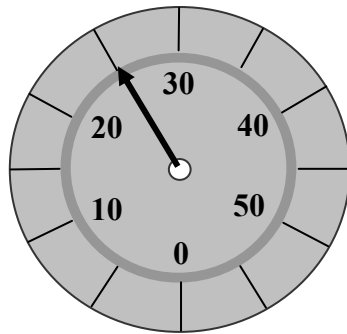


**Front right**

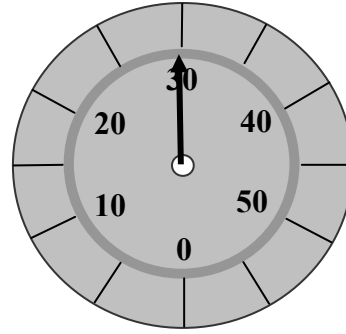


**Front left**

**Units —**  
Pounds per  
square inch  
(psi)



**Rear right**



**Rear left**

Front right	Front left	Rear right	Rear left

2. Look at the table showing the recommended pressures for your car. Which tyres need to have their pressure increased?

Front right	Front left	Rear right	Rear left
34 psi	34 psi	34 psi	34 psi

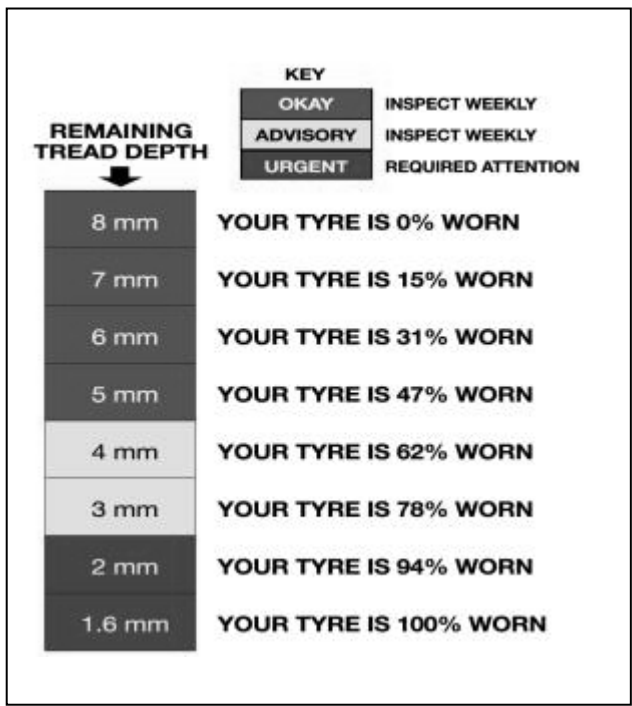
**Tyre(s):**

3. While you are there you decide to check the tread depth on each tyre. Here are the measurements in millimetres.

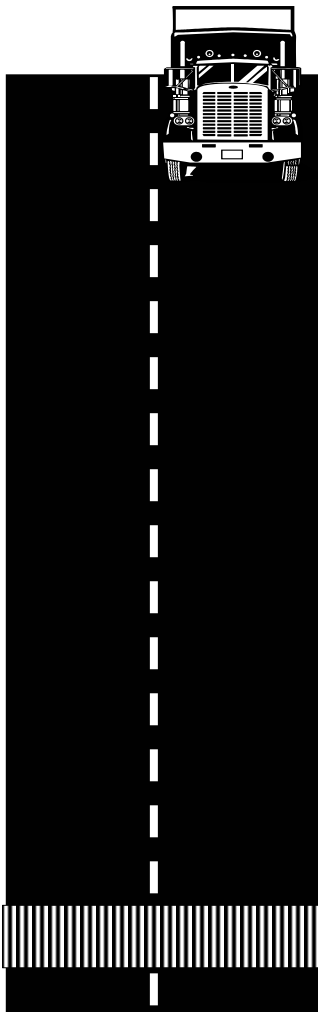
Front right	Front left	Rear right	Rear left
6 mm	5 mm	3 mm	2 mm

Look at the chart below. Which wheel should you be thinking about changing?

**Wheel(s):**



5. Look at the diagram and information below. You are travelling at 30 mph in wet conditions. What will be the stopping distance of the car in these circumstances?



**Remember wet and icy conditions double the stopping distances.**

**Stopping distance**

<b>SPEED</b>	<b>THINKING DISTANCE</b>	<b>BRAKING DISTANCE</b>	<b>OVERALL STOPPING DISTANCE</b>
<b>20 mph</b>	6 metres	6 metres	<b>12 metres</b>
<b>30 mph</b>	9 metres	14 metres	<b>23 metres</b>
<b>40 mph</b>	12 metres	24 metres	<b>36 metres</b>
<b>50 mph</b>	15 metres	38 metres	<b>53 metres</b>
<b>60 mph</b>	18 metres	55 metres	<b>73 metres</b>
<b>70 mph</b>	21 metres	75 metres	<b>96 metres</b>

## Activity 4

### Cheap flights

Many people now go onto the internet to find cheap deals on flights abroad. Can you think of some of the low cost airlines now operating out of Scotland? Here are some of their websites:

**www.easyjet.com**  
**www.bmibaby.com**  
**www.ryanair.com**  
**www.globespan.com**

1. Choose three destinations in Europe and fill in the table comparing the information you have obtained.

<b>Airline</b>	<b>Departing airport</b>	<b>Destination</b>	<b>Cost</b>

To use these airlines you have to reach the airport first.

2. Fill in the table below by finding out how far each airport is from your home and how long it would take you to get there.

<b>Airport</b>	<b>Distance from home</b>	<b>Time taken to get there</b>

## Activity 5

### Currency

Here is a list of the 10 countries which recently joined the European Union.

1. Can you complete the table showing the name of their currency and the current rate of exchange with the Pound (£) and the Euro (€).

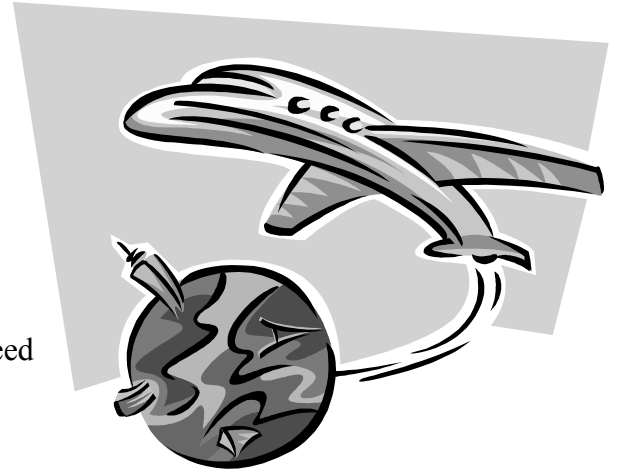
<b>Country</b>	<b>Currency</b>	<b>£</b>	<b>€</b>
<b>Cyprus</b>			
<b>Czech Republic</b>			
<b>Estonia</b>			
<b>Hungary</b>			
<b>Latvia</b>			
<b>Lithuania</b>			
<b>Malta</b>			
<b>Poland</b>			
<b>Slovakia</b>			
<b>Slovenia</b>			

## Activity 6

### Health

A recent newspaper article said that heart disease is a major worry in Scotland. Many local health centres now offer a check up where they:

- ◆ check your blood pressure
- ◆ measure your height and weight
- ◆ calculate your BMI body index
- ◆ arrange any medication/injections you may need



### Blood pressure

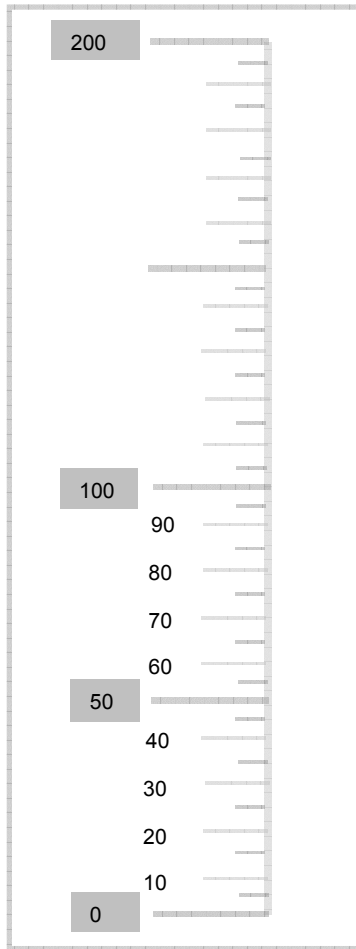
When a doctor or nurse measures your blood pressure they take two readings:

- ◆ One when the heart muscle is **relaxed**.
- ◆ One when the heart muscle is **contracting**, ie pumping.

Sometimes a digital meter is used and sometimes the older inflatable cuff equipment. The pressure is read off from a mercury scale similar to the one on a thermometer.



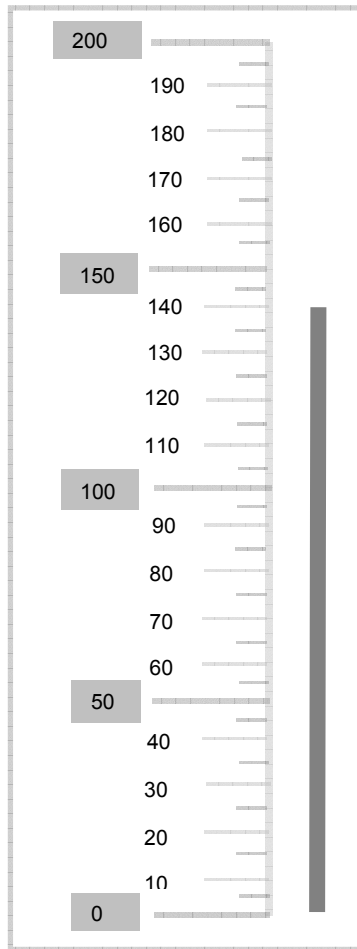
Have a look at the scale below and answer these questions:



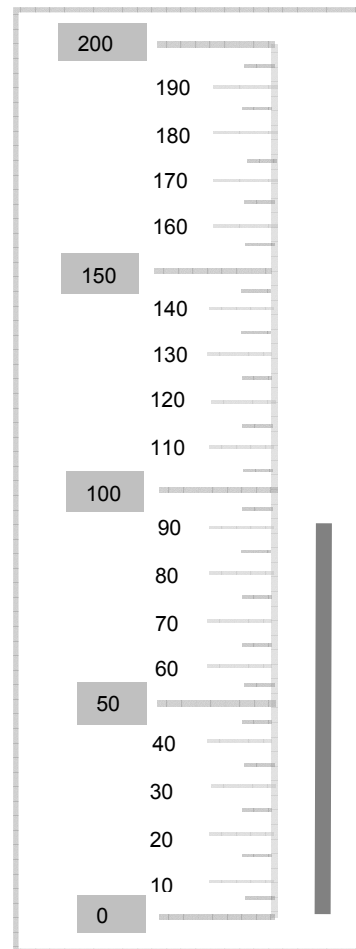
mmHg =  
millimetres  
Mercury

1. What is the starting point for the scale?
2. What is the highest point on the scale?
3. Draw in the reading on the scale from 100 mmHg up to 200 mmHg.

4. Now have a look at the readings below. What do you think they are?



**Heart muscle  
contracting**



**Heart muscle  
relaxed**

**Contracting/relaxed**

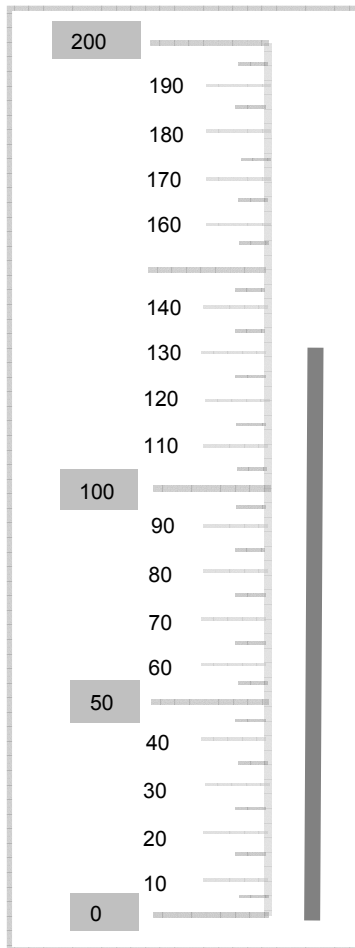
/

The healthy ranges for blood pressures vary slightly, but in general:

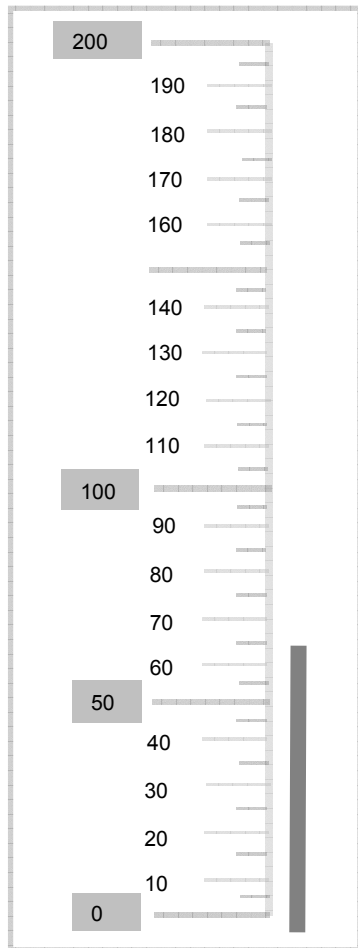
- ◆ normal blood pressure is around 130/80
- ◆ borderline is between 130/80 and 160/95
- ◆ high blood pressure is 160/95 and over

5. Which range would these readings be within?

6. Have a look at these other blood pressure readings for two different people. What are they? Decide whose readings are healthy and whose are not.



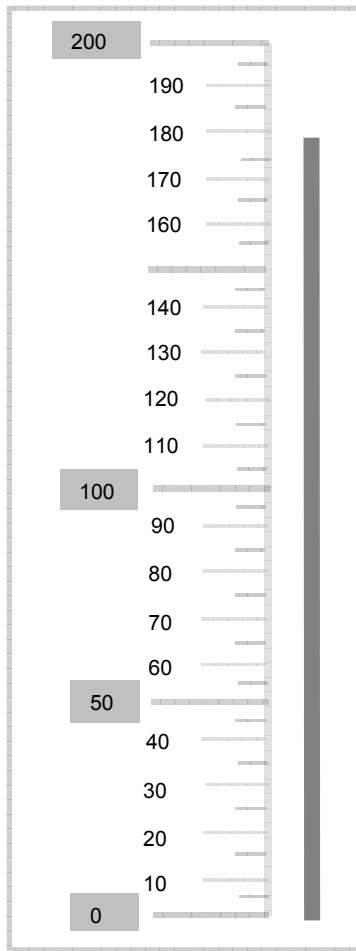
**Person A**  
**Blood Pressure**



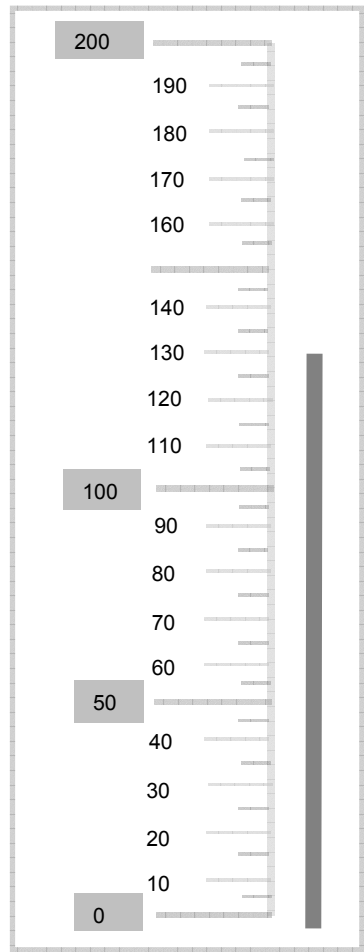
**Heart muscle contracting**

**Heart muscle relaxed**

**Contracting/relaxed**  
/



**Person B**  
**Blood Pressure**



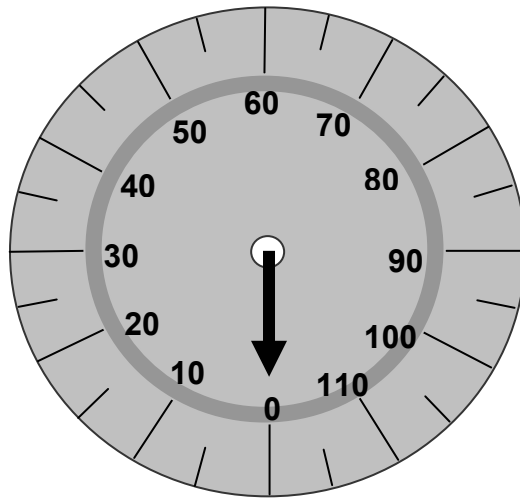
**Heart muscle contracting**

**Heart muscle relaxed**

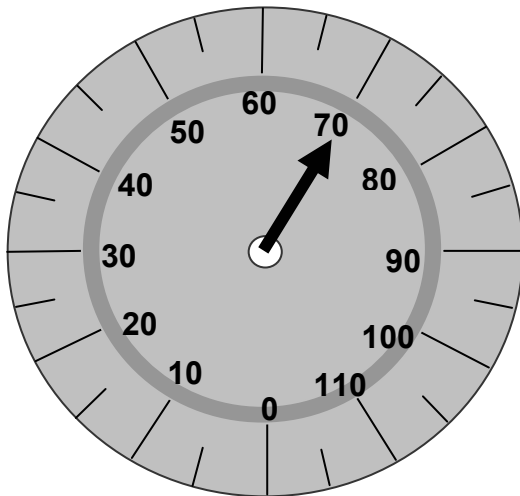
**Contracting/relaxed**  
/

7. Which person should be taking more care of himself/herself?

The doctor then checks your height and weight. First they ask you to step on the scales. Have a look at the scale below and ask yourself the same questions as before.

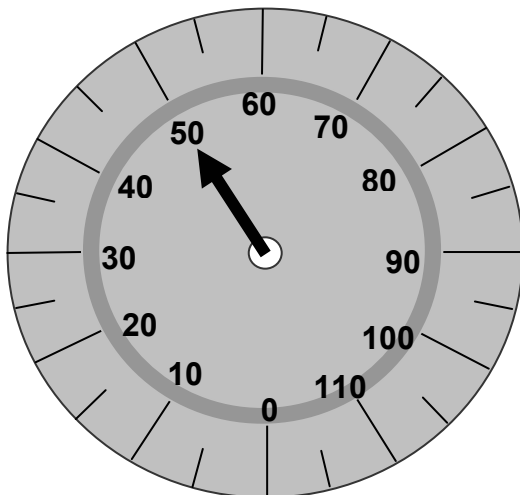


- 8. What is the starting point for the scale?
- 9. What is the highest point on the scale?
- 10. What do these people weigh?



**Person A  
Weight**

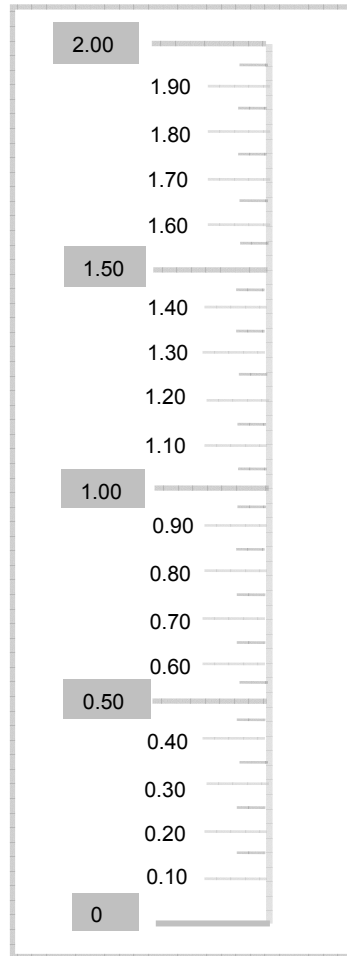
..... kg



**Person B  
Weight**

..... kg

**Metres**

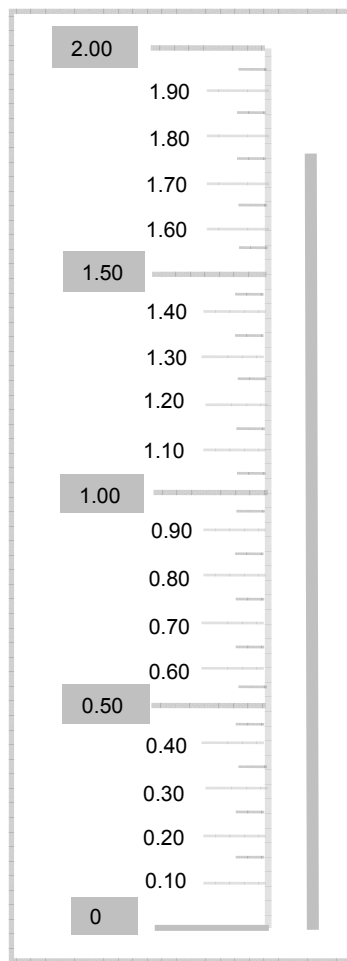


Your height is measured in metres using a wall scale.  
Look at the scale below and answer the same four questions.

11. What is the starting point for the scale?
12. What is the highest point on the scale?
13. What does each mark on the scale stand for?
14. What units does the scale measure in?

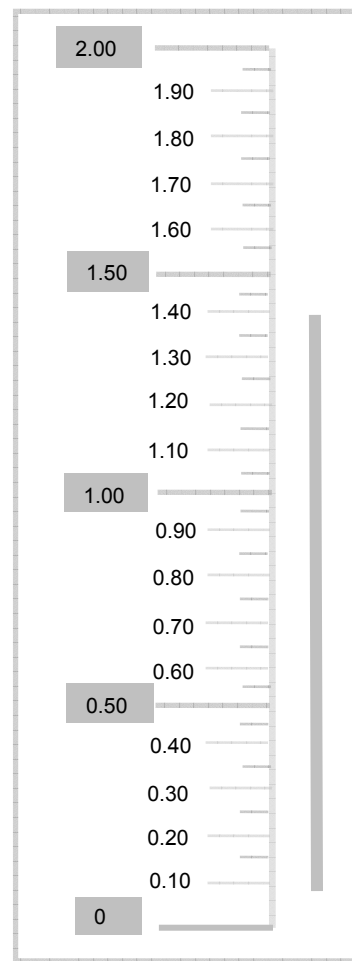
15. What are the two heights indicated on the scales below?

**Metres**



**Person A**  
..... metres

**Metres**



**Person B**  
..... metres

16. Now find a partner and measure each other's height.

**Name** .....

..... metres

**Name** .....

..... metres

Health checks may also involve working out an idea of your healthy weight range from your weight and your height known as the Body Mass Index (BMI).

**You can calculate your BMI by following these three steps:**

- 1. Work out your height in metres and multiply the figure by itself.**
- 2. Measure your weight in kilograms.**
- 3. Divide the weight by the height squared (ie the answer to Q1.) For example you might be 1.6m (5 feet 3 inches) tall and weigh 65kg (10 stone). The calculation would then be:**

$$1.6 \times 1.6 = 2.56.$$

**BMI would be 65 divided by 2.56 = 25.39.**

17. Calculate the BMI for persons A and B.

18. The other way is to read the information from a table like the one below. Read off the information for persons A and B. How accurately do the readings match your calculations?

WEIGHT lbs	100	105	110	115	120	125	130	135	140	145	150	155	160	165	170	175	180	185	190	195	200	205	210	215	
kgs	45.5	47.7	50.0	52.3	54.5	56.8	59.1	61.4	63.6	65.9	68.2	70.5	72.7	75.0	77.3	79.5	81.8	84.1	86.4	88.6	90.9	93.2	95.5	97.7	
HEIGHT in/cm																									
5'0" - 152.4	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	
5'1" - 154.9	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	36	37	38	39	40	
5'2" - 157.4	18	19	20	21	22	22	23	24	25	26	27	28	29	30	31	32	33	33	34	35	36	37	38	39	
5'3" - 160.0	17	18	19	20	21	22	23	24	24	25	26	27	28	29	30	31	32	32	33	34	35	36	37	38	
5'4" - 162.5	17	18	18	19	20	21	22	23	24	24	25	26	27	28	29	30	31	31	32	33	34	35	36	37	
5'5" - 165.1	16	17	18	19	20	20	21	22	23	24	25	25	26	27	28	29	30	30	31	32	33	34	35	35	
5'6" - 167.6	16	17	17	18	19	20	21	21	22	23	24	25	25	26	27	28	29	29	30	31	32	33	34	34	
5'7" - 170.1	15	16	17	18	18	19	20	21	22	22	23	24	25	25	26	27	28	29	29	30	31	32	33	33	
5'8" - 172.7	15	16	16	17	18	19	19	20	21	22	22	23	24	25	25	26	27	28	28	29	30	31	32	32	
5'9" - 175.2	14	15	16	17	17	18	19	20	20	21	22	22	23	24	25	25	26	27	28	28	29	30	31	31	
5'10" - 177.8	14	15	15	16	17	18	18	19	20	20	21	22	23	23	24	25	25	26	27	28	28	29	30	30	
5'11" - 180.3	14	14	15	16	16	17	18	18	19	20	21	21	22	23	23	24	25	25	26	27	28	28	29	30	
6'0" - 182.8	13	14	14	15	16	17	17	18	19	19	20	21	21	22	23	23	24	25	25	26	27	27	28	29	
6'1" - 185.4	13	13	14	15	15	16	17	17	18	19	19	20	21	21	22	23	23	24	25	25	26	27	27	28	
6'2" - 187.9	12	13	14	14	15	16	16	17	18	18	19	19	20	21	21	22	23	23	24	25	25	26	27	27	
6'3" - 190.5	12	13	13	14	15	15	16	16	17	18	18	19	20	20	21	21	22	23	23	24	25	25	26	26	
6'4" - 193.0	12	12	13	14	14	15	15	16	17	17	18	18	19	20	20	21	22	22	23	23	24	25	25	26	

BASED ON CLINICAL GUIDELINES ON THE IDENTIFICATION, EVALUATION, AND TREATMENT OF OVERWEIGHT AND OBESITY IN ADULTS. NHLBI OBESITY EDUCATION INITIATIVE. NATIONAL INSTITUTES OF HEALTH, 1998.

- Underweight (BMI less than 18.5)
- Healthy weight (BMI 18.5 to 24.9)
- Overweight (BMI 25 to 29.9)
- Obese (BMI 30 to 39.9)
- Extremely obese (BMI 40 and above)

Now you might like to try this for yourself or others.

## Activity 7

### Speed

Many people speed dangerously when driving. Road safety campaigns are continually reminding us to be aware of how fast we are travelling in different circumstances.

Look at the table below showing stopping distances at different speeds.

1. Complete the column showing the overall stopping distance.

<b>SPEED</b>	<b>THINKING DISTANCE</b>	<b>BRAKING DISTANCE</b>	<b>OVERALL STOPPING DISTANCE</b>	<b>WET &amp; ICY CONDITIONS</b>
<b>20 mph</b>	6 m	6 m		
<b>30 mph</b>	9 m	14 m		
<b>40 mph</b>	12 m	24 m		
<b>50 mph</b>	15 m	38 m		
<b>60 mph</b>	18 m	55 m		
<b>70 mph</b>	21 m	75 m		

What else can affect your braking distance?

### **Tyres**

Worn tread and wrong tyre pressures can also increase your car's braking distances. Make sure you regularly check your tyre pressure is correct and that you have the required amount of tread on each tyre.

### **Road Conditions**

Different types of weather affect roads differently, such as wet or icy roads, mud, oil and loose chippings can all be dangerous. In these types of road condition you will take twice as long to stop and should leave twice the usual space between you and the car in front. After long dry spells, even light rain can make the road surface extremely slippery.

2. Fill in the stopping distance for wet and icy roads.

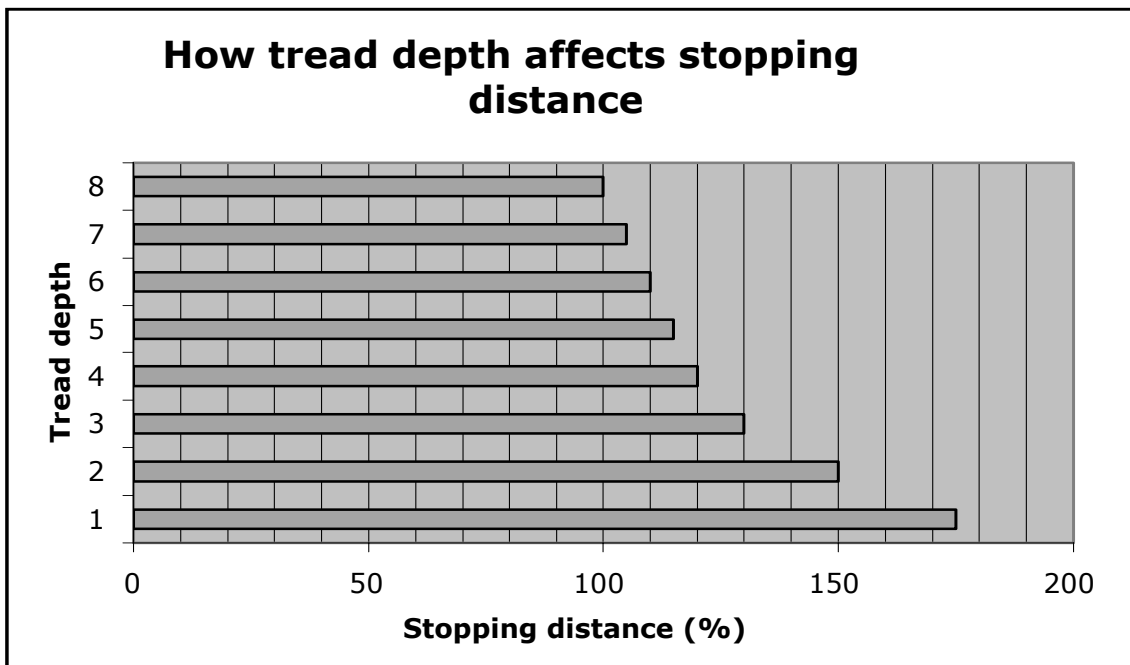
### Tyre tread measurements

Tyres are checked by taking three readings across the width of the tyre, starting with the outside tread depth measurement.

Maximum tyre tread	Minimum legal limit
8 mm	1.6 mm*

\*This should apply to the centre 75% of the tyre breadth.

As a rough guide a millimetre (1mm) of tyre tread lasts from approximately 1,000–4,000 miles, dependent upon driving style, road and weather conditions.



The chart above shows how braking distance changes with tyre tread depth in wet road conditions. The stopping distance is shown as a percentage.

100% represents the braking distance with 8mm tyre tread depth on a wet road.

3. By how many percent would your stopping distance increase if your tyre tread had worn down to a depth of 2mm?
4. If your stopping distance was 20 metres with 8mm of tyre tread on a wet road, what would the distance be when it had worn down to 2mm?

You need to think through the following steps:

**If the tyre tread is 2mm, then the stopping distance will be 150% of the stopping distance with 8mm tyre tread depth.**

**Remember the stopping distance with 8mm tread depth was 20 metres. The calculation you need to do is:**

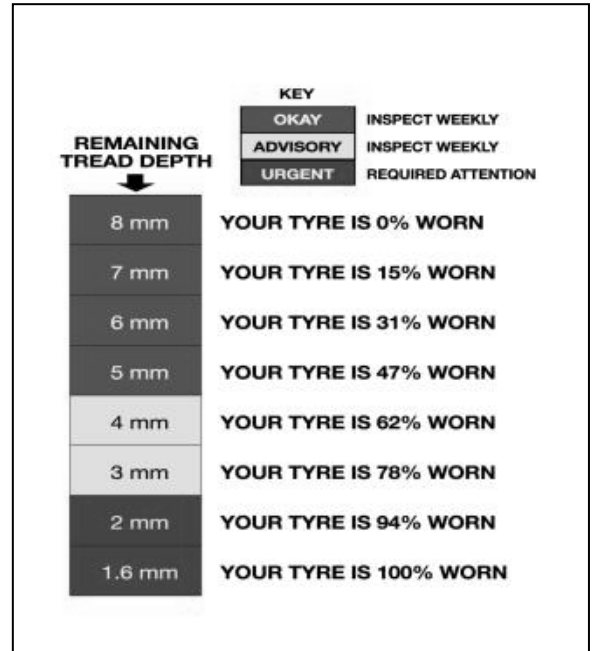
**$150\% \times 20 \text{ metres} = 30 \text{ metres}$  (The new stopping distance at 2mm tread depth).**

5. What would your stopping distance be if it had only worn down to 5mm?
6. Can you complete the table below using the method above?

<b>Tyre tread depth</b>	<b>Stopping distance when wet (metres)</b>
1	
2	30
3	
4	
5	
6	
7	
8	20

Look at the picture on the right.

7. At what tyre tread depth should you start inspecting your tyres weekly?
  
8. At what depth do they require attention?



**Correct Inflation**

A correctly inflated tyre, in relation to the load, should show the tread contact even with the road.

The law requires tyres to be inflated to a pressure appropriate for the application. Refer to tyre pressure displayed on vehicle.

**Illegal Tyres Penalty Warning**

For every tyre offence there is a maximum fine of £2,500, with discretionary disqualification and a compulsory driving licence endorsement of three penalty points.

9. Can you complete the table below?

Number of faulty tyres	Maximum Fine (£)	Penalty Points
1	2,500	3
2		
3		
4		