Scottish Centre for Financial Education

Learning
+Teaching
Scotland

Talk Money, Talk Maths

Financial education through mathematics

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Foreword

The Scottish Centre for Financial Education was established in 2002 to promote financial education in all primary and secondary schools and across a wide range of curriculum and subject areas. Learning and Teaching Scotland acknowledges the support of the Scottish Executive and The Royal Bank of Scotland in setting up the centre.

One of the key areas in supporting the development of financial capability is numeracy and *Talk Money, Talk Maths* is designed to meet the needs of all young people in this area of the curriculum in their first two years of secondary education. Managing money is an important and challenging part of everyday life and I am sure that this resource will promote a greater understanding of the problems and issues that everyone needs to address.

It is hoped that teachers using this resource will make an important contribution to the economic aspects of education for citizenship as well as developing skills and dispositions that are important for life after school.

Mike Baughan
Chief Executive
Learning and Teaching Scotland

Introduction

In December 1999 Scottish CCC (now Learning and Teaching Scotland) published *Financial Education in Scottish Schools – A Statement of Position*. This document describes how managing money is an important and challenging feature of everyday living and outlines a minimum entitlement within this area of the curriculum. Whether as employees, employers, self-employed persons or voluntary workers, people need to:

- understand key financial and economic ideas
- be skilled in managing their financial affairs
- recognise the importance of using financial resources responsibly
- be able to operate in a confident and enterprising manner.

Continuing social, economic and political change since the publication of this document has meant that the development of financial capability is even more pressing. Indeed many young people state that they are not well-enough equipped to make sound financial decisions. Issues surrounding pensions, insurance and increasing levels of personal debt mean that there is a greater need for individuals to take a more active and informed interest in their own financial future.

The position paper describes the value of financial education in relation to personal growth, social development, education for work and education for citizenship. It is also the case that in the course of developing financial capability young people will be developing core skills as well as other generic skills, including thinking skills.

Planning for financial education

The position paper on financial education takes the view that young people's entitlement to financial education can be secured through studies in mathematics, language, aspects of personal and social education and environmental studies within the 5–14 stages. Post-14 the entitlement can be provided through studies of subjects that all young people continue until aged 16. These are mathematics, language and personal and social education. Young people cannot become financially capable unless they have a good understanding of numbers, but they need more than this. Money and finance can also be an excellent context for developing skills in mathematics.

Learning and teaching

Learning and teaching in mathematics can be made more effective where a balance of practical, oral and written tasks is provided. This pack provides information and scenarios to assist in this task. The intention is to provide young people in the first two years of secondary school with activities that are related to their age and attainment. One of the key elements of the pack is the use of the PowerPoint presentations in order to stimulate whole-class discussions before and after the activities have been completed. The emphasis should be on helping young people understand what the problems are and to become aware of the technical vocabulary surrounding the issues.

To prepare young people for the financial challenges they will face on leaving school they should have opportunities to experience a combination of two types of learning activity involving:

- identifying and tackling financial problems, related to everyday situations and issues
- engaging critically with economic and social issues, for example, through case studies focusing on a variety of situations and scenarios.

Mathematics teachers can provide both types of opportunity and the contexts in this teacher support pack illustrate this.

The contexts are:

- Talk Phones, Talk Maths
- Talk School Visits, Talk Maths
- Talk Banks, Talk Maths
- Talk Computers, Talk Maths.

It is suggested that mathematics departments build these into their programmes of work with two scenarios taught in S1 and two scenarios in S2.

Finance can be a sensitive area

The aim of this resource is to ensure that all young people regardless of background, religious belief, social status or additional support needs have the chance to learn through a shared common experience in the classroom. Teachers know that dealing with financial matters in a classroom may create difficulties and problems. Young people from different social backgrounds will have varied experiences of dealing with money. Each of the contexts in this resource could be a sensitive area for the young people in classes across Scotland. Teaching within environmental studies, like all other curricular areas, is neither culture nor value free. Young people are usually fully aware of their family circumstances and most teachers are aware of the difficulties some young people have. Regardless, however, of background all young people face challenges in coping with financial matters now and in the future.

Many people from lower income families do not have the same choice of mainstream financial services and this can be at a large cost to their own families. Those people who are ‘financially excluded’ may have difficulties giving their children the experience of using financial services that others take for granted. There is also evidence to suggest that such children can go on to be financially excluded themselves. Young people from more affluent families have different experiences and they too may face difficulties when managing their money when they leave home for work, attend college or university. For example, they may not be aware of family budgeting and may rarely see their parents using cash.

Cultural differences can be an issue. For some religious groups the UK banking system is problematic. It may be advisable to take advice from local community leaders if you consider that this may be a problem in your area.

Using the Resource

This section illustrates four scenarios that can be used in mathematics to develop financial capability. The activities within each have been chosen to be both ability-related and age-specific; this means that the situations and activities are relevant for most young people aged 12–14. Where it has been possible the worksheets have been differentiated using the 5–14 guidelines for mathematics and so allows progression through the practical exercises. For example worksheet 1C1 is aimed at young people working towards Level C and worksheet 1E1 is aimed at young people working at or towards Level E.

The materials have been designed in such a way that teachers can use them in a variety of ways. They can be used, for example:

- in whole-class teaching using the PowerPoint slides
- in small group situations using the PowerPoint slides
- in individual work
- as homework.

However, teachers may wish to consider using the resource over one or two lessons focusing on financial education. The pattern of the lessons could be as follows.

The teacher could:

- introduce the unit using the PowerPoint presentation (slide 1)
- involve the class by asking open questions (slide 1)
- use the material as a 'warm up' session on 'mental' maths (slides 2 and 3)
- discuss the problems illustrated through the PowerPoint presentations (slide 4)
- give young people the opportunity to solve practical problems (slide 5)
- close the lesson with a discussion on issues and problems dealt with – again using the PowerPoint presentation as a stimulus (slide 6).

There are notes attached to the PowerPoint slides that will provide more information and allow teachers to examine the issues raised in each scenario. In addition Appendix 1 illustrates how using this resource addresses the learning outcomes for financial education.

The worksheets included in the pack can be photocopied for use in schools. The CD *Talk Money, Talk Maths* included in this resource contains the following files.

- Talk Money, Talk Maths
- Talk Money, Talk Maths (solutions)
- Four PowerPoint presentations
- Spreadsheets for 'Talk Computers, Talk Maths'.

These materials can be accessed from both Mac and PC platforms.

Teachers can use these files to edit the material to meet the needs of the young people in their own schools.

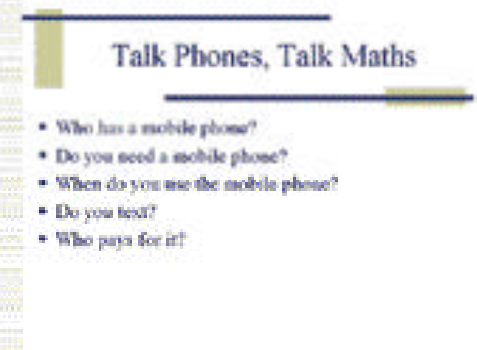
Talk Phones, Talk Maths

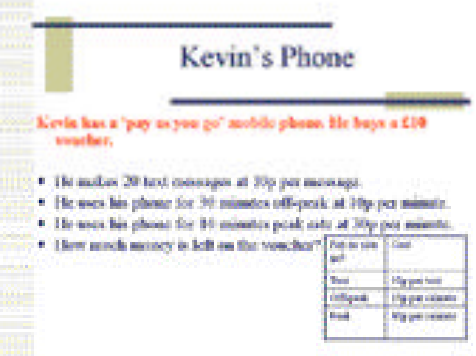
One of the financial problems that young (and not so young) people face is whether or not to use a mobile phone. Deciding on which mobile phone and network to use is a difficult issue that consumers must deal with. In addition to this the widespread use of mobile phones raises important issues for individuals and society. It is the purpose of this unit to address these issues as well as the number work associated with the costs of using a mobile phone.

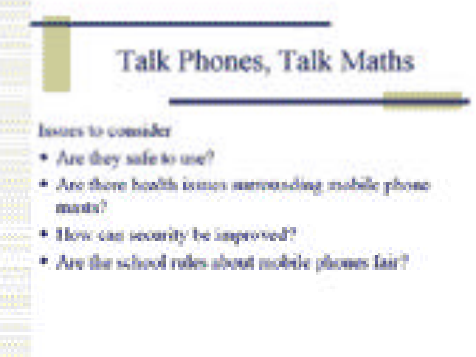
The purpose of the PowerPoint presentation is to give a stimulus for discussing the issues surrounding the use of mobile phones. Points that teachers may want to discuss with their classes are:

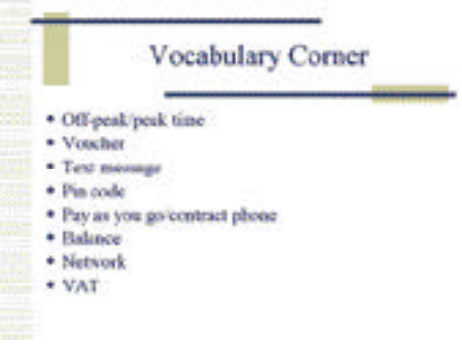
- who has a mobile phone
- whether you need a mobile phone
- what the rules and regulations are about using mobile phones in school
- how you pay for 'top up' cards
- how mobile phones are advertised
- how to deal with sales staff in shops
- how safe mobile phones are.

Talk Phones, Talk Maths – PowerPoint slides









This page illustrates the PowerPoint presentation 'Talk Phones, Talk Maths'. If it is not possible to use PowerPoint these slides can be printed for use with an overhead projector.

Talk Phones, Talk Maths – 1C1

Question 1

John and Michael use the Pear mobile phone network. Each has a £10 voucher on his phone. Peak times are from 8 a.m. to 6 p.m.

John	**Cost**	**Total**
30 texts	10p each	£
40 off-peak minutes	5p per minute	
10 peak minutes	20p per minute	
	Total spent	
	Balance	

Michael	**Cost**	**Total**
18 texts	10p each	£
10 off-peak minutes	5p per minute	
20 peak minutes	20p per minute	
	Total	
	Balance	

(a) Who has the more money left? _____

(b) How many text messages did Michael make? _____

(c) Who spent the more money on peak-rate calls? _____

(d) Who spent the more money on off-peak calls? _____

(e) How much more did John spend than Michael? _____

(f) How much more expensive is the peak rate than the off-peak rate?

_____

(g) John made a two-minute call at 3 p.m. How much did this cost?

_____

(h) John made a two-minute call at 10 p.m. How much did this cost?

_____

Talk Phones Talk Maths – 1D1

Question 1

Jean and Michelle use the Apricot mobile phone network. They both have a £15 voucher on their phone. Peak times are from 8 a.m. to 6 p.m.

Jean	**Cost**	**Total**
25 texts	4p each	£
40 off-peak minutes	6p per minute	
35 peak minutes	20p per minute	
	Total	
	Balance	

Michelle	**Cost**	**Total**
20 texts	4p each	£
50 off-peak minutes	6p per minute	
15 peak minutes	20p per minute	
	Total	
	Balance	

(a) Who has the more money left? _____

(b) How many text messages did Michelle make? _____

(c) Who spent the more money on peak-rate calls? _____

(d) Who spent the more money on off-peak calls? _____

(e) How much more did Jean spend than Michelle? _____

(f) How much more expensive is the peak rate than the off-peak rate?

_____

(g) Jean made a five-minute call at 4 p.m. How much did this cost?

_____

(h) Jean made a five-minute call at 9 p.m. How much did this cost?

_____

Talk Phones Talk Maths – 1E1

Question 1

Maureen and Jamie use the S-mobile phone network. They both have a £15 voucher on their phone. Peak times are from 8 a.m. to 6 p.m.

Maureen	**Cost**	**Total**
45 texts	p each	£1.35
69 off-peak minutes	2p per minute	
30 peak minutes	18p per minute	
	Total	
	Balance	

Jamie	**Cost**	**Total**
55 texts	p each	£1.65
47 off-peak minutes	2p per minute	
60 peak minutes	18p per minute	
	Total	
	Balance	

(a) Who has the more money left? _____

(b) How much does each text message cost? _____

(c) Who spent the more money on peak-rate calls? _____

(d) How can Jamie cut down on his bill without spending less time talking to his friends?

_____

(e) How much more did Jamie spend than Maureen? _____

(f) Maureen made a ten-minute call at 6.30 p.m. How much did this cost?

_____

(g) Jamie made a three-minute call at 8.30 a.m. How much did this cost?

_____

Talk Phones, Talk Maths – 1C2

Question 1

Jenny is looking to buy a new mobile phone. She is keen to get best value for money. She has investigated the following two networks.

	Network O/3	Network R-Mobile
Text	5p per minute	10p per minute
Off-peak	15p per minute	5p per minute
Peak	20p per minute	30p per minute

(a) Which network is the cheaper for text messages?

_____

(b) Which network is the more expensive for off-peak calls?

_____

(c) Which network is the more expensive for peak-rate calls?

_____

Question 2

Jenny sends 30 text messages and makes 40 minutes off-peak and 10 minutes peak calls.

(a) Complete the following tables for each of the two networks.

Network O/3

	No	Cost per minute/text	Total cost
Texts			
Off-peak			
Peak			
Total			

Network R-Mobile

	No	Cost per minute/text	Total cost
Texts			
Off-peak			
Peak			
Total			

Use the tables to help Jenny answer the following questions.

(b) Which network is the more expensive overall?

_____

(c) How much more expensive are peak-rate calls per minute on R-Mobile compared with Network O/3?

_____

(d) How much cheaper is it to send text messages on Network O/3 compared with R-Mobile?

_____

(e) Which network would you suggest Jenny use?

_____

(f) Which network would you use?

_____

(g) Are there any circumstances in which it would be better to use O/3?

_____

Talk Phones, Talk Maths – 1D2

Question 1

Safia is looking to buy a new mobile phone. She is keen to get best value for money. She has investigated the following two networks.

	Network P2	Network Q3
Text	1p per minute	2p per minute
Off-peak	8p per minute	5p per minute
Peak	15p per minute	12p per minute

On average she sends 45 text messages and makes 40 minutes off-peak calls and 10 minutes peak calls.

(a) You are required to complete the following tables for each of the two networks.

P2

	No	Cost per minute/text	Total cost
Texts	45	1p	
Off-peak	40	8p	
Peak	10	15p	
Total			

Q3

	No	Cost per minute/text	Total cost
Texts	45	2p	
Off-peak	40	5p	
Peak	10	12p	
Total			

(b) Which network is the more expensive overall?

_____

(c) Which network is the cheaper for text messages?

_____

(d) How much more expensive are peak-rate calls per minute on Network P2 compared with Network Q3?

_____

(e) Why is text messaging popular?

_____

Talk Phones, Talk Maths – 1E2

Question 1

Helen is looking to buy a mobile phone. She is keen to get best value for money. She has investigated the following two networks.

	Allnet	**Netphone**
Text	p	p
Off-peak	12p per minute	8p per minute
Peak	20p per minute	25p per minute

On average she sends 26 text messages and makes 35 minutes off-peak calls and 15 minutes peak calls.

(a) You are required to complete the following tables for each of the two networks.

Allnet

	No	**Cost per minute/text**	**Total cost**
Texts	26		£1.04
Off-peak	35		
Peak	15		
Total			

Netphone

	No	**Cost per minute/text**	**Total cost**
Texts	26		£1.82
Off-peak	35		
Peak	15		
Total			

(b) Which network is the more expensive overall?

_____

(c) How easy is it to change networks?

_____

(d) If the network you were using doubled the price of text messages would you change to another one?

_____

Other activities

(a) Where do you find information on mobile phones?

(b) Is this information always reliable?

(c) Collect information on the cost of new mobile phones.

(d) Collect information on the costs of the various networks.

(e) Discuss the advantages and disadvantages of ‘pay as you go’.

(f) Discuss the advantages and disadvantages of long-term contracts.

(g) Find out where mobile phones are manufactured.

Talk School Visits, Talk Maths

The background for this unit should be familiar to all young people in S1/S2. Many schools organise a residential experience to help develop skills such as team working and qualities such as self-motivation and self-reliance.

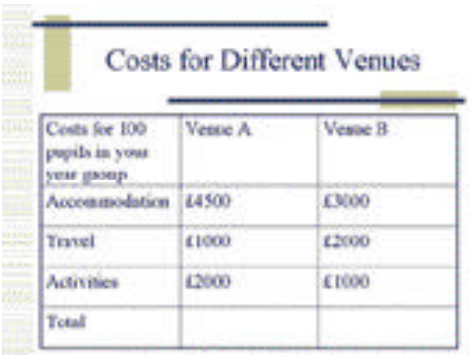
Increasingly, young people are expected to take more responsibility and this will involve them looking after their own money. It may also mean that they are required to save for the visit and organise payments over a period of time. Young people need to be aware of the financial implications the cost of the visit may have on their family.

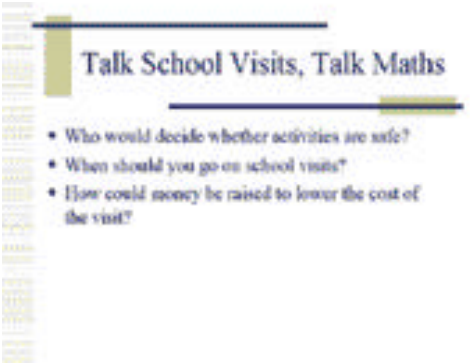
Young people can also develop their financial capability by organising fund-raising events to subsidise the cost of the visit and by discussing the resources needed to make these events a success.

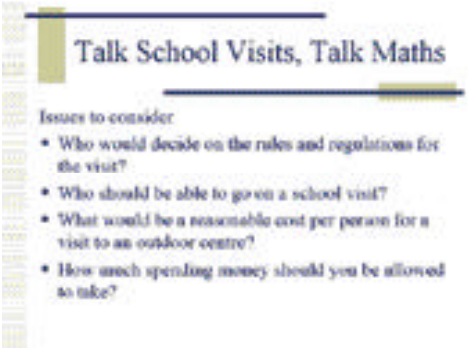
The purpose of the PowerPoint presentation is to give a stimulus to discussing the issues surrounding the school visit. Questions that teachers may want to discuss with their classes are as follows.

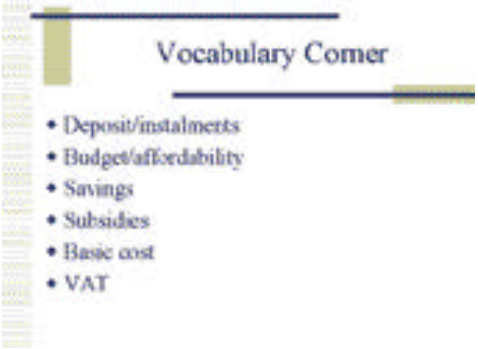
- How many people need to go on the visit to make it feasible?
- How is the visit going to be paid for?
- Which type of visit should the class or year group go on?
- How are the costs calculated?
- What should the deposit be?
- What insurance may be needed?
- How long can you be given to pay for the visit?
- Who should be allowed to go on school visits?

Talk School Visits, Talk Maths – PowerPoint slides







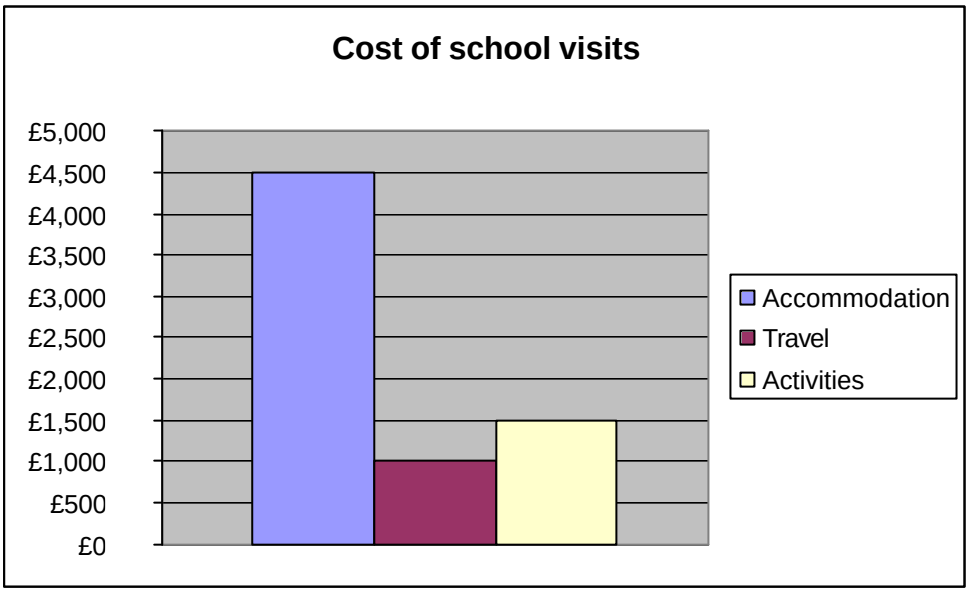


This page illustrates the PowerPoint presentation 'Talk School Visits, Talk Maths'. If it is not possible to use computer software slides these can be printed for use with an overhead projector.

Talk School Visits, Talk Maths – 2C1

Question 1

Katy has carried out an investigation into taking her year group on a two-day school visit. There are 100 pupils in her year group. She has completed the following bar chart to illustrate the costs of accommodation, travel and activities.



(a) What is the accommodation cost? _____

(b) What is the cost of the travel? _____

(c) What is the cost of the activities? _____

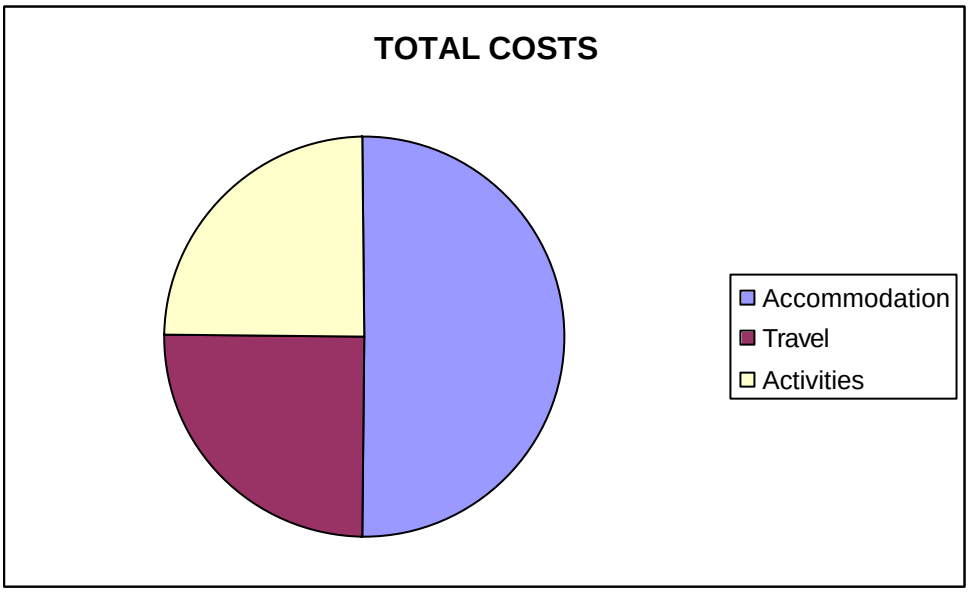
(d) What is the total cost for 100 pupils? _____

(e) What is the cost per pupil? _____

Question 2

Shameena has carried out an investigation for her year group that also has 100 students. She has illustrated her findings in a pie chart.

Total costs



(a) What percentage of the total cost will be spent on accommodation?

_____

(b) What percentage of the total cost will be spent on travel?

_____

(c) What percentage of the total cost will be spent on activities?

_____

Talk School Visits, Talk Maths

Question 3

Karen wants to go on a school visit.

The cost is £125. She has paid a £35 deposit.

(a) How much does she still have to pay?

£125 – £35 =

(b) If she has to pay for the rest of the trip in six, monthly, instalments, calculate the amount she will pay each month?

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Question 4

Jean wants to go on a school visit to Dalguise.

The cost is £175. She has paid a £25 deposit.

(a) How much does she still have to pay?

£175 – £25 =

(b) If she has a part-time job and can save £30 per month, how many months will it be before she can pay for the trip?

(c) Why do some people prefer paying by monthly instalments?

Talk School Visits, Talk Maths

Question 5

The basic cost per person for the accommodation and travel for a school visit is £150. The extra costs for the activities are shown below.

Activity	Cost
Watersports	£30
Quad biking	£40
Archery	£15

Complete the following combinations table.

Watersports	Quad biking	Archery	Total
£30	£40		£70
£30		£15	
	£40	£15	

Which two activities would you choose to keep the cost below £200?

Question 6

Your teacher has worked out the basic cost of accommodation and travel for the school visit to be £100. The extra costs for the activities are shown below.

Activity	Cost
Tennis	£15
Visit to theme park	£25
Swimming	£10
Ice skating	£20

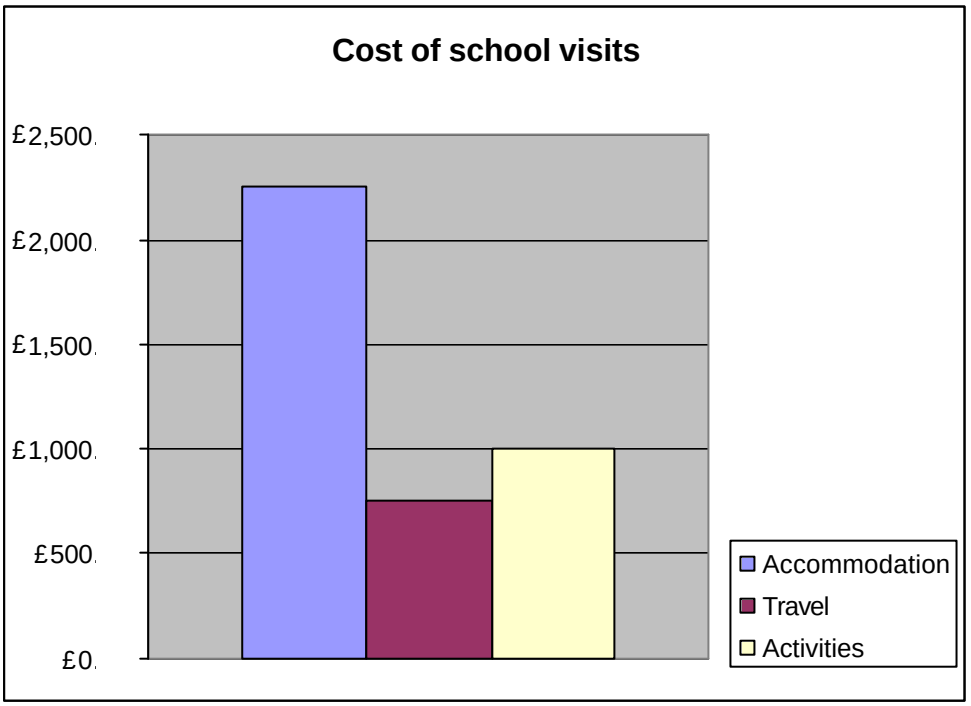
Complete the following combinations table to work out which three activities keep the cost below £150.

Tennis	Visit to theme park	Swimming	Ice skating	Total
£15	£25	£10		£50

Talk School Visits, Talk Maths – 2D1

Question 1

Ken has carried out an investigation into taking his year group on a school visit. There are 50 pupils in his year group. He has completed the following bar chart to illustrate the costs of accommodation, travel and activities.



(a) How much does it cost for accommodation? _____

(b) How much more does it cost for activities than for travel? _____

(c) What is the total cost for all 50 pupils? _____

(d) What fraction of the total cost is for activities? _____

(e) What percentage of the total cost is for activities? _____

(f) What is the cost per pupil? _____

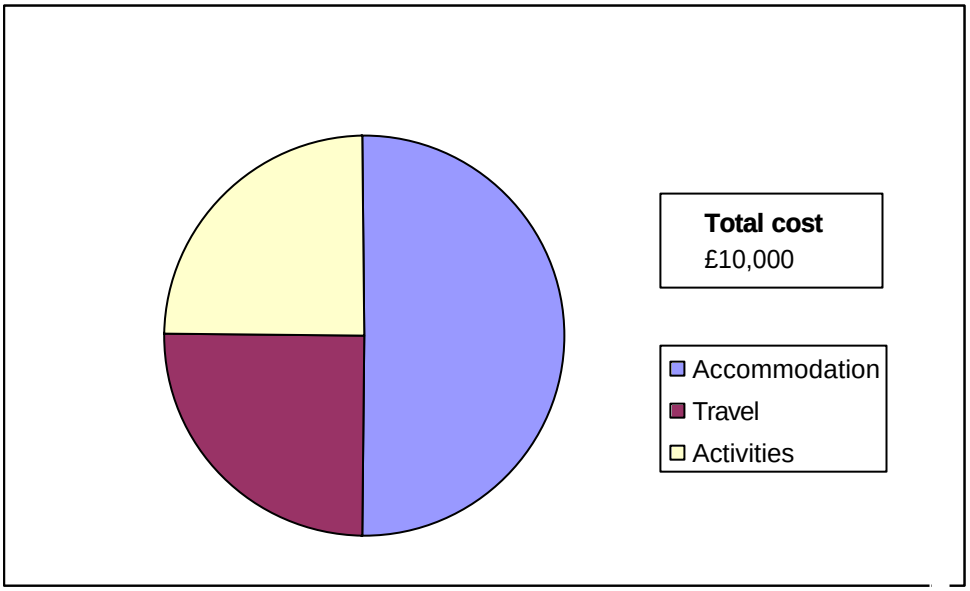
Question 2

Nicholas has carried out an investigation for his year group that has 50 students. The total cost of the school trip is £10,000.

He has illustrated his findings on a pie chart.

(a) What percentage of the total cost will be spent on accommodation?

_____



(b) How much is spent on accommodation? _____

(c) What percentage of the total cost will be spent on travel? _____

(d) How much is spent on travel? _____

(e) Calculate the cost per person. _____

Question 3

Ruth wants to go on a school visit. The cost is £250. She pays a £25 deposit to book her place on the trip.

(a) How much does she still have to pay? _____

(b) If she has to pay for the rest of the trip in 10, monthly instalments, how much does she need to pay each month? _____

Question 4

Hayfa wants to go on a school visit. The cost is £500. She pays a deposit of 10 per cent to book her place on the trip.

(a) How much does she pay as a deposit? _____

(b) How much does she still have to pay? _____

(c) What percentage is this of the total cost? _____

(d) If she has a part-time job and can save £50 per month how many months will it be before she can pay for the trip? _____

(e) Why do some people prefer to pay for school visits in monthly instalments?

_____

Question 5

Mrs Davidson is organising a visit to York. The cost of accommodation and travel is £100 and she has discovered the following costs per person.

Food	£6 per day
Sports	£4.25 per day
Swimming	£2 per day

Assuming the trip to York lasts four days, calculate the total cost of the trip.

Question 6

The basic cost of accommodation and travel for an outdoor education visit is £160.

The young people will be at the centre for two days and they will choose two activities per day.

Activity per day	**£**
Swimming	5
Tennis	6
Watersports	9

Complete the following combination table.

Swimming	**Tennis**	**Watersports**	**Total**

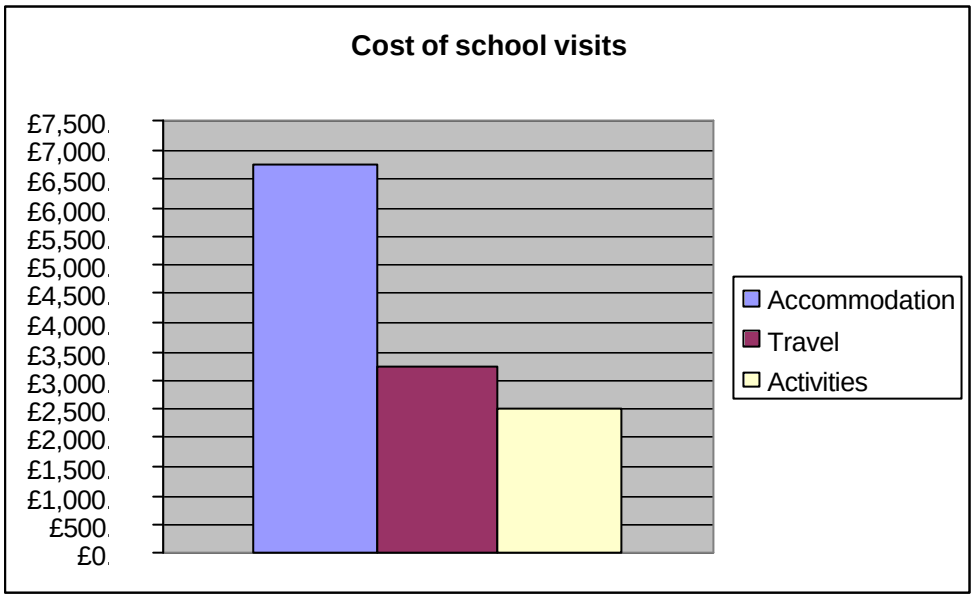
If James pays £186 for the trip, which activities did he choose?

_____

Talk School Visits, Talk Maths – 2E1

Question 1

Mr Kennedy has carried out an investigation into taking his year group on a school visit. There are 200 pupils in his year group. He has completed the following bar chart to illustrate the costs of accommodation, travel and activities.



(a) How much more does it cost for accommodation than for travel?

_____

(b) How much more does it cost for travel than for activities? _____

(c) What is the total cost for all 200 pupils? _____

(d) What fraction of the total cost is for activities? _____

(e) What percentage of the total cost is for activities?_____

(f) What is the cost per pupil? _____

(g) How much should Mr Kennedy charge if he wants an amount rounded up to the nearest £5?

_____

Question 2

Dieter has carried out an investigation for his year group that has 80 students. The total cost of the school trip is £24,000.

He has illustrated his findings on a pie chart.

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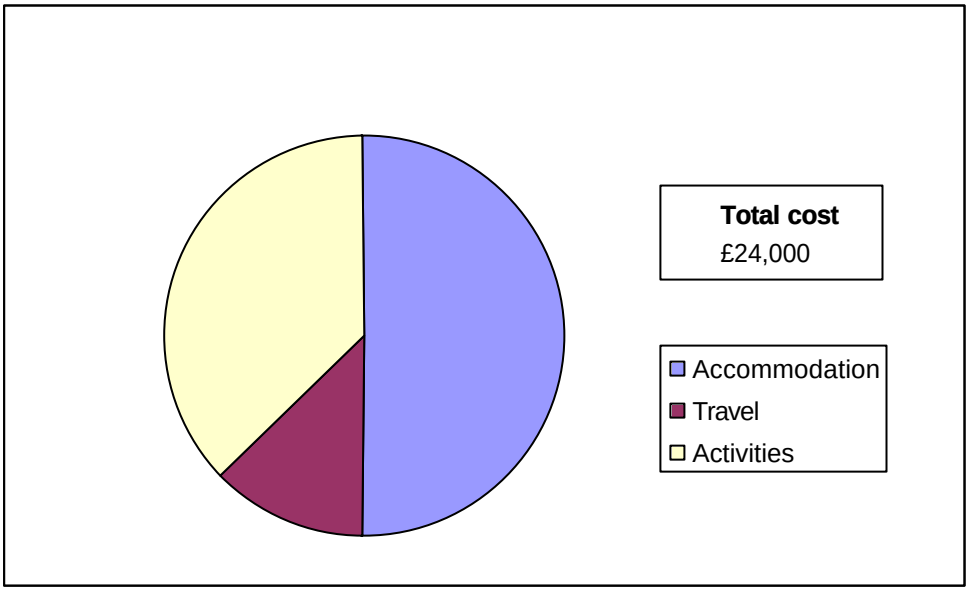


(a) What percentage of the total cost will be spent on accommodation?

_____

(b) What percentage of the total cost will be spent on travel? _____

(c) What percentage of the total cost will be spent on activities? _____

(d) How much will be spent on accommodation? _____

(e) How much will be spent on travel? _____

(f) How much will be spent on activities? _____

(g) What is the cost per pupil? _____

Question 3

Karen wants to go on a school visit. The cost is £450. She pays a deposit of 20 per cent to book her place on the visit.

(a) How much does she pay as a deposit? _____

(b) How much does she still have to pay? _____

(c) If she has to pay for the rest of the visit in five, monthly, instalments how much does she need to pay each month? _____

(d) Why do some people prefer to pay bills by monthly instalments?

_____

Question 4

Jean wants to go on a school visit. The cost is £240. She pays a deposit of 12.5 per cent.

(a) How much does she pay as a deposit? _____

(b) How much does she still have to pay? _____

(c) How long will it take Jean to save up for the visit if she can pay £20 per month?

_____

Question 5

Mrs Robertson is organising a visit to the Lake District. Accommodation and travel will cost £105 per person and in addition the following information has been obtained.

Food	£7 per day
Sports	£3.75 per day
Swimming	£2.25 per day
Disco	£2.50 each

Assuming the visit to the Lakes lasts for four days, calculate:

(a) the cost for each individual student _____

(b) the total cost for 50 pupils. _____

Question 6

Miss Young has organised a school visit, however the tour operator has not added VAT to the costs.

Cost item	**£**
Accommodation	2400
Travel	1200
Watersports	800
Quad biking	1600
Total before VAT	
VAT @ 17.5%	
Price charged to group	
Number in group	30
Cost per person	

Use this to help calculate the VAT.

10%	
5%	
2½%	
17½%	

Complete the table above.

Other activities

(a) Discuss where you can get money to pay for the visit.

(b) In groups of three or four, discuss the best way to save or pay for the visit.

(c) What rules should be applied when you are on a school visit?

(d) Discuss how best to advertise the visit in school.

(e) Discuss opportunities for fund-raising activities.

Talk Banks, Talk Maths

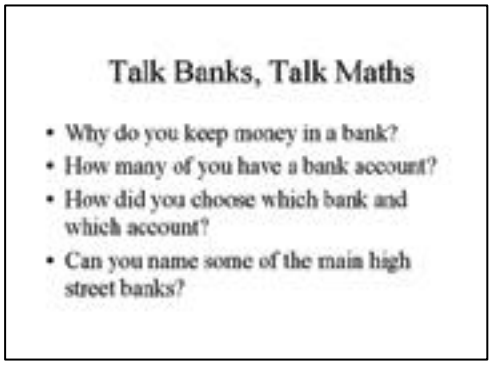
Keeping money safe and planning ahead are two reasons why this scenario is important for young people. It is important that young people know about interest received on savings and interest paid on loans. In addition it gives teachers an opportunity to discuss loan sharks and the high levels of interest they charge.

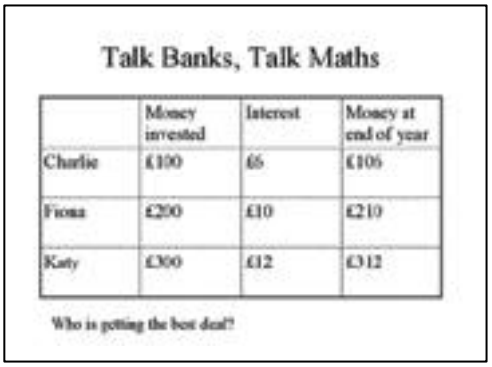
Many banks are involved in providing insurance for their customers and this scenario gives the opportunity to discuss this type of service.

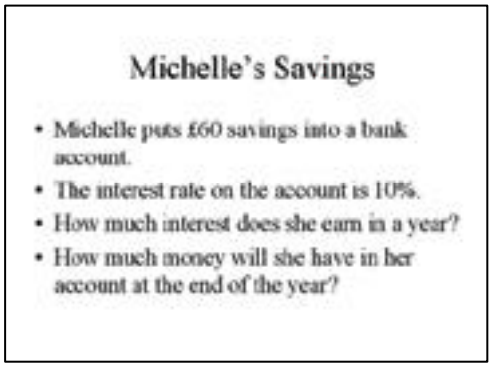
As in previous units the purpose of the PowerPoint presentation is to give a stimulus to discussing the issues surrounding banks and building societies. Questions that teachers may want to discuss with their classes are as follows.

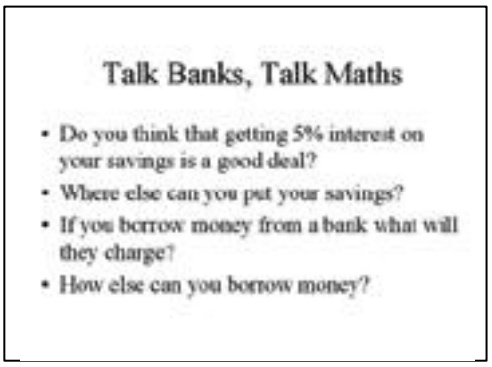
- Why would you keep your money in a bank?
- What other services do banks provide?
- How many ways can you get information on your bank account?
- How would you decide which is the best bank or building society?
- What do banks charge?
- How do banks make profits?
- Where can you buy foreign currency?

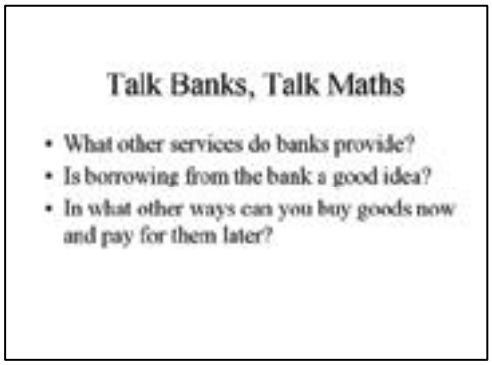
Talk Banks, Talk Maths – PowerPoint slides*

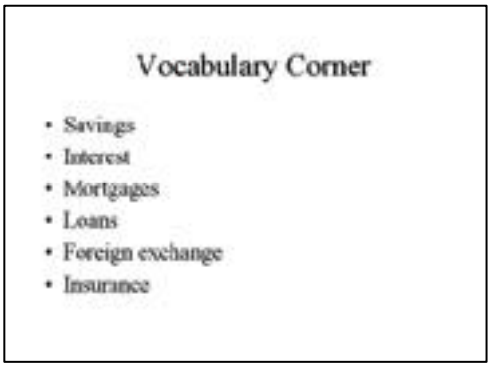












This page illustrates the PowerPoint presentation 'Talk Banks, Talk Maths'. If it is not possible to use PowerPoint slides these can be printed for use with an overhead projector.

*** Teachers can apply their own design to the presentations on the CD**.

Talk Banks, Talk Maths – 3C1

Question 1

Bill, Rashid and Monique save with different banks.

Complete the table and answer the questions below.

	Money saved	**Annual interest earned**	**Money at end of year**
Bill	£200	£10	£
Rashid	£100	£	£106
Monique	£400	£	£408.50

(a) Who has saved the most money?

_____

(b) Who has saved the least money?

_____

(c) (i) If Rashid had saved £200 how much money would he have had at the end of the year?

_____

(ii) Is this more or less than Bill?

_____

(iii) Who earns the better rate of interest, Bill or Rashid?

_____

Talk Banks, Talk Maths – 3C2

Question 1

Mr Brown takes out a bank loan to pay for a new car that costs £7000.

He pays back £200 every month for four years.

(a) How much does he pay each year?

£200 x 12 =

(b) What is the total amount paid at the end of four years?

4 x =

(c) Explain why he had to pay back more than £7000.

_____

_____

Question 2

Louise decides to pay her car insurance through her bank. The annual fee is £240.

(a) How much will she pay each month?

£240 ÷ =

(b) Give a reason why Louise would do this.

_____

Question 3

Denis pays his car insurance through his bank. It costs him £15 each month.

(a) What is his annual insurance premium?

£15 x =

(b) If Denis paid in full the cost would be £175. How much more does he pay in a year by paying monthly? Do you think this is a good deal?

_____

Talk Banks, Talk Maths – 3C3

Question 1

David is on a school visit to France and the exchange rate is 1.5 euros for £1.

To help him with prices the school has given David this ready reckoner.

Euros	Pounds
3	2
6	4
15	10
30	20
75	50
150	100

(a) David exchanges £200 for euros at the bank. How many euros will he have to spend?

_____

(b) David buys a bottle of juice costing 3 euros. How much is this in pounds?

_____

(c) A meal costs 9 euros. How much is this in pounds?

_____

(d) He wants to buy a pair of trainers costing 60 euros. How much is this in pounds?

_____

(e) If he brings home 30 euros, how much is this in pounds?

_____

Talk Banks, Talk Maths – 3D1

Question 1

Tim, Greg and Layton save with different banks.

Study the table and answer the questions below.

	Money saved	**Interest rate per annum**	**Money at end of year**
Tim	£300	3%	£309
Greg	£200	4%	£208
Layton	£500	2%	£510

(a) Who earned the most money in interest?

_____

(b) Whose bank offered the best deal?

_____

(c) If Greg had invested £400 how much money would he have had at the end of the year?

_____

(d) If Layton had saved his money in the same bank as Greg, how much would he have earned in interest?

_____

Talk Banks, Talk Maths – 3D2

Question 1

Jenny takes out a bank loan of £9500 over three years to pay for a new car.

She pays back £300 every month.

(a) How much does she pay back after the three years?

(b) How much interest did she pay over the three years?

(c) Explain why she has to pay interest.

Talk Banks, Talk Maths

Question 2

Larry decides to pay his car insurance through his bank. The annual fee is £180.

(a) How much will he pay each month?

(b) Give a reason why Larry would do this.

Question 3

Donald pays his car insurance through his bank. It costs him £12.50 each month.

(a) What is his annual insurance premium?

(b) If Donald paid in full, the cost would be £165. How much more does he pay in a year by paying monthly? Do you think this is a good deal?

Talk Banks, Talk Maths – 3D3

Question 1

Davina is on a school visit to France and the exchange rate is 1.5 euros for £1.

To help with prices the school has suggested that she complete this ready reckoner.

Euros	Pounds
3	
6	
15	
30	
75	
150	

(a) Davina exchanges £240 for euros at the bank. How many euros will she have to spend?

_____

(b) She buys an ice cream costing 4.5 euros. How much is this in pounds?

_____

(c) A meal costs 21 euros. How much is this in pounds?

_____

(d) She wants to buy sunglasses costing 51 euros. How much is this in pounds?

_____

(e) If she brings home 36 euros, how much will the bank give her in pounds?

_____

Talk Banks, Talk Maths – 3E1

Question 1

Cheryl, Tracey and Zoe save with different banks.

Complete the table and answer the questions below.

	Money saved	**Interest rate per annum**	**Money at end of year**
Cheryl	£300	3%	
Tracey	£200	4%	
Zoe	£400	2%	

(a) Who earned the most money in interest?

_____

(b) Whose bank offered the best deal?

_____

(c) If Tracey had invested £300, how much money would she have had at the end of the year?

_____

(d) If Cheryl had saved her money in the same bank as Tracey how much more would she have earned?

_____

Talk Banks, Talk Maths – 3E2

Question 1

Jimmy buys a new kitchen costing £12,500. He pays an initial 20 per cent deposit and borrows the rest over five years from the bank. He pays back £200 every month.

(a) How much is the deposit?

_____

(b) How much does he pay back to the bank after the five years?

_____

(c) How much interest did he pay over the five years?

_____

(d) What is the total cost of the kitchen?

_____

(e) Do you think this is a good way to pay for a kitchen?

_____

Talk Banks, Talk Maths

Question 2

Lesley decides to pay her car insurance through her bank. The annual fee is £183.

How much will she pay each month?

Question 3

Andy pays his car insurance through his bank. It costs him £19.25 each month.

What is his annual insurance premium?

Talk Banks, Talk Maths – 3E3

Question 1

Danny is on a school visit to France and the exchange rate is 1.4 euros for £1.

Complete the ready reckoner below.

Pounds	Euros
1	1.4
2	
5	
10	
20	
50	

(a) Danny exchanges £225 for euros at the bank. How many euros will he have to spend?

_____

(b) He buys an ice cream costing 3.5 euros. How much is this in pounds?

_____

(c) A meal costs 21 euros. How much is this in pounds?

_____

(d) He wants to buy a sports top costing 77 euros. How much is this in pounds?

_____

(e) If he brings home 49 euros, how much will the bank give him in pounds?

_____

Other activities

(a) Find out which banks or building societies offer accounts to young people.

(b) Which do you think offers the best deal? Why?

(c) Why do you think these organisations offer such deals?

(d) Collect information regarding bank accounts, loans and credit cards. You will find these in various high-street banks and building societies but also in some supermarkets.

(e) Which of these offer a good deal? Why?

(f) Find out at what age you can borrow money from a bank or building society.

(g) In groups of three or four, discuss where you will find, hear or see advertisements for loans.

(h) Why do you think that advertisers choose to do this?

Talk Computers, Talk Maths

Mathematics teachers should also consider how wider use of ICT including computers, CD-ROMs and the Internet could enrich their teaching and make the subject more stimulating and attractive to pupils.

Standards and Quality in Secondary Schools 1995–1999: Mathematics, HMI Report, 1999

Information and communications technology is having a huge impact on the way we live our lives. In the future more people will buy goods and services using the internet. Spreadsheets and databases are useful for recording and analysing financial information. Using ICT can enhance learning and teaching and making connections between ICT and mathematics can assist in developing financial capability.

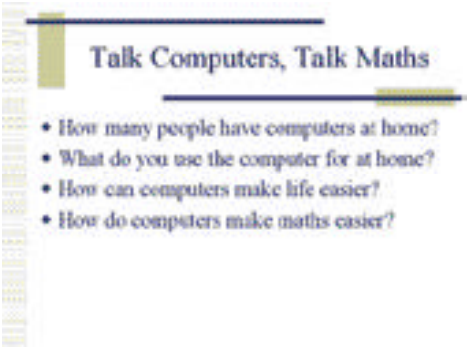
This scenario gives young people the opportunity to discuss ICT and the effects it will have on their decisions in the future. It will allow young people to discuss the effects of advertising and ICT on their choices and illustrate ways in which ICT can be used to help with their financial affairs.

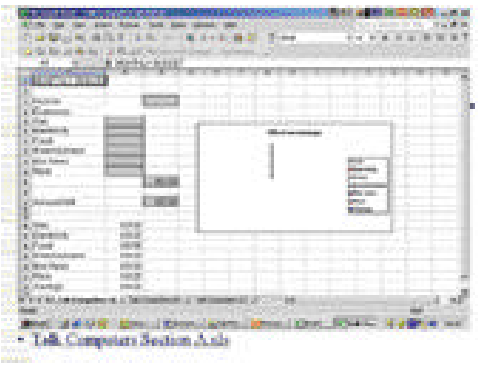
As in previous units the purpose of the PowerPoint presentation is to give a stimulus to discussing ICT and the solutions and problems it can bring. Using spreadsheets is a very powerful tool for analysing financial information and this is illustrated in this scenario.

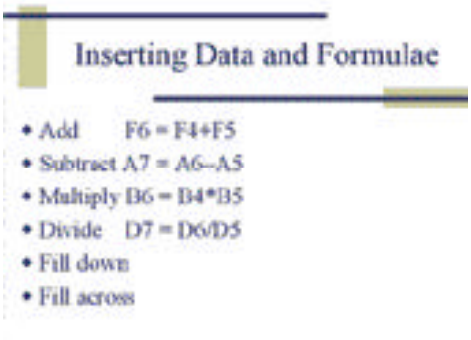
The spreadsheets are aimed at approximately levels D and E as illustrated in the 5–14 guidelines on information and communications technology.

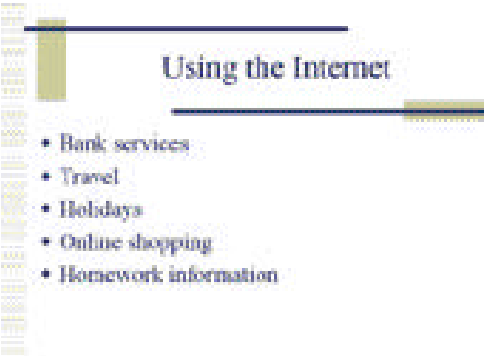
It is acknowledged that many maths teachers may find it difficult to access computer suites, however it is also important to make connections between what young people are learning in mathematics and the power of information and communications technology. It is suggested that in this unit in particular the use of group work or using computer suites perhaps during examination periods would be beneficial. In addition teachers may have access to interactive white boards and these are powerful in illustrating mathematical concepts.

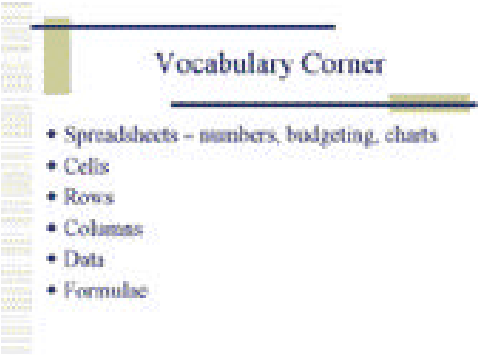
Talk Computers, Talk Maths – PowerPoint slides











This page illustrates the PowerPoint presentation 'Talk Computers, Talk Maths'. If it is not possible to use PowerPoint slides these can be printed for use with an overhead projector.

Talk Computers, Talk Maths – Section A

Question 1

Joyce has asked you to prepare a spreadsheet to help her keep a budget.

(a) Load spreadsheet '**Talk Computers Section A.xls**'* and enter this information into Talk Computers A1. Where the cells are shaded you are required to enter either data or formulae.

Joyce earns £700 per month.

She has to pay the following bills each month.

Gas	£25
Electricity	£15
Food	£240
Entertainment	£80
Bus Fares	£35
Rent	£200

The formula to be entered is as follows.

C11 = B5 + B6 + B7 + B8 + B9 + B10
or
C11 = SUM(B5:B10)

C13 = C3 – C11

(b) How much money does she have at the end of the month?

_____

(c) Which of the above expenses do you think that Joyce can control?

_____

(d) How much can Joyce save if her rent is increased to £250 per month?

_____

(e) Illustrate using a pie chart how much Joyce spends on each bill.

*** Mac users load 'Talk Computers 1'**

Question 2

Paul has asked you to prepare a spreadsheet to help him keep his budget.

(a) Load spreadsheet '**Talk Computers Section A.xls**'* Talk Computers A2 and enter this information.

Paul earns £650 per month.

He has to pay the following bills each month.

Gas	£20
Electricity	£25
Food	£280
Mobile phone	£15
Bus fares	£25
Rent	£160

(b) How much money did he spend during the month? _____

(c) How much money does he have at the end of the month?

_____

(d) Which of the above expenses does Paul not control?

_____

(e) Why is it important to prepare a budget?

_____

(f) If Paul moves to a new flat that will cost £195 per month how much can he save per month now?

_____

(g) Illustrate using a pie chart how much Paul spends on each bill.

*** Mac users load 'Talk Computers 2'**

Question 3

Chris has asked you to prepare a spreadsheet to help him keep a budget.

(a) You are required to use spreadsheet '**Talk Computers Section A.xls**'* Talk Computers A3 to complete this exercise.

Chris earns £675 per month.

He has to pay the following bills each month.

Food	£180
Entertainment	£100
Train fares	£35
Rent	£240
Mobile phone	£40
Electricity	£10

(b) How much money is he planning to spend each month?

_____

(c) How much money does he have at the end of the month?

_____

(d) He wants to buy a new music system that costs £350. How many months would he need to save for in order to buy it?

_____

(e) How much money will he have at the end of each month if the rent is increased to £300?

_____

(f) Prepare a bar graph illustrating the amount spent on each item of expenditure.

*** Mac users load 'Talk Computers 3'**

Additional internet tasks

Question 4

At today's values how much is £100 worth in:

(a) US dollars

_____

(b) Euros

_____

(c) Turkish lira

_____

Question 5

(a) How much would a return flight from Edinburgh to London cost, flying two weeks from today? You want to leave Edinburgh about 8 a.m. and return at about 6 p.m.

_____

(b) Do you think this is a good buy? _____

(c) What are the alternatives to flying? _____

(d) Find out some other costs of travelling from Edinburgh to London.

_____

Talk Computers, Talk Maths – Section B

Question 1

(a) You have been asked to help keep records and calculate profits for the healthy tuck shop that the school has been running. In order to help with this you have been given spreadsheet '**Talk Computers Section B.xls**'* Talk Computers B1. Data and formulae are entered into the shaded cells. The spreadsheet is illustrated on the next page.

In the first week of the new term you purchased:

- 10 kg of apples at 85p per kg
- 8 kg of oranges at 60p per kg
- 6 kg of pears at 75p per kg.

Sales for the week amounted to £20.

You are required to use a spreadsheet to calculate the weekly profit.

You are required to enter the formula into cells as follows.

D5 = B5 * C5
D6 = B6 * C6 ***You can use the fill down facility here***
D7 = B7 * C7
D8 = D5 + D6 or D7 = SUM(D5:D7)
B15 = D8
B16 = B14 – B15

(b) What would the profit have been if sales had fallen to £18?

_____

(c) Illustrate the total cost of each item of fruit using a bar graph.

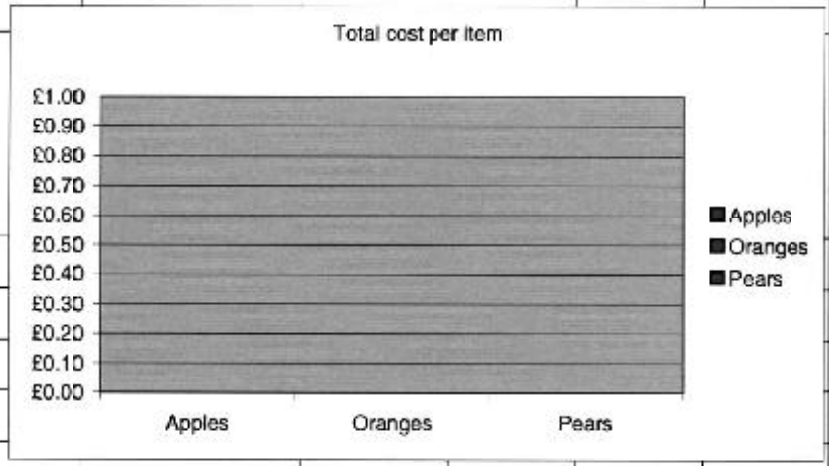
(d) Illustrate this information using a pie chart.

(e) What would the profit have been if pears were 90p per kg and sales were £20?

_____

*** Mac users load 'Talk Computers 4'**

	A	B	C	D	E	F	G	H	I
1	**Talk Computers, Talk Maths**		Section B	Question 1					
2	Calculation of costs								
3									
4	Item	No of kg	Cost per kg	Total cost per item					
5	Apples								
6	Oranges								
7	Pears								
8	Total purchase cost			0.00					
9									
10									
11									
12	Profit calculation								
13									
14	Sales								
15	Total purchase cost								
16	Profit								
17									



Question 2

(a) Using the spreadsheet '**Talk Computers Section B.xls**'* Talk Computers B2, calculate the profit for week 5. Notice that the prices and quantities have changed.

Purchases were:

- 12 kg of apples at 80p per kg
- 8 kg of oranges at 75p per kg
- 10 kg of pears at 70p per kg.

Sales for week 5 amounted to £25.

(b) What advantages are there in using spreadsheets?

_____

_____

(c) Why do you think prices have changed?

_____

(d) What will influence the amount of fruit sold?

_____

_____

(e) Illustrate the total cost of each item using
(i) a bar chart
(ii) a pie chart.

*** Mac users load 'Talk Computers 5'**

Question 3*

You and some friends have organised a stall at the school fund-raising event.

Your sales were for £85.

You purchased:

- two boxes of chocolate bars at £7.50 per box
- three boxes of fruit gums at £5.25 per box
- four boxes of cola at £6.50 per box
- five boxes of orange juice at £4.50 per box.

(a) What was the total cost of the goods purchased?

_____

(b) What was the profit made?

_____

(c) Illustrate the total cost of goods purchased in a bar graph.

(d) Illustrate this information in a pie chart.

(e) At the end of the event there were 10 chocolate bars left. What could you have done to make sure these were sold?

_____

*** Mac users load 'Talk Computers 6'**

Additional internet tasks

Question 4

(a) Find the names of four hotels in Manchester.

(b) How much do they cost per night?

(c) Which one would you decide to stay in? Why?

Question 5

(a) How far is it from Glasgow to Aberdeen?

(b) How long would it take to drive this distance?

(c) How much would it cost in petrol if you decided to drive this distance?

(d) What are the problems with this information?

Question 6

List five websites you could use that could save you money when buying goods or services.

Additional tasks

(a) Why is it important to prepare a budget?

(b) Discuss how to keep financial and personal information safe when you are using the internet.

(c) Discuss appropriate websites where young people can purchase goods or services more cheaply than on the high street.

(d) Discuss different sources of income.

(e) How are goods and services advertised on the internet?

(f) Discuss different internet providers and how much they cost.

(g) Do they give good value for money?

Useful Websites

The following list of websites may assist in the previous exercise.

www.ryanair.com

www.theaa.com

www.britishairways.com

www.thisismoney.com/tourist.asp

http://money.msn.co.uk/Bank_Plan/Loans/Tools/it_loans/default.asp

www.thetrainline.com

In addition to these websites the use of various search engines may be useful, for example:

http://uk.yahoo.com/

www.ask.co.uk/

www.msn.co.uk

http://uk.altavista.com/

Appendix – Financial Education Learning Outcomes

The following table illustrates how the learning outcomes for financial education can be addressed through the activities in *Talk Money, Talk Maths*. The activities contained in this pack can make an important contribution also to education for citizenship and enterprise in education.

Talk Money, Talk Maths

Aspect of financial capability	Learning outcome		Young people are given the opportunity to:
Financial understanding As a result of learning experiences young people should be able to demonstrate an understanding and appreciation of:	1a	the nature and role of money in society, including foreign currency	discuss using money to buy phones and pay for calls
	1b	sources of income	discuss where money comes from to pay for top-up cards
	1c	taxation, spending, saving and investment	discuss interest as a type of spending
	1d	credit and debt	examine different loans and credit cards
	1e	financial services/products and advisory services	discuss different savings accounts and rates of interest received
	1f	consumer rights and responsibilities	discuss rights and responsibilities in relation to using mobile phones
	1g	the impact of advertising ICT and the media.	use the internet to get best deals on shopping, travel and banking
Financial competence As a result of learning experiences young people should be able to:	2a	keep financial records	collect information on various telephone networks
	2b	analyse financial information	compare costs of different school visits
	2c	assess value for money	choose mobile phone network, school visit or bank service giving best value for money
	2d	prepare and use bugets	calculate cost for different visits and phones prepare budget using spreadsheet
	2e	make financial decisions.	decide on best payment methods for mobile phone or school visit
Financial responsibility As a result of learning experiences young people should be able to:	3a	take increasing responsibility for making decisions with respect to themselves	discuss health risks associated with mobile phones discuss health and safety issues on school visits
	3b	analyse the potential impact of financial decisions made by others on society and the environment both locally and globally	examine the impact of telephone masts on the local environment discuss the impact of rising interest rates on the costs of borrowing
	3c	analyse the potential impact of their financial decisions on society and the environment both locally and globally.	examine the effect that using mobile phones has on others and on the environment
Financial enterprise As a result of learning experiences young people should be able to:	4a	evaluate potential risks and returns	decide on 'enterprise project' to subsidise cost of school visit
	4b	use financial and other resources in an innovative and confident manner	participate in 'enterprise project'
	4c	apply knowledge and skills creatively in a range of situations.	apply numeracy skills in a variety of contexts, including using ICT.

Other Resources

Included in this pack is the interactive CD-ROM *Facing up 2 Finance*. This is designed for use in S3/S4 Personal and Social Education (PSE), however it may be used to set the contexts for lessons in mathematics for Standard Grade or for Intermediate 1 or 2.

In addition teachers of mathematics may find the following resources and contacts useful.

Websites

- www.LTScotland.org.uk – Learning and Teaching Scotland
  This website provides a range of online resources for Scottish education. There is information about the activities, products and services of Learning and Teaching Scotland and it includes pages on the work of the Scottish Centre for Financial Education.

- www.pfeg.org – Personal Finance Education Group
  This is an excellent site for finding out about and accessing resources. There are sections on resources for 5–14, Standard Grade and post-16.

- www.fsa.gov.uk – Financial Services Authority
  The Financial Services Authority is the independent body that regulates the financial services industry in the UK. One of the aims of the FSA is to promote public understanding of the financial system.

- www.fep.org.uk – Finance Education Partnership
  This website contains information on financial education activities provided by the Finance Education Partnership, based at the Chartered Institute of Bankers in Scotland.

- www.rbsf2f.com – The Royal Bank of Scotland *Face 2 Face With Finance*
  This is the portal to the Royal Bank of Scotland's *Face 2 Face With Finance* website.

- www.britannicstreet.co.uk – Britannic Assurance Group
  This site contains lots of good activities for use in the classroom.

- www.bbc.co.uk – BBC on the internet
  There is a section on BBC learning dedicated to financial information.

- www.channel4.com – Channel 4 learning on the internet
  Channel 4Learning produces many programmes that can be used in schools. In particular there is a link to *Looking after the Pennies*, a series of three television programmes that illustrates the importance of good financial management.

- www.youngscot.org – lots of information for young Scots aged 12–26.
  A great site for young people, with information on housing, health, sport, travel, etc., as well as money.

Interactive CDs

Facing Up 2 Finance – Learning and Teaching Scotland

Lifeskills: Traveller's Cheque – Learning and Teaching Scotland

Lifeskills: Smart Spender – Learning and Teaching Scotland

Lifeskills: Time and Money – Learning and Teaching Scotland

Britannic Street – Britannic Assurance Group

Switched On – Ofgem

Printed materials

Colossal Cards – Financial Services Authority

Making the Most of It – Financial Services Authority

The Red Box – The Inland Revenue

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