Car Costs

Data Sheet 1

Regular Expenses

Item	Estimate of Cost	When
Petrol/Diesel	10p per mile	As needed
Oil	£12 for can of oil and filter	Once or twice per year
Air Filter	£10	Once a year
MOT	£25 - £30 (excluding repairs)	End of year for cars aged 3 years or more
Road Tax	£100 if less than 1000 cc £155 over 1000 cc	End of year
Insurance	£200 - £600 depending on type of insurance, car and experience of driver (etc)	End of year

Some of the other expenses which may arise

Item	Estimate
Tyres	£25 - £40 each. Usually replace a pair together.
Exhaust	£70 - £150. Depends on type of car.
Brake Pads (front) or Brake Shoes (rear)	£15 per pair £10 per pair
Shock Absorbers	£30 - £50 each. Replace a pair together.
Battery	£30 - £40
Engine or Body Repair	Depends on problem.

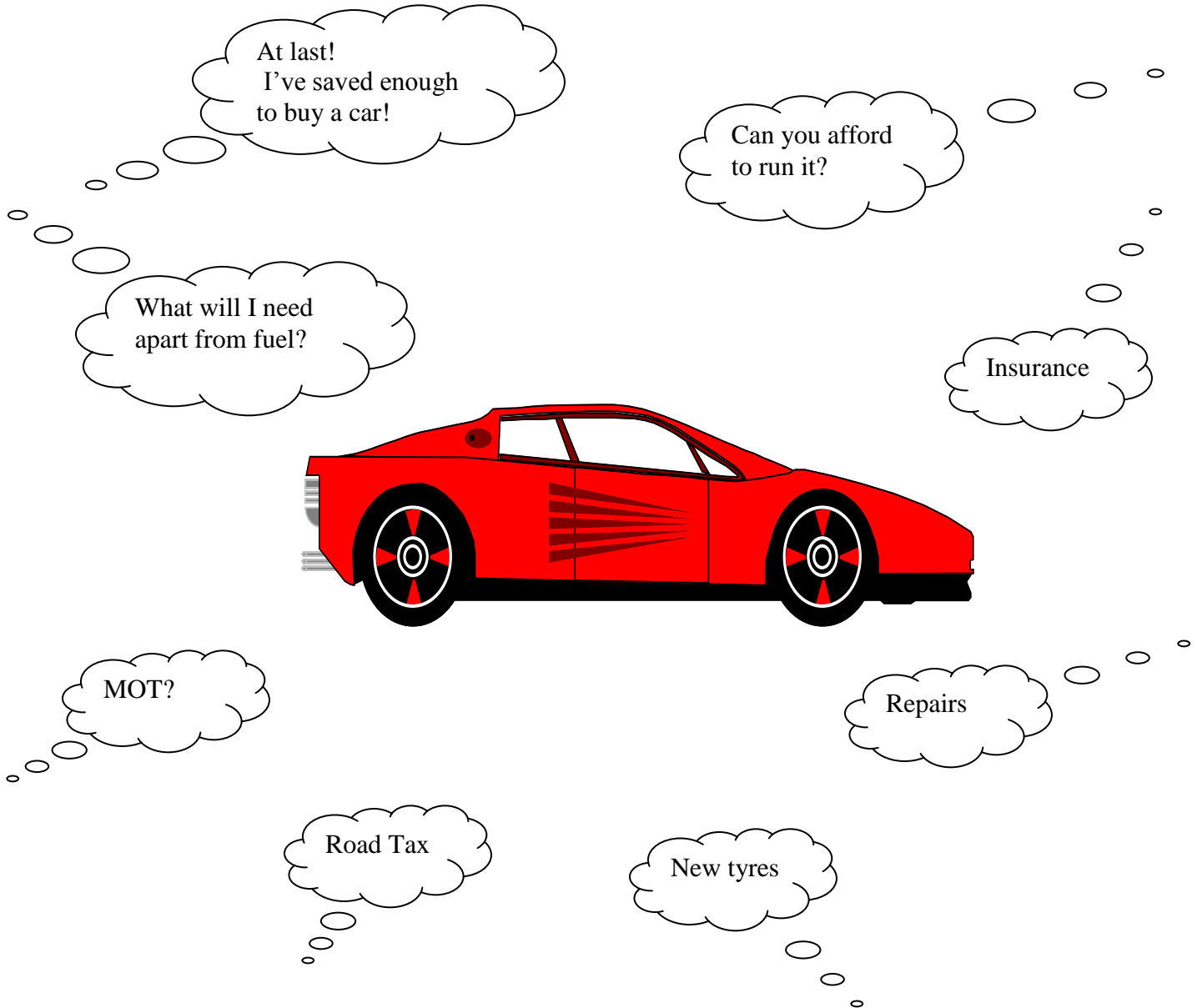It is assumed that the owner services and maintains the car.

Add the costs of servicing by a garage or other items to the list if you wish.

Some items such as batteries can be bought more cheaply from a good scrap yard.
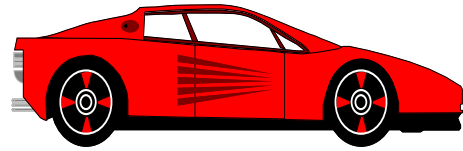
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Car Costs

Discussion Sheet

At last!
 I've saved enough
to buy a car!

Can you afford
to run it?

What will I need
apart from fuel?

Insurance

MOT?

Repairs

Road Tax

New tyres

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Car Costs

Assignment

Suppose you would like to buy a car. Before going ahead you need to be sure that you will be able to afford the costs of running it. One way of doing this is to decide how much you can afford to spend on the car per month and imagine that this is kept in a separate account from which you will take all the money needed to pay for petrol, oil, repairs, MOT, road tax, insurance and any other costs which might arise.

This assignment involves an imaginary account of this sort.

Assume that you have saved enough to buy the car and pay for tax and insurance for the first year. This initial expenditure will not appear in the account.

Estimate the average amount you can afford to spend on the car per month (find a rough estimate or guess).

Write a list of all the likely costs, including an estimate for each item.

Use a spreadsheet to find the balance of the account at the end of each month for at least one full year. Include the costs of renewing car insurance and road tax at the end of the year. Remember that you will need to check your work if you are to achieve high marks.
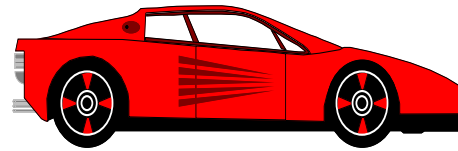
Draw a line graph to show how the balance varies during the year.

Draw charts to compare the different costs involved. Use at least three different categories.

Write a summary to explain what your calculations and diagrams show.

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Car Costs

Data Sheet 2

Gemma Johnson
Account No: 27895

Gemma has a separate bank account in which she saves money to pay for the costs of running her car.

She deposits £100 into this account at the beginning of each month.

The table shows how the balance in the account varied during last year.

Date	Item	Details	Withdrawals	Deposits	Balance
01-Jan	Deposit	Standing Order		£100	£100
03-Jan	Petrol	Card Purchase	£26		£74
10-Jan	Oil	Cheque	£12		£62
27-Jan	Petrol	Card Purchase	£18		£44
01-Feb	Deposit	Standing Order		£100	£144
23-Feb	Petrol	Card Purchase	£21		£123
01-Mar	Deposit	Standing Order		£100	£223
18-Mar	Petrol	Card Purchase	£25		£198
22-Mar	Brake Pads	Cheque	£10		£188
01-Apr	Deposit	Standing Order		£100	£288
19-Apr	Petrol	Card Purchase	£23		£265
24-Apr	Engine Repair	Cheque	£54		£211
01-May	Deposit	Card Purchase		£100	£311
11-May	Petrol	Card Purchase	£15		£296
01-Jun	Deposit	Standing Order		£100	£396
02-Jun	Petrol	Card Purchase	£24		£372
08-Jun	Pair of Tyres	Cheque	£80		£292
12-Jun	Petrol	Card Purchase	£25		£267
01-Jul	Deposit	Standing Order		£100	£367
06-Jul	Petrol	Card Purchase	£19		£348
14-Jul	Oil	Cheque	£12		£336
23-Jul	Petrol	Card Purchase	£21		£315
28-Jul	Air Filter	Cheque	£10		£305
01-Aug	Deposit	Standing Order		£100	£405
04-Aug	Petrol	Card Purchase	£26		£379
15-Aug	Exhaust	Cheque	£106		£273
31-Aug	Petrol	Card Purchase	£20		£253
01-Sep	Deposit	Standing Order		£100	£353
23-Sep	Petrol	Card Purchase	£25		£328
01-Oct	Deposit	Standing Order		£100	£428
19-Oct	Petrol	Card Purchase	£24		£404
26-Oct	Body Repair	Cheque	£141		£263
01-Nov	Deposit	Standing Order		£100	£363
13-Nov	Petrol	Card Purchase	£22		£341
01-Dec	Deposit	Standing Order		£100	£441
09-Dec	Petrol	Card Purchase	£26		£415
14-Dec	MOT & Repairs	Cheque	£68		£347
18-Dec	Road Tax	Cheque	£155		£192
20-Dec	Insurance	Cheque	£432		-£240
		Totals	£1,440	£1,200	

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Sample Examination Questions

Use Car Costs on Data Sheet 2.

1

a On 15th August money was withdrawn from Gemma's account.

  (i) How much was withdrawn? _____

  (ii) What was the reason for this withdrawal?.

  _____

b The balance on 20th December is - £240.

  (i) Explain why this is negative.

  _____

  _____

  (ii) Show how the totals given at the bottom of the table can be used to check the final balance of - £240.

  _____

  _____

  (iii)   If Gemma had decided to put £400 that she received at Christmas into this account, what would have been the balance at the end of the year?

  _____

  _____

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2   The table below shows the balance at the end of each month.

a Complete the table by putting values in the empty cells.

End of	Balance
Dec	0
Jan	£44
Feb	£123
Mar	£188
Apr	£211
May	
Jun	£267
Jul	
Aug	£253
Sep	£328
Oct	£263
Nov	£341
Dec	-£240

b At the end of which month was the balance greatest? _____

c How much more was in the account at the end of September than at the end of August?

_____

_____

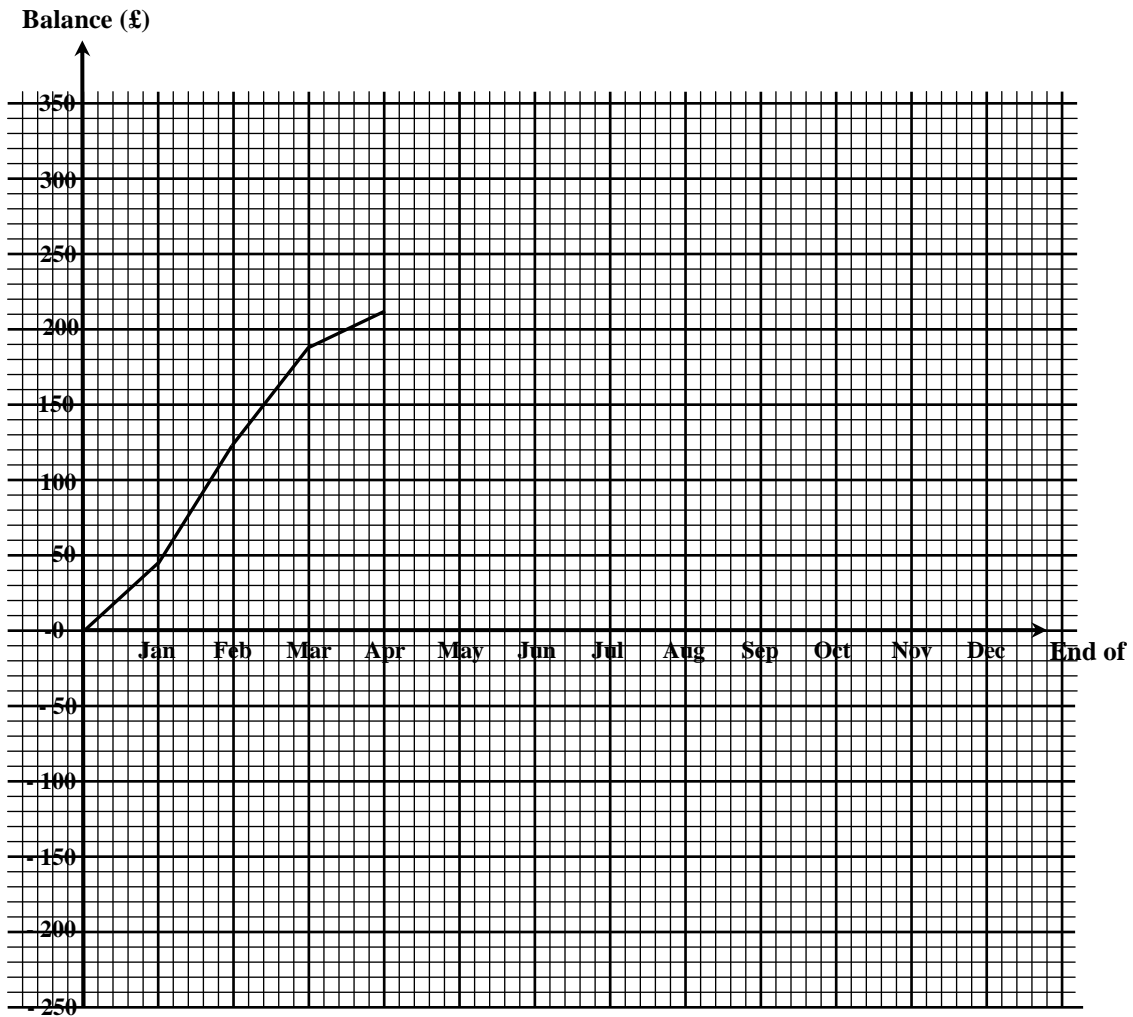**d** By how much did the balance decrease during October?

_____

_____

2e The line graph shows how the balance of the car account varies for the first four months of the year.

(i) Use the values in your table in part **2a** to complete the graph to show how the balance varies during the rest of the year.

Balance (£)

(ii) During which months of the year did the balance decrease?

_____

(iii) During which month of the year did the balance increase by the greatest amount?

_____

Mathematics for all post-16 – A project funded by the Nuffield Foundation

3a The costs of running the car can be summarised in four categories as shown in the table below. You are going to draw a pie chart to illustrate this information. Complete the table, giving angles to the nearest degree.

Category	Annual Cost	Number of Degrees
Petrol	£360	90
Insurance	£432	
Road Tax		
Repairs and Maintenance	£493	
Total	£1,440	

Space for working:

_____

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b Complete the pie chart to show this information.

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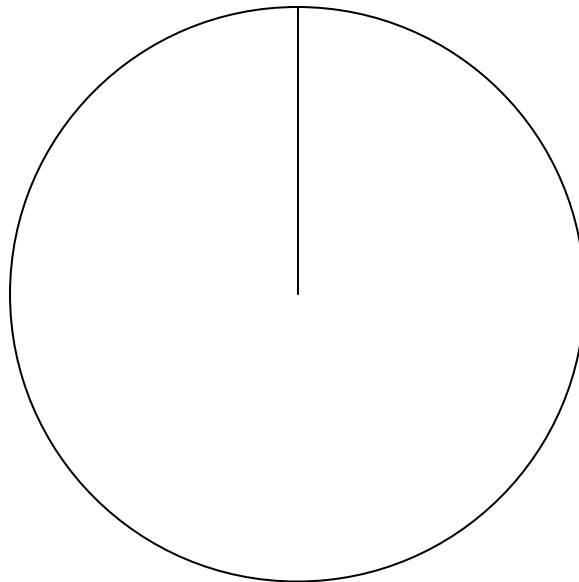
Car Costs	Teacher Notes

Which Free-Standing Unit does this support?

Foundation Level – Managing Money

Evidence for Coursework Portfolio

The assignment can be used to satisfy the requirement to produce a report on financial transactions which includes use of a spreadsheet.

What students need to know

- How to record transactions for an account.
- How to draw charts and graphs by hand.
- How to use spreadsheets, including the drawing of graphs and charts.

General Notes and Suggestions

The Car Costs package includes two data sheets (pages 1 and 4), a discussion sheet (page 2), an assignment (page 3) and sample examination questions (pages 5 - 8).

Discussion Sheet

This can be used, with or without the first data sheet, to introduce the topic.

Assignment

More able students may be able to attempt the assignment with little or no help. Other students can be given the first data sheet (page 1) to indicate the sort of items they should include. The costs given are only estimates and if possible students should find out the actual costs for the type of car they would like to own. Less able students can be shown the second data sheet (page 4) as an example of a possible layout for their car account.

Students may enjoy treating this assignment as a game of chance. This can be done by numbering the items in the second table (1 to 6) and using a die to decide the expenditure on these items during the month. A first throw may be used to decide whether any of

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these expenses arise (eg odd number – expense, even number – no expense) and then a second throw to decide which expense (if necessary). The costs involved could be decided before starting the assignment or by using the die again.
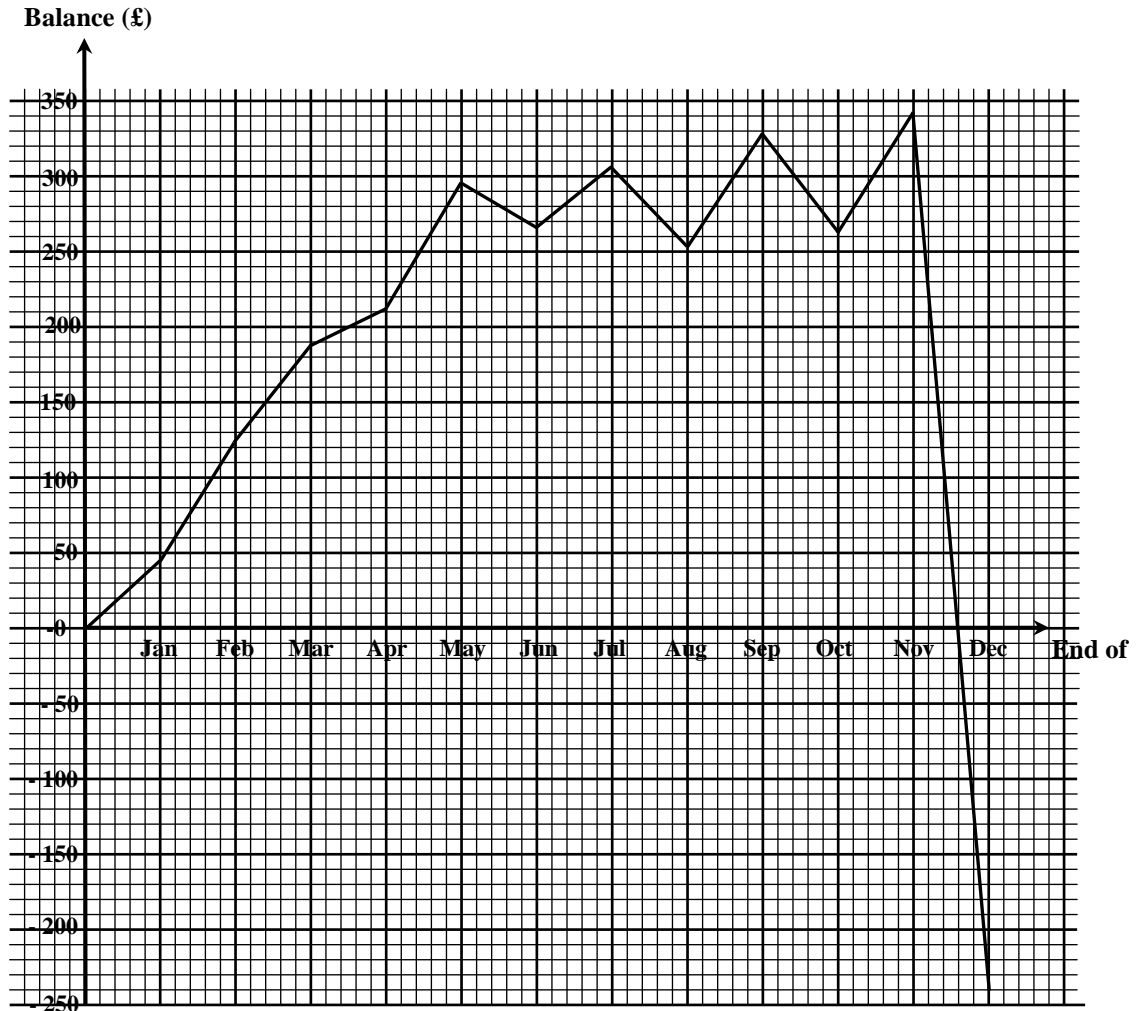
Sample Examination Questions

These are based on the second data sheet (page 4) and can be used for practice.

Answer to Sample Questions

1 a (i) £106   **(ii)** Exhaust
   b (i) Gemma did not have enough in the account to pay for the insurance cheque of
        £432. She now owes the bank £240.
     (ii) £1200 – £1440 = - £240   **(iii)**   £160

2 a May £296,   Jul £305   **b** November   **c** £75   **d** £65
   e (i)

Balance (£)

   (ii)   June, August, October, December   **(iii)**   May

3a

Category	Annual Cost	Number of Degrees
Petrol	£360	90
Insurance	£432	108
Road Tax	£155	39
Repairs and Maintenance	£493	123
Total	£1,440	360

   b pie chart with angles as given