

Lesson 3

RUNNING COSTS

This lesson plan links to the following national curriculum areas:

- PHSE NC criteria: Knowledge, skills and understanding: 1a, 1c, 1e; Breadth of study: 4g
- Citizenship: Unit 05, How the economy functions; Unit 09, Consumer rights and responsibilities
- English: Reading: 1a, 4a, 4c; Breadth of study: 9b, 10
- Key skills: ICT; Problem-solving; Working with others; Application of number

Objectives At the end of the lesson the student will be able to:

- Identify the main car maintenance activities
- Calculate basic running costs for a car
- Understand the concept and impact of car value depreciation

Activity	Method	Timing	Resources / materials
<p>1 Introductory Activity and mind map / spider diagram</p>	<p>Introduce the idea of car maintenance to the class. Tell them that the test now contains a 'Show Me Tell Me' maintenance element.</p> <p>Get the class to mind map possible car maintenance tasks: eg</p> <ul style="list-style-type: none"> • oil check • tyre pressure check • brakes check <p>List results on the board.</p>	5 minutes	
<p>2. Activity 1 extension: Class visit to car on school grounds OR online 'Show me, tell me' game</p>	<p>Log on to www.AA-Attitude.co.uk and go to >Passing your tests >Interactive learning zone >Show me tell me game.</p> <p>Using the online interactive animation Show me tell me, students complete <i>Activity sheet 1: Maintaining your car</i>. Teachers might want to split the class into groups for this activity, mixing students with a good knowledge of cars with those with less knowledge.</p> <p>Discuss which tasks they would be able to perform.</p> <p>Discuss why different people have differing levels of knowledge about cars and how they work. What are the reasons for this? For example, an individual's family may have an interest in cars which means that they are more knowledgeable, or someone may feel that it is important</p>	30 minutes	<p>Internet to view interactive animation Show Me Tell Me on www.AA-Attitude.co.uk</p> <p><i>Activity sheet 1: Maintaining your car</i></p> <p><i>Teacher answer sheet 1a: Maintaining your car.</i></p> <p>OR</p> <p>Ideally teacher to find a staff volunteer knowledgeable about cars to show and explain the engine and associated simple maintenance issues. Alternatively, use Teacher answer sheet 1b: Visit to car on school grounds for background information on maintenance tasks.</p> <p>Note: Since many schools ban pupils from school car parks for health and safety and insurance reasons, a car could be pre-positioned at an appropriate point outside.</p>

Activity	Method	Timing	Resources / materials
	<p>to know about how a car works because they drive a lot and are concerned about breaking down.</p> <p>OR</p> <p>Class visit to a selected car on school grounds, with completed <i>Activity sheet 1: Maintaining your car</i>. Discuss students' solutions from activity sheet. Demonstrate simple tasks such as checking oil, brake check, checking windscreen washer.</p> <p>Teachers may want to use <i>Teacher answer sheet 1b: Visit to car on school grounds to demonstrate selected maintenance tasks</i>.</p> <p>Differentiation Easier: Students focus on two or three maintenance tasks. Harder: After completing <i>Activity sheet 1</i>, students are asked to make a list of other maintenance tasks they can think of. In groups, they discuss how these would be carried out.</p>		
<p>3. Activity 2: Mind map / spider diagram car maintenance costs</p>	<p>Part 2: Money Class mind map different car maintenance costs (eg services charges, insurance, MOT). Introduce concept of depreciation.</p>	<p>5 minutes</p>	
<p>4. Activity 2a: Calculating car maintenance costs</p>	<p>The class is divided into appropriate group sizes. Students use <i>Activity sheet 2: Mike's maintenance costs</i> to calculate car maintenance costs. Compare costs in group discussion and use example from depreciation exercise to illustrate depreciation costs.</p> <p>Differentiation Easier: Use prompts on <i>Teacher answer sheet 2</i> to guide students.</p>	<p>15 minutes</p>	<p><i>Activity sheet 2: Mike's maintenance costs</i></p> <p><i>Teacher answer sheet 2: Mike's maintenance costs</i></p> <p>Calculators</p>

Activity	Method	Timing	
Plenary	<p>Harder: Timed activity. Students have a maximum of 10 minutes to complete the activity sheet.</p> <p>Summarise lesson outcomes: buying a car means taking responsibility for maintenance and costs. Maintenance tasks will be less daunting when you start looking into them, and learning about them can enhance your feeling of independence.</p> <p>Discuss other costs not covered in exercise (eg MOT), higher insurance costs for younger people and the difference between costs for men and women. Discuss why insurance companies have these differences.</p>	5 minutes	

Extension or homework suggestions

- 1 Carry out a more detailed review of road tax. How and why is it collected, and evaded? Why tax different vehicles at different rates? How much does the government collect and how is it used?
- 2 Examine the impact of the law on drivers, especially: speed cameras, clamping, accidents, joy-riding. Refer to the Highway Code at www.highwaycode.gov.uk.
- 3 Introduce a car-customising exercise, involving Internet research of costs for customising your ideal car – eg new alloys, music systems, satellite navigation etc. Use the ‘Bling it On’ exercise on www.AA-Attitude.co.uk (access the game from the home page) to explore the various ways a car could be customised.

Activity sheet 1

MAINTAINING YOUR CAR

How would you check that the engine has sufficient oil?

How would you check that the engine has sufficient engine coolant?



How would you check that you have a safe level of hydraulic brake fluid?

How would you check the tyres to ensure that they have sufficient tread depth and that their general condition is safe to use on the road?

Where would you find information about the recommended tyre pressure and how tyre pressures should be checked?

For hints and tips go to www.AA-Attitude.co.uk

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Show me tell me game

Teacher answer sheet 1a

MAINTAINING YOUR CAR

How would you check that the engine has sufficient oil?

Find the dipstick/oil level indicator and check oil level against the minimum/maximum markers.

How would you check that the engine has sufficient engine coolant?

Identify where you would check the engine coolant level. Look for the high/low markings on header tank (where fitted) or radiator filler cap and check level against markings.



How would you check that you have a safe level of hydraulic brake fluid?

Identify the reservoir and check the level against the high/low markings.

How would you check the tyres to ensure that they have sufficient tread depth and that their general condition is safe to use on the road?

Make sure there are no cuts and bulges. There should be 1.6mm across the central $\frac{3}{4}$ of the breadth of the tyre and around the entire outer circumference.

Where would you find information about the recommended tyre pressure and how tyre pressures should be checked?

In the manufacturer's guide. Use a reliable pressure gauge, check and adjust pressures when tyres are cold. Don't forget to check the spare tyre and remember to refit the valve caps.

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Show me tell me game

Teacher answer sheet 1b

MAINTAINING YOUR CAR

Visit to car on school grounds.

If you are unfamiliar with cars you may also like to access www.AA-Attitude.co.uk >Interactive learning zone >Show me tell me game

Task	What to do
Checking the oil level	Open the bonnet, identify where you would check the engine oil, identify the dipstick/oil level indicator, and check against the minimum/maximum markers.
Checking level of engine coolant	Identify where you would check the engine coolant level. Look for the high/low markings on header tank (where fitted) or radiator filler cap and check level against markings.
Checking the hydraulic brake fluid	Identify the reservoir and check the level against the high/low markings.
Finding information about the recommended tyre pressure and how tyre pressures should be checked	Look in the manufacturer's guide. Use a reliable pressure gauge, check and adjust pressures when tyres are cold. Don't forget to check the spare tyre and remember to refit the valve caps.
Checking tread depth and safety of tyres	Make sure there are no cuts and bulges. There should be 1.6mm across the central $\frac{3}{4}$ of the breadth of the tyre and around the entire outer circumference.
Checking the brake lights	Operate the brake pedal, make use of the reflections in windows, garage door etc, or ask someone to help.
Checking the brakes	Apply the indicators or hazard warning switch and walk around the vehicle to check functioning of all indicators.
Checking indicators	Brakes should not feel spongy or slack. Brakes should be tested as you set off.
Checking parking brake for excessive wear	Parking brake should secure itself when fully applied. It shouldn't be at the end of the working travel.

Activity sheet 2

MIKE'S MAINTENANCE COSTS

Read the information about Mike

Mike is 27 years old. His Vauxhall Astra cost him £13,862 three years ago. He uses his car to see his girlfriend, to go out at weekends and he drives into work. Mike covers about 15,000 miles a year. He got a very good deal on his insurance – 10% cheaper than the average, he also took out breakdown cover.

Mike didn't spend any money on service or part replacements in the first year because the car was new and he was too busy with his job

to take it for a service check. At the end of the second year, however, Mike had some problems with the car starting. He took it to a garage to be fixed. This resulted in repair labour costs of £597 and replacement parts costs of £255.

Look at the table for average maintenance costs. Using the information about Mike, can you calculate the maintenance costs for his Astra over the last two years? Remember, the figures in the table are for one year only.

Cost description	Car price				
	Up to £10,000	£10,000 – £13,000	£13,000 – £20,000	£20,000 – £30,000	over £30,000
Annual road tax	£100	£125	£150	£190	£190
Average insurance cost per year	£362	£457	£541	£717	£880
Depreciation (at 10,000 miles per year)	£1,161	£1,611	£2,343	£3,266	£5,178
Breakdown cover cost per year	£40	£40	£40	£40	£40
Average service labour costs for driving 15,000 miles per year*	£369	£432	£597	£690	£763
Average car parts replacement costs for driving 15,000 miles per year*	£184	£219	£255	£289	£331

Source: http://www.theaa.com/allaboutcars/advice/advice_rcosts_petrol_table.jsp
*costs based on pence per mile

MIKE'S COST OVER TWO YEARS FOR

Road tax	=	_____
Insurance	=	_____
Depreciation	=	_____
Breakdown cover	=	_____
Service labour costs	=	_____
Replacement costs	=	_____

TOTAL

Can you think of anything that Mike could have done differently to reduce his maintenance costs?

Still got some time? Try this depreciation exercise...

Mike's car cost him £13,862 three years ago. He travels about 15,000 miles per year. Use the table to figure out:

- a) how much his car has depreciated in three years
- b) how much he could sell his car for after three years

Answer a: _____

Answer b: _____

Teacher answer sheet 2

MIKE'S MAINTENANCE COSTS

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MIKE'S COST OVER TWO YEARS FOR

Road tax	= 2 years x £150 = £300
Insurance	= 2 years x £541 = £1,082 – 10% = £108.20 = £973.80
Depreciation	= Year 1: £3,514.50. Year 2: £2,416.50 = £5,931
Breakdown cover	= 2 years at £40 = £80
Service labour costs	= Year 1: none. Year 2: £597
Replacement costs	= Year 1: none. Year 2: £255

TOTAL £8,136.80

Remind students of Mike's 10% insurance discount

Remind students that there are no service and replacement costs for year 1

Still got some time? Try this depreciation exercise...

Mike's car cost him £13,862 three years ago. He travels about 15,000 miles per year. Use the table to figure out:

- how much his car has depreciated in three years
- how much he could sell his car for after three years

Remind students that the amount the car depreciates depends on the car's value after each year

Answer a: **£7,672.50**

Answer b: **£6,189.50**

TEACHER EVALUATION

Use this sheet to evaluate how the lesson went and how you would look to improve it. You may like to post any suggestions on the Contact us page of the teacher zone.

RUNNING COSTS

Comments

a) What worked well?

b) What didn't work well?

c) How would you improve this lesson the next time?

60-SECOND STUDENT EVALUATION

Name: _____

Name or number of lesson: _____

During this lesson the **three** most important things I learned were:

- 1.
- 2.
- 3.

The things I **enjoyed most** about this lesson were:

The things I **least enjoyed** about this lesson were:

Finally, **give the lesson a rating** on a scale of 1 to 10, with 10 as the best.

(Please circle your answer)

1 2 3 4 5 6 7 8 9 10