

Problem Solving

Section I: Analysing the Problem

[HIGHER]

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Introduction to the section

This section is the first of a series of self study packs intended to guide you through the skills required to complete Problem Solving at Higher.

The whole series is composed of the following sections:

- *Section One:* Analysing the problem
- *Section Two:* Planning and carrying out your project
- *Section Three:* Evaluating your project.

The sections should be worked through in consecutive order.

You are encouraged to integrate your work in Problem Solving with other study areas where feasible. However, you must discuss this with your subject tutors before you begin any work.

Assessment explained

This first section covers the first outcome.

Problem Solving at Higher, Outcome 1:

You will need to:

- identify the critical factors involved in the problem you have to address
- assess the relevance of the critical factors to the problem
- develop an approach to deal with the problem
- be able to explain why the approach you have taken will work.

Aims and objectives of this section

This section will help you to:

- understand what is meant by problem solving activity
- understand how to analyse a problem and identify the critical factors.

By the end of this section, you should be able to:

- identify a complex problem that can be used as a problem solving activity for the purposes of this section
- break this problem down into at least four critical factors
- identify the relationship between factors
- develop an overall approach to a problem solving activity.

Symbols used in the pack



This symbol denotes a numbered Self Assessed Activity – a short exercise that you are encouraged to do for yourself. Comment and feedback for most of the Activities can be found on the pages following the Activities, but you should try to do the Activity before reading this. Your responses don't need to be shown to your tutor.



This denotes a Tutor Assessed Activity. These are different from Self Assessed Activities because there is no comment given after them (the tools for answering Assessment Tasks are included in the section however) and you should show this work to your tutor. Your tutor will mark this work and give you feedback.



This symbol denotes a Tutor Checkpoint and alerts you to the fact that it is now time to meet your tutor to discuss your progress. (There is further explanation of this on the page on Attendance/tutor contact requirements in the Student Introductory Guide.)

Tutor support

Although you may be studying Problem Solving at Higher as a flexible learning student, this does not mean that you have no support. Please do not hesitate to contact your tutor about any problems you are having, or to seek clarification on any points.

Case study A (possible responses)

Your responses may have included one or more of the following.

1. Bad publicity surrounding the hotel is putting people off.
2. The 60s night is not attracting customers in sufficient numbers.
3. The hotel may be facing financial disaster if this downturn in takings continues.

Can you suggest any possible solutions?

(Possible solutions overleaf.)

Case study B (possible solutions)

1. Market his product at a much lower price.
2. Try a marketing ploy such as giving away cash prizes or holidays with the new drink.

T

Problem solving isn't just about solving puzzles. It is about how you tackle the problems that face you in your everyday life at home, at school or college and at work.

Now rate your own problem solving skills.

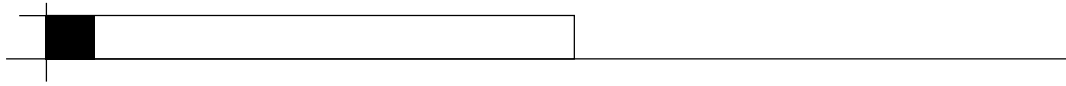
Tick the box that describes most accurately your level of confidence when you have to:

	1	2	3	4
1. Cope well with everyday problems	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2. Be methodical about your approach to problems	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3. Talk to people you don't know	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4. Work on your own	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5. Work in a group	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6. Find out information	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7. Manage your time	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
8. Set a deadline and work towards it	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
9. Look at your own work critically	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
10. Learn from mistakes	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

- | | | |
|---|---|-----------------------|
| 1 | = | I can't do this |
| 2 | = | I find this difficult |
| 3 | = | I can just manage |
| 4 | = | I can do this |

You may wish to discuss your completed response with your tutor. Problem Solving at Higher requires you to have all the skills at a fairly high level.

You may be able to identify particular areas that you wish to work on (for example time management).





Mini project

The main part of this unit requires you to solve a problem of your own choosing. In order to practise some of the skills that you will need, select a mini project topic from the list below. The mini project should take no more than 6–8 hours to complete.

You should carry out an investigation into one of the areas listed below.

Analyse the effectiveness of a current government campaign aimed at:

- Reducing drinking and driving
- Improving the nation's eating habits
- Reducing the number of people who smoke cigarettes
- Reducing the number of people who use illegal drugs.

The mini project topic I have selected is:

Once you have selected a problem try to break it down into bite-sized pieces. For example, when planning a holiday there are lots of factors to think about – when, where and how much the holiday will cost.

Suggest four key factors that your problem presents:

1. _____

2. _____

3. _____

4. _____

Possible solution overleaf.

Possible factors

1. The time available for the analysis – this will restrict the depth of your study.
2. The original purpose of the campaign. You would have to establish what this was before you could suggest how far the campaign had succeeded.
3. Access to information – how are you going to find information about the campaign? You should focus on one aspect of the campaign, perhaps a poster or television advertisement.
4. How will you decide whether or not the campaign has been successful? You may decide to do a survey in your class to find out how many people it reached and whether or not they were convinced to change their habits as a result of the campaign. If you do decide to do this you will have to keep the sample very small and the questionnaire very brief – remember the mini project should take no longer than 8 hours to complete.

How will you tackle the problem? What are your key steps and how much time will you allocate to each step?

Step 1

I will allocate the following amount of time to this step: _____

Step 2

I will allocate the following amount of time to this step: _____

Step 3

I will allocate the following amount of time to this step: _____

Step 4

I will allocate the following amount of time to this step: _____

(Add further steps if necessary.)

I will need (resources such as the library, television or access to the Internet):

1. _____

2. _____

3. _____

Possible solution

Key steps:

1. Firstly I will find out about the government's anti-smoking TV campaign – what are its aims and objectives? I will do this research by using the Internet, the library and possibly the telephone. This should take me about 2 hours.
2. Then I will draw up a brief questionnaire. I will make ten copies and give them to ten people in my class. I will ask them if they have seen the advert and I'll ask them how effective they think it was. This should take me about 2 hours.
3. I will collate all the information and find out what people thought. This should take me about 1 hour.
4. I will write up my findings. This should take about 1 hour.

I will need access to the library, a telephone and the Internet.

Go ahead now and try to tackle the problem.



Evaluating the mini project

How did you get on with the mini project? Did you find a successful solution?

Did you encounter any problems? If so, how did you tackle them?

What did you learn from completing the mini project?

If you had to do this task again, what would you change about your approach?

Possible solution overleaf.

Possible solution**Evaluating the mini project****How did you get on with the mini project? Did you find a successful solution?**

It was hard work but I found it interesting. I've written a brief report on my findings which is what I set out to do.

Did you encounter any problems? If so, how did you tackle them?

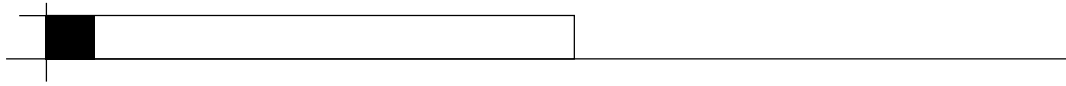
I found that the research activity took much longer than I expected. I spent a lot of time at home reading the information I printed in the library. That helped me to keep to my schedule. I probably spent twice as much time on research than I had originally planned.

What did you learn from completing the mini project?

Apart from learning a lot about the health campaign I carried out a survey for the first time.

If you had to do this task again, what would you change about your approach?

I would spend longer on my questionnaire. Some people just said yes or no to my questions and that wasn't very helpful. Next time, if I use a questionnaire, I will ask open-ended rather than closed questions.



Beginning the assessment tasks

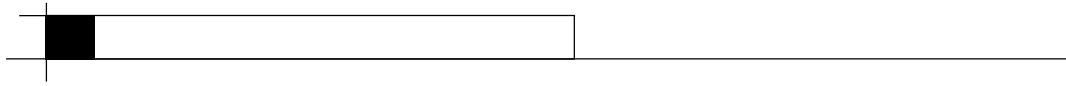
The first problem that you will have to tackle in this section is selecting a problem that you will have to work on for the purposes of the assessment.

That's right – you will have to set a problem for yourself.

The process will be much more valuable to you if you work on a problem that is related to your area of study. Discuss this with your tutor and with other members of your class.

You may choose to work on your own or with others in a group. If you decide to work in a group, you will still have to present all your own work for each of the assessment tasks.

Use your imagination and the advice of your tutor. You may also want to use the technique called 'brainstorming', which is explained more fully in the next section.



Analysing a task

BRAINSTORMING

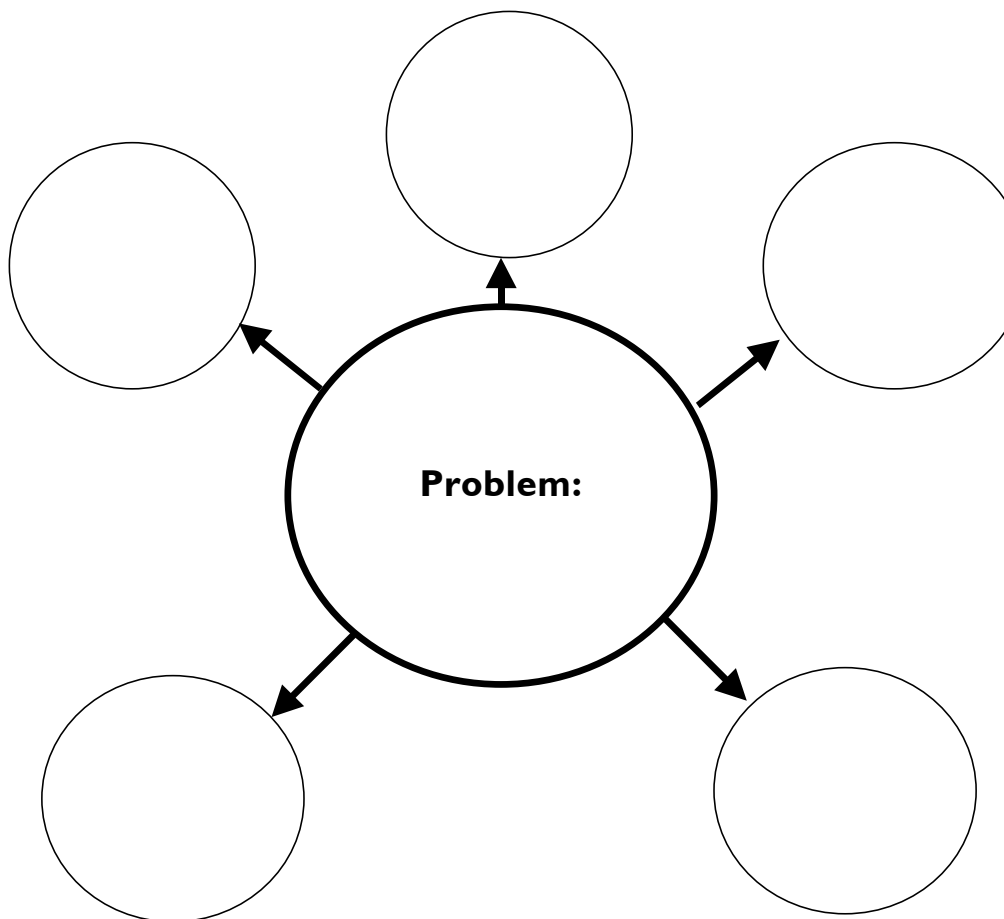
Brainstorming is the rapid pooling of all and any ideas that you or a group of people can come up with *before* any discussion or judgement takes place. Every idea is recorded no matter what the group members' opinion of it.

How to brainstorm

1. Keep a relaxed atmosphere.
2. Get the right size of team. The technique works best with groups of 5 to 7 people.
3. Choose a leader. The leader checks that everyone understands what is going on and why.
4. Define the problem clearly.
5. Generate as many ideas as possible.
6. Do not allow any evaluation or discussion.
7. Give everyone an equal opportunity to contribute.
8. Write down every idea – clearly and where everyone can see them. Use a flipchart or large sheet of paper or specialised computer software.
9. When all the ideas are listed, review them for clarification, making sure everyone understands each one. At this point you can remove duplications and ideas that the group feels are not appropriate.
10. Allow time for ideas to incubate or develop. Brainstorm in sessions with perhaps a few days in between. This gives time for the team to let the ideas turn over in their minds, which often results in new ideas at a later session.

T₃

Now you can start to break down your problem into factors or bite-sized pieces. Try to identify at least four or five of these factors now.



T₄

Explain how the factors you have identified relate to the problem and to each other. Remember you need to do this for at least four factors.

(For example, if you were designing a presentation on local tourist attractions, research would be an important factor. It would be an important factor as the group would have to find out the details of what the local tourist attractions were before presenting that information.)

1. _____

2. _____

3. _____

4. _____

How will you evaluate your solution?

The problem that you are trying to solve is likely to be too complex to set only one objective. You need to make a list of **musts** and **wants**. **Musts** are the basic requirements without which the solution would be unacceptable. **Wants** are those qualities that are desirable in any solution.

For example, two colleagues are looking for a bigger flat nearer to where they both work. Their musts and wants are as follows:

Musts	Wants
Within five miles of work	Older property with some character
Two bedrooms	Carpets included
Less than £60,000	Good decor
Good standard of fixtures and fittings	

T₆

Look again at your own problem as you have defined it.

What are the Must and Wants for the solution that you are looking for?

Musts

Wants

_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____

In no more than 50 words describe how you will evaluate your solution.

(For example, if you wanted to create a PowerPoint presentation on local tourist attractions, you might choose to show the presentation to an audience and ask them to complete a questionnaire on what they thought of it.)



Now you must check with your tutor to make sure that this problem gives sufficient scope to cover all aspects of the section. This will usually be done in a personal or group meeting with your tutor.