

Activity 6A

Savings in your home

Conserve Section 6

Aims

- To review Assignment 4 from the Calculate section.
- To brainstorm the best energy saving ideas for your home.

Students need

- A copy of the completed Table 4.3 from Assignment 4, *Discuss energy saving ideas*
- Energy journal
- A copy of the *About the energy savings experiment*

For the teacher

- Discuss what students have learnt and achieved in Calculate.
- Introduce Conserve and provide each student with a copy of the *About the energy savings experiment* sheet (Support materials, page 79). Discuss the experiment and explain the differences between the control and experimental week.
- Explain what 'achievable' and 'sustainable' mean in the context of selecting energy saving ideas.

Action plan

1. In Conserve you will put your energy saving ideas into action to reduce household bills and cut greenhouse gases. Read through the *About the energy savings experiment* sheet for further details.

In the space below write the aim of the experiment.

2. Refresh your energy saving ideas from Assignment 4, Table 4.3 by transferring them into Table 6.1.
3. In small groups compare your energy saving ideas with each other. In Table 6.2, include any additional ideas that you think may work well in your household.

Table 6.1. Energy saving ideas from Assignment 4, Table 4.3

	Room	Appliance	Saving idea
1			
2			
3			
4			
5			

Hint: If you have lost your notes, ask some classmates for the ideas they used.

Table 6.2. Other energy saving ideas

	Room	Appliance	Saving idea
1			
2			
3			
4			
5			

Activity 6A

Savings in your home

4. From the saving ideas listed, select 3–5 ideas that will be suitable in your home. Here are some hints and questions to help you choose the best ideas.

- From your lists, choose 3–5 saving ideas that you think will save the most energy. Number them in order from biggest saving to smallest saving (try to remember what you discovered using the energy efficiency calculator).

- From your lists, choose 3–5 saving ideas that you think will be easiest for your household to do. Number them in order from easiest to hardest.

- Give reason(s) for nominating the easiest saving idea.

- Give reason(s) for nominating the hardest saving idea.

5. As a class discuss the following and make a note of the conclusions drawn.

- What saving ideas would save the most energy? Make a list of the top two.

- What does achievable and sustainable mean? Why are they important ideas?

- Could your energy saving ideas work for a whole year? Explain.

- What are the benefits of saving energy?

6. In Table 6.3, make a list of 3–5 energy saving ideas to take back to your household.

Now is a good time to adjust your saving ideas to make them more achievable and sustainable. Select changes that your household would be happy to do – especially if they knew it would save money and help the environment!

Hint: A small, easy change that happens for a whole year may save more than a big change that lasts only one week.

Assignment 6A, *Discuss energy saving ideas*, asks you to discuss these ideas with your household and find out who wants to join the energy team!

Table 6.3. Selection of biggest and easiest energy saving ideas

	Room	Appliance	Saving idea
1			
2			
3			
4			
5			

Assignment 6A

Discuss energy saving ideas

Aims

- To review your energy saving ideas with your energy team.
- To adjust your energy saving ideas as per comments from the energy team.

Students need

- Energy journal
- Table 6.3 from Activity 6A, *Savings in your home*
- A copy of the *About the energy savings experiment*

For the teacher

- Ask students to introduce Conserve to their household using the *About the energy savings experiment* sheet provided in Activity 6A.
- Ask students to discuss the project with members of their household to see who is interested in participating. Be sure to explain the energy team options to students.

Action plan

1. Use the information sheet to help explain the project and the experiment to your household. Ask who wants to be involved in the energy team.

The energy team includes members of your household who can participate in the experiment by recording their energy use over a two-week period.

Write down the names of the members of your energy team

2. Discuss the energy saving ideas developed in Activity 6A by showing your energy team Table 6.3.

Explain each idea and how it will save energy. Discuss how achievable and sustainable the savings are. Ask team members if they think they could make the savings and if there are changes they would suggest.

Explain the connection between reducing energy usage and lowering greenhouse gases, helping the environment and saving money.

3. Ask each member of your energy team to say what is the most important motivation to them for saving energy, for example, it might be saving money or helping the environment.

Write their answers in Table 6.4.

Table 6.4. Energy team's motivations

Energy team member	Most important motivation for saving energy

Assignment 6A

Discuss energy saving ideas

4. With the team, finalise the energy saving ideas (making any changes that are discussed) and write the new energy saving ideas in Table 6.5.
5. Now it's time to decide on the dates and times for the experiment.

Space for notes

Explain and discuss the concept of a control and experimental week. Stress that the control week is about recording normal usage.

- Our **control week** will start on _____ (include date) at _____ am / pm
- Our **control week** will end on _____ (include date) at _____ am / pm
- Our **experimental week** will start on _____ (include date) at _____ am / pm
- Our **experimental week** will end on _____ (include date) at _____ am / pm

Be prepared to discuss your energy team's approved energy saving ideas in class.

Make sure Table 6.5 is completed correctly.

Table 6.5. Energy team approved energy saving ideas (3–5 ideas)

	Room	Appliance	Saving idea
1			
2			
3			
4			
5			

Activity 6B

Principles of collecting data

Conserve
Section 6

Aims

- To gain an understanding of the principles and steps involved in completing the experiment.
- To develop sound record keeping skills.

Students need

- Energy journal
- Table 6.5 from Assignment 6A, *Discuss energy saving ideas*

For the teacher

- Reinforce the importance of accurately recording data.
- Ask students to form small groups to discuss their energy saving ideas.
- If students need additional space they can use their energy journal.

Action plan

1. In small groups, discuss the energy saving ideas created at home in Assignment 6A, Table 6.5.

Present your ideas to the group and be sure to include the following:

- who is in your energy team
 - what your energy saving ideas are
 - what motivates your energy team members
 - when your control week will start.
2. This experiment relies upon keeping accurate records of energy used by the appliances listed in your energy saving ideas. There are a number of steps that should be taken to ensure that accurate records are kept. Read the hints for good record keeping.
 3. Decide how you are going to record the energy used in the control and the experimental week. Start by thinking about the units of measurement that you will use. It is essential that you use the same units as those used in the energy efficiency calculator (see Table 6.6 (located over the page) for the units used in the energy efficiency calculator).

Remember: You don't need to record all the energy used in your house, only the use of appliances listed in the energy saving ideas (Assignment 6A, Table 6.5).

Hints for good record keeping

- Have a place for record-keeping devices (such as a sheet of paper) next to each appliance that is going to be monitored.
- Prepare the record-keeping devices before the experiment commences, that is, rule columns on the page, clearly label each column with appropriate headings, provide simple instructions and write the starting and concluding dates of the experiment (you could output this from your computer).
- Be as accurate as possible with time-keeping. You may need to use a clock or a watch.
- Be consistent when measuring time. Make sure you use the same units, that is, always measure the same appliance in, say, minutes/seconds, not a mixture of minutes/seconds and hours/minutes.
- When recording the use of an appliance the record needs to be kept consistent and up-to-date. Always include by whom (the user), the date, when and for how long the appliance was used or whether an appliance was used at all. For appliances that measure usage in time it is recommended that a record be kept of the beginning and concluding time of use. From this you can calculate the total time of use (this can be completed at the end of the week).
- If someone forgets to record their usage, ask them to make an estimate. Note that it was an estimate.
- Make notes of any unusual events, such as weather changes or any change in routine, that would affect your normal energy use.

We are assuming that the other energy use stays the same or constant. Therefore, to calculate the savings, you need only to monitor the appliance that you plan to change the use of.

4. In Table 6.7, list your 3–5 energy saving ideas in the left-hand column, then complete the remaining columns. Follow the example provided.

Activity 6B

Principles of collecting data

5. Make space in your energy journal for daily notes on the project. Always record the daily maximum and minimum temperature. Make a note if weather affects your energy use. Be on the lookout for unusual events that might affect energy usage, especially those relating to the saving ideas.
 - a little brother flushes Monday's shower record down the toilet
 - a member of the energy team is ill and at home instead of at school or work
 - your sister's netball team stay over for a video night after winning the finals.
6. As a class discuss what to do in the following circumstances:*
 - a sudden weather change
 - your aunt, uncle and five cousins come to stay half way through the control week

* Note that the experiment only records the energy used by the energy team members.

Table 6.6. Units used in the energy efficiency calculator

Time	Min / day	Shower, hair dryer
	Hours / day	Home computer, portable TV, portable stereo, small appliances, lighting, space heater, central heating, airconditioner, games console, outdoor lighting
	Hours / week	Alarm clock, electric blanket, iron, sewing machine, dishwasher, oven, stove, microwave, TV, stereo, VCR/DVD, vacuum cleaner, pool, BBQ, spa, saw, drill
Number	Items / week	Bath, dishwashing sinks, washing machine cycles, clothes dryer cycles
	Number of items	Refrigerator, freezer

Table 6.7. Measurement of saving ideas

	Saving idea	What is the unit?	Measuring device	Record keeping device	Instructions to energy team
	<i>Shorter showers</i>	<i>Min / day</i>	<i>Watches</i>	<i>Sheets of paper with columns and a pen in the bathroom to record who used and start and finish times</i>	<i>Note shower start and stop time on sheet in minutes</i>
1					
2					
3					
4					
5					

Assignment 6B

Set up your data collection

Conserve
Section 6

Aims

- To set up your data collection.
- To start your control week.

Students need

- Energy journal
- Assignment 6A, *Discuss energy saving ideas*
- Table 6.6 and 6.7 from Activity 6B, *Principles of collecting data*

For the teacher

- Remind students that it's important that the collection of data is accurate. Small inconsistencies can create incorrect results.
- Ensure that students know that the record-keeping devices must be ready to use at the start of the control week.

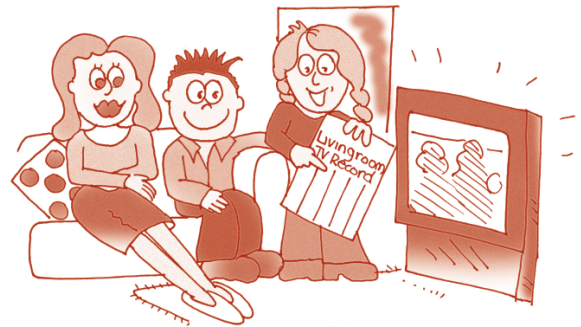
Action plan

Remind your energy team that the control week will record only the normal use of the 3–5 appliances listed in the final energy saving ideas.

1. Make recording device(s) for each of your energy saving ideas. Review Activity 6B, Table 6.7 and make the recording devices as listed.

As there may be more than one TV and bathroom you may need quite a few sheets of paper. It's best to put the recording device near the appliance.

Before you start ruling up sheets, think about giving them good headings and adding clear instructions. Table 6.8 provides an example of a recording device for monitoring TV.



2. Inform the energy team about the data collection devices. Show them the sheets and instructions. Explain the importance of keeping accurate records and ask the team to use a clock or watch when needed.
3. Place the data collection devices in suitable locations and make sure they are safe from damage or loss. Ensure that pens or pencils are available. Tell your energy team where the record sheets will be located.
You will need to check the sheets each day to make sure that they are safe and being used.
4. You will need to answer yes to all the following questions before starting the control week.
 - Are my data collection devices ready? Yes / No
 - Does everyone in my energy team understand the control week? Yes / No
 - Does everyone know what appliances are being monitored? Yes / No
 - Is my energy journal up-to-date and ready? Yes / No
5. Start recording data on the start day and time of the control week. This day and time was written down in Assignment 6A.
6. Be prepared to discuss your data collection methods in the next lesson.

Table 6.8. Living room TV record

Living room TV record				
<i>Please record the exact on and off time of the TV</i>				
Who	Date	On time (hr, min)	Off time (hr, min)	Time used

Remember: It is essential that you use the same units as you used in the energy efficiency calculator. Check Activity 6B, Table 6.6 to see what unit is being used for each appliance. For example, TV is in hours/week. If you have recorded the time in minutes, you will need to convert to hours.