World Environment Day

Activity Extension Pack

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GIRL GUIDES AUSTRALIA

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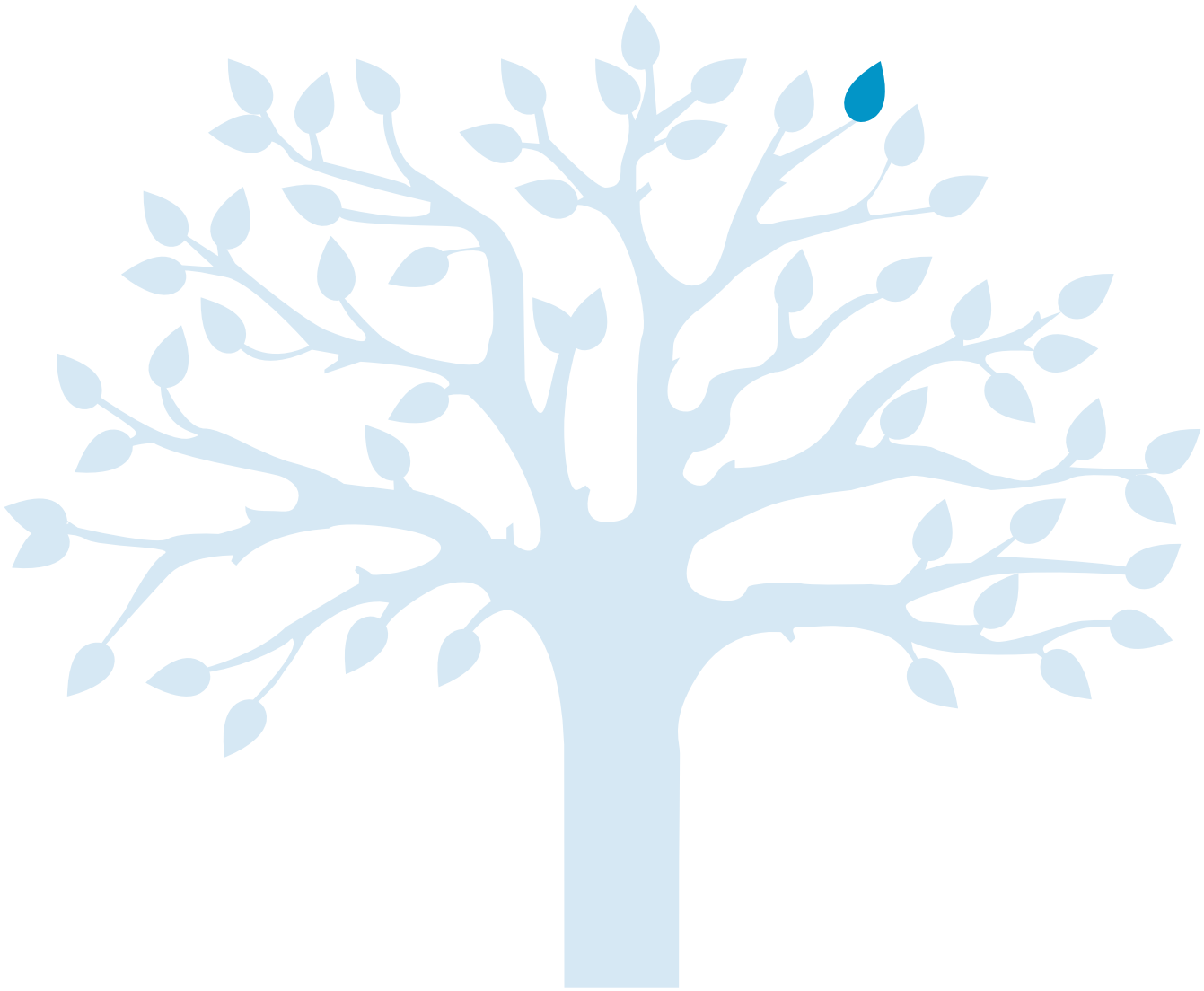
Contents

1. Extension Activities

This pack is for Guide Units that enjoyed the World Environment Day Activity pack and would like further activities on this topic. These extension activities provide ideas to continue learning about the environment along with ways to encourage further action and / or share knowledge.



Activity 1.1 Nature walk – Urban biodiversity

Aim

To gain an understanding about the environment we live in and to consider the value of the urban environment. Skills developed through this activity may be transferable to school science classes, particularly biology and environmental science lessons. If Guides take an interest in this activity, they may be interested in further learning about environmental issues, including biodiversity conservation, human impacts on the environment and long-term sustainability issues.

Age

Any age – assistance from an adult required (note that the Leader will need to do some preparation prior by visiting the site and looking at the different types of trees, plants and animals. It may be worthwhile trying to identify some of these to point out to the girls during the site visit).

Materials

- An outdoor area featuring plants, water and/or wildlife, preferably close to an urban area.
- Pens and paper for drawing and taking notes.
- Hat, sunscreen and sturdy shoes.

Time

Allow at least 2 hours

Directions

1. Introduce the girls to the site. Explain any safety hazards that may be present and where the girls will be moving within the site. Make sure everyone has their hat and sunscreen on.
2. Stop at any interesting environmental features and have a short chat with the girls as to why they are important. Examples include:
   a. Trees – provide habitat for birds and bats. Point out any hollows that may be present and any leaf litter than may be on the ground. Lizards like to hide in leaf litter.
   b. Water systems such as streams or part of a river – provides habitat for waterbirds, insects, frogs and sometimes fish. Point out any plants growing in the water or any sections where there are plants growing near the river.
3. Get the girls to count all of the different birds, plants and other things of interest they see. Get them to also consider any sources of rubbish, pollution or other negative things. If working with a younger group of girls, encourage them to draw different leaves and animals they see. Younger girls could even collect leaves from leaf litter and make posters with them describing the park environment that they visited and what they learned.
4. Get the girls to write a short paragraph about how they feel about the open space – i.e. whether they like being outside and seeing the vegetation and animals. Then get the girls to consider what their urban environment would be like without open spaces. This could form the basis of a discussion about the importance of environmental values, not only for their intrinsic and habitat value for local animals but also how people interact with them.

Take Action!

Did you know how many trees, plants and animals live in our urban environments? This helps us to think about sustainability in our cities. Next time you go for a walk in an open space, think about that area from an environmental perspective. Think about what plants and animals live there? Is there anything nearby that could harm them (such as rubbish in the river)? How can we avoid harming the plants and animals in this area?

Activity 1.2 Water monitoring

Aim

To participate in World Water Monitoring Day (WWMD) - an international education program that builds awareness and involvement in protecting our precious water resources. This program is fun and easy to get involved in. This task will help Guides to understand the importance of water quality preservation. It is anticipated that Guides will take a greater interest in waterways and ecosystems around them after participating in this activity. Skills developed during water quality testing will be transferable to science classes at school.

Age

Any age – assistance from an adult required

Materials

- Water monitoring kits, which are available through WWMD organisers (http://www.worldwatermonitoringday.org/).
- Pens and paper for writing down results, drawing features and taking notes.
- Hat, sunscreen and sturdy shoes.
- Access to a computer.

Time

Allow at least 2 hours

Directions

1. Water monitoring kits will need to be ordered by the supervisor prior to organising the WWMD event.
2. Once you've registered and chosen a suitable waterway just head out and start monitoring anytime between 22 March and 31 December. Here's what you will get to test:
    - Dissolved Oxygen (DO) – Oxygen isn't just important for us, fish and other aquatic species need it as well. The higher the DO reading, the healthier the ecosystem is.
    - pH (acidity) – Measure how acidic or basic the water source is on a scale of 1 – 14 (with 1 being the most acidic). A pH between 6.5-8.5 is best for supporting aquatic life.
    - Turbidity (clearness) – Turbidity can impact the aquatic ecosystem by affecting photosynthesis, respiration and reproduction of aquatic life.
    - Temperature – This indicator is very important. If the water is too hot or too cold it can have severe effects of the fish that rely on the water source to survive.
3. Introduce the girls to the site you'll be testing. Ideas include streams, lakes and rivers. Explain any safety hazards that may be present at the site and make sure everyone has their hat and sunscreen on. Particularly with younger girls, make sure that an adult is nearby when working near water.
4. Divide the girls into groups and get each group to do one of the above 4 highlighted tests (e.g. dissolved oxygen, pH, turbidity, temperature). Once the group is finished, get the groups to swap and do all the different tests available. This will give the girls an opportunity to become familiar with all aspects of the kit. Additionally, you'll be able to compare results collected by the girls and check them for differences. This could form a discussion with older girls about scientific methodologies and why differences may sometimes occur within testing and results, for example, before and after heavy rainfall.
5. As a group, send off your WWMD results and check the published results. Compare your results with other results from different areas. What does this tell you about the quality of water in your waterway?

   All these tests can be done with one easy to use kit. Once you have tested your water samples, WWMD organisers collate all the results and publish them for everyone to see.

Take Action!

Waterway health is important for many reasons. Awareness of waterway issues and monitoring of changes within waterways is critical for understanding the processes that affect them. Why not join a waterway monitoring group such as Waterwatch? Or talk with your friends and family about waterway health. The more people that understand how waterways are affected, the more action may be taken to keep our waterways healthy.

Activity 1.3 Catchment water pollution

Aim

To see what may be polluting a river or creek. This task will help Guides to understand the different types and sources of pollution in our waterways and show them that pollution from far away can still end up in our waterways. This is a message that Guides can spread to anyone they see littering in the streets.

Age

All

Materials

- Pens and paper for drawing diagrams and writing notes.
- Hat, sunscreen and sturdy shoes.

Time

Allow at least 2 hours

Directions

1. Select a watercourse (river or creek) to monitor. Consider using the same site as for WWMD activities and combining the two activities.
2. Select a location next to the watercourse to commence your walk.
3. It is difficult to define the catchment of a watercourse without a topographic map so walking about a 100m radius from your selected point should be adequate.
4. As you walk write a list of the pollution you can observe in the catchment (e.g. food wrappers, bottles).
5. Also observe the watercourse – does it look murky? Is there pollution floating in the water? Can you see oil in the water?

Point and diffuse sources of pollution:

- A point source of pollution is a single localised discharge of pollution into the water body, such as polluted water from an urban storm water drain, or discharge from a factory.
- A diffuse source of pollution has no single discharge, such as rubbish spread around the river banks, or runoff from the surrounding area into the waterway.

6. Attempt to identify point & diffuse sources of the pollution in the catchment and water (see description above). Think about why it is important to know whether it is a point source of pollution or a diffuse source.

Take Action!

It is important that we are aware of how pollution in a catchment can affect waterway health. Share the things that you learned during the activity, such as the types of pollution you saw and where it came from, with your family and friends. Is there anything you can do at home to prevent pollution from entering your local waterway? Also think about whether it is easier to stop point or diffuse pollution?

Take Action!

These are additional activities that the girls can do at home to follow on from World Environment Day activities that were completed in the Guide meeting. These should be suggested if the girls are particularly interested in a certain activity.

Activity 2.1 Create your own compost bin – to follow on from World Environment Day Pack Activity 23

Background

There are lots of things we throw out that can actually be used for something else – improving the soil in our gardens! Anything that was once growing is called 'organic' and anything organic can be used to improve soil if it is allowed to decompose properly. This is called composting, or making compost.

If we throw organic waste into the rubbish bin, it ends in an area not designed to get things to decompose. In other words, the organic waste is wasted and not used for compost.

This activity shows us some simple ways to make compost from our own waste organics. Composting involves putting organic waste (fruit and vegetable scraps, some paper [used to be a tree] and other organic waste) into a container so that it can decompose or break down. The waste "breaks down", aided by micro-organisms, worms and air circulation. The broken down organic matter can then be used as garden fertiliser to improve the growth of other plants.

Age

10 +

Materials

- A plastic storage bin with a lid for each girl (at least as large as a large ice cream container – ideally it is bigger).
- A pair of scissors or a knife to cut the bottom out of the container if you are going to put it straight on the garden.
- A hammer and nails to punch holes in the bin.

Activity 1 *If you don't have a garden – perhaps just a courtyard*

Preparing the bin

You need to have air circulating around your compost to help it decompose faster. To manage this in a plastic bin, you will have to drill holes in the bin. It really doesn't matter what size the holes are as long as you have plenty of holes. Space them 25mm – 50mm apart, on all sides, bottom, and lid.

Placing your bin in a convenient spot

Because this bin is small, it will fit just about anywhere. If you don't have a yard, a patio, porch, or balcony will work just fine. If you have plenty of space, consider putting it outside the kitchen door so that you can compost kitchen scraps easily, or near your vegetable garden so that you can toss weeds or trimmings into it. It can also go inside a garage or storage shed if you'd rather not look at it.

Filling the bin
Anything you would throw in a normal compost pile, you can throw into your compost bin: leaves, weeds, fruit and vegetable peels, egg shells, coffee grounds, tea bags, and grass clippings all work well. Anything you put into the bin should be chopped fairly small so it will break down quicker in the small space. Fruit and vegetable trimmings can be chopped small with a knife or run through a blender or food processor to break them down. Crush eggshells finely so they will break down faster.

Maintaining your bin
Every day or so, as you think of it, you can aerate the bin by giving it a quick shake. If the contents of the bin are staying very wet, or there is an unpleasant odour coming from the bin, you'll need to add some shredded fall leaves, shredded newspaper, or sawdust to the bin. These will dry it out and help restore the ratio of greens to browns that makes compost happen more quickly. If the contents are very dry, use a spray bottle to moisten the contents, or add plenty of moisture-rich items such as fruits or veggies that are past their prime.

Harvesting and using your compost
The easiest way to harvest the finished compost from your bin is to run it all through a simple compost sifter so that the large pieces are kept out of the finished compost. Anything that still needs to decompose can go back into the bin, while the dark crumbly finished compost can either be stored for later use or used immediately used on the garden. It is also wonderful to use in pot plants as well as the garden.

Activity 2 *If you do have a garden you can put the bin straight onto soil*

Preparing the bin
As for Activity 1, but also cut a hole in the bottom of the bin.

Placing your bin in a convenient spot
Place your bin in the garden on some soil (see the picture). The lid will stop birds or rodents getting in. If you have a vegetable garden you could put it near there so that you can toss weeds or trimmings into it.

Filling the bin
As for Activity 1.

Maintaining your bin
You can just leave it in the garden where the worms and microbes will be doing their work from the bottom up. When it becomes full, you can use a spade and simply turn it into the garden bed, shift your bin and start somewhere else.

Speak out, do, educate

- Make your own compost bin and see how much less organic waste you can send to landfill by putting it to use in your garden. If you weigh everything you put into the bin for a week, you'll know how much you are saving from the rubbish tip.
- Record how much waste you put into a compost bin at home and report back to your Guide group. Start a chart in your Guide group to track your waste savings throughout the year.
- Tell your friends and family about composting. It's a great way to improve your garden for free!
- Think about why some people have more compost than others (e.g. there are more people in house, eat more vegetables, better composters).

Activity 2.2 Making recycled paper – to follow on from World Environment Day Pack Activity 22

Background

Paper is something we use every day to write on and is an item that often goes to waste. Did you know that you can make your own paper from waste paper? It's easy, saves paper from going to landfill, saves you buying more paper and gives you some cool looking paper that is different every time.

Age

All

Materials

- Lots of old newspapers, catalogues, and other paper products.
- A large tub (e.g. a baby's bath, a wheelbarrow).
- A whisk or egg beater.
- A bucket.
- A big bowl.
- A colander.
- A flat surface on which you can lay your paper pulp to dry (e.g. an old table).
- A sponge.

Activity

1. Rip your waste paper into stamp sized pieces. Rip enough paper to make around 6 cups full.
2. Put your ripped paper in a bucket and add 6 cups of hot water. Stir and leave the mixture to soak for a minimum of 30 minutes.
3. Take out a few handfuls of the soaked paper and put it in a bowl and add extra water.
4. Beat the paper with a whisk or egg beater.
5. Tip this mixture into your large tub.
6. Repeat steps 3) to 5) with the rest of your paper.
7. Collect around 2 cups of the paper pulp in the colander and allow the water to drain out. Use your hands to squeeze out excess water.
8. Lay your paper pulp onto a flat surface.
9. Flatten out the paper pulp using your hand and a sponge. Get your pulp as flat and thin as possible – you may want to use a heavy object to help flatten it.
10. Leave your paper out to dry in the sun.
11. Repeat steps 7) to 10) with the remaining pulp.
12. You can also add dried flowers, glitter, food colouring or even hundreds and thousands to make your paper extra special.
13. Once your paper is dry you can use it as wrapping paper, to make cards or to write a nice letter to a friend.

Speak out, do, educate

- Think of all of the different ways that you can use your new recycled paper. Why not take it along to your next Guides' meeting and show everyone what you have made? Tell other Guides at your meeting how you made your recycled paper.
- Take every opportunity to recycle, whether it is paper and cardboard products, food waste, bottles, cans or anything else that can be recycled. Look for the recycling symbol on packaging to tell you whether it can be recycled.

Activity 2.3 Save Water around your home – to follow on from World Environment Day Pack Activity 13

Background

Water is a precious resource, and it's important that we don't use more than we need. Australia is the driest populated continent on earth, but Australians consume the greatest amount of water per person. There is a lot we can do around the home to reduce the amount of water we use, and this will leave more water to keep our rivers and environment healthy.

Age

All

Activity

Choose one or two of the water saving ideas in the following list to reduce your water use around the home, at school, and at the Guide meeting place. Estimate how much water you can save each week by measuring the amount once for each water saving method, then multiplying that by how many times you do it each week. It can be easy to save water by changing the way you do things!

Some examples of ways to reduce water use around the home are:

- Turn off the tap when you clean your teeth.
- Time how long it takes for you to have a shower, and then cut it down as much as you can.
- Use an environmentally friendly dishwashing liquid, and reuse the dishwater by watering your garden with it after you've done the dishes.
- Use a bucket to collect water in your shower while you are waiting for the water to heat up.

Speak out, do, educate

- Take every opportunity to save water around your home. Talk with your family and friends to find out whether they, too, can be saving water.
- Prepare a graph in your Guides group to track your water savings activities. Compare results with the group and even set up a challenge within your group or between groups to see who can save the most water!

Activity 2.4 Personal ecological footprint – to follow on from World Environment Day Pack Activity 29

Background

Every activity you do consumes resources from the planet and produces waste that the planet must deal with. Your Ecological footprint is a measure of the pressure your daily activities place on the planet. By measuring your Ecological footprint you can work out what contributes most to your footprint and identify ways you can change your lifestyle to reduce the pressure you place on the environment.

Activity

1. Go to - http://www.footprintnetwork.org.au/
2. Under the 'footprint basics' tab select 'personal footprint'.
3. Take the Personal Footprint quiz and work out how much land area it takes to support your lifestyle. This is your ecological footprint.
4. Identify your biggest area of resource consumption and come up with three changes you can make to you/your family's lifestyle to reduce your ecological footprint.

Speak out, do, educate

- Try to make one or two of the changes you came up with in step 4 in the next week. Ask your friends to do the same and compare how you went. Re-calculate your ecological footprint. How much land area can you save?
- Think about how making the small changes to your everyday behaviour can affect your overall ecological footprint. Can you think of anything else you could be doing to reduce your overall footprint?

Activity 2.5 Locally grown produce – to follow on from World Environment Day Pack Activity 25

Background

We often don't think of how much energy and resources are needed to produce our food and deliver it to our local stores. In many cases, the food that you find at your local supermarket has travelled a long way from where it was produced. The transport, refrigeration and storage required for this uses a lot of energy, but there are lots of things you can do to improve the sustainability of the food you eat. One way you can make a difference is to grow your own food. This will reduce the energy and waste that normally goes into getting the food from where it is grown to your dinner plate. The food you grow will need no transport or packaging, and will be so fresh and delicious that you'll never want to buy it from the supermarket again! There are lots of herbs and vegetables that are really easy to grow, and they don't take up much space so they can be grown in a pot if you don't have much space in your garden.

Activity

There are lots of ways that we can reduce food waste, and reduce the amount of resources that are needed to produce and transport the food we eat. Try some of these:

1. Don't waste food. This will ensure that the resources that went into producing the food are not wasted.
2. Buy food when it's in season. Food that is out of season has usually travelled a long way from a place where they it is in season.
3. Buy fresh food rather than processed foods. Processed foods usually take more energy and water to produce than fresh foods.
4. Eat less meat. Meat is one of the most highly resource-intensive foods; in fact it takes around 16,000 liters of water to produce 1kg of beef.
5. Buy food that is locally grown. This will reduce the energy required for transport of the food to your local area. Visiting your local farmers market is one way to do this, and can be a lot of fun too!
6. Grow your own food. This will reduce the energy and waste that normally goes into getting the food from where it is grown to your dinner plate. The food you grow will need no transport or packaging, and will be so fresh and delicious that you'll never want to buy it from the supermarket again! It's best to talk to your local nursery or garden centre about starting a vegetable garden if you're not sure. Remember to talk to your Mum or Dad or another adult before starting to grow your own food.

Speak out, do, educate

- Talk to your friends about how they are reducing their food waste.
- How can you integrate these activities with growing your own food? Can you use compost generated from your compost bin? How does your overall effort of recycling, composting and growing your own food, as well as reducing water use, affect your ecological footprint? These activities all have a common theme of environmental sustainability.

- Research an aspect of environmental sustainability that you find interesting. It could be anything from endangered species to using resources. Discuss what you learned with your group.

Activity 2.6 Make your own shampoo

Background
The things we use to clean our home and ourselves often come from a long way away and contain some nasty chemicals. When these things need to be transported a long way, they produce a lot of carbon dioxide emissions, which contribute to global warming. So why not consider making some of your cleaning products at home, which will save you money, reduce your CO2 emissions and you'll know exactly what ingredients are in them.

Age
10+

Activity
Here are some instructions to make your own natural shampoo.
You'll need:

- 8 grams of olive oil.
- 1 egg.
- 1 tablespoon of lemon juice.
- 1 teaspoon of apple cider vinegar.

Get mum or dad's help to mix all of the ingredients together in a blender. Use the shampoo immediately. As this shampoo doesn't have any preservatives it won't last long so just make enough for you to use straightaway.

Speak out, do, educate
How did you go making your own shampoo? Did your hair feel and look different after using it? Find out how far away your regular shampoo comes from and think about how much emissions a truck would be producing to transport it all the way to your local shops. Do some research and make a list of other things that you could easily make at home to reduce your ecological footprint. Discuss these ideas with other girls in your Guide Unit.

Activity 2.7 Saving energy around your home – to follow on from World Environment Day Pack Activity 29 and 30

Background
Saving energy is one of the best ways to conserve natural resources. There are many things you can do at home to help your family become more energy efficient. Knowing how much electricity each of your appliances uses will give you a clearer picture of where you use the most energy. It will also help you identify where you can save energy!

This activity will highlight the cost and environmental implications associated with energy usage. Guides will be able to calculate the cost of their personal energy usage and will identify ways in which they can reduce their energy consumption. Skills developed will be transferable to maths and sciences classes in school.

Age
12+

Energy Saving tips

- Turn off the lights every time you leave the room.
- Shutdown the computer when you are not using it.
- Unplug electronics like cell phones, video games and televisions when not in use.
- Don't hold the refrigerator open for long periods of time.
- Ask your mum and dad to change regular light bulbs to energy efficient Compact Fluorescent Light bulbs (CFLs).
- Take a short shower instead of a long bath.
- Plant a tree.

Activity – Using the Energy Cost Calculation Guide

- You'll need access to a computer or a calculator for this activity.
- Count the number of regular light bulbs in your home and calculate how much energy you could save by switching to Compact Fluorescent Lightbulbs (CFLs). How much money could you save by switching to CFLs?
- Select six electrical appliances that you use regularly. Use the energy cost calculation guide (below) to determine the annual cost to run these appliances.
- Identify six ways you could help save energy at your home / school.

Energy Cost Calculation Guide

a) Identify six appliances that you use in your home and find out the wattage of these appliances. The wattage is often stamped on the bottom or back of the appliance. Wattage is the maximum power drawn by the appliance. Since many appliances have a range of settings (for example, the volume on a radio), the actual amount of power consumed depends on the setting used at any one time. If you can't find the exact wattage of your appliance use the typical wattages given in the table below:

Appliance	Typical Wattage
Television (color): 19" – 27" – 36" – 53"-61" Projection – 53"-61" Flat Screen –	 110 113 133 170 120
Computer: CPU - awake / asleep – Monitor - awake / asleep – Laptop –	 120 / 30 or less 150 / 30 or less 50
Radio (stereo) –	400
Refrigerator (frost-free, 0.5 cubic meter) –	725
Microwave oven –	750-1100
Heater (portable) –	750-1500
Toaster –	800-1400
Water heater (40 gallon) –	4500-5500
Washing Machine	350-500
Clothes Dryer	1800-5000
Dishwasher	1200-2400
Toaster	1225
Electric blanket - Single/Double –	60 / 100

b) Use the following formula to work out the Daily Kilowatt-hour (kWh) consumption of each appliance:

- Wattage x Hours Used Per Day – Daily Kilowatt-hour (kWh) consumption (1 kilowatt (kW) – 1,000 Watts).

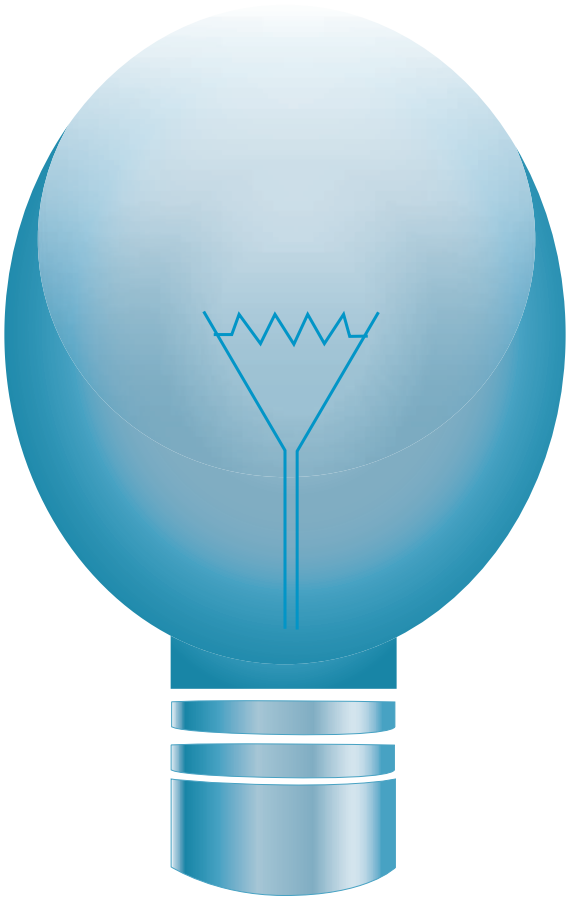
c) Multiply the Daily Kilowatt-hour (kWh) consumption by the number of days you use the appliance during the year to determine the annual consumption.
d) Ask Mum or Dad for a copy of your most recent energy bill and find the Kilowatt-hour rate you are charged for electricity.
e) Calculate the annual cost of the appliance by multiplying the annual consumption (kWh per year) by the cost per kWh consumed. The kWh information should be on your electricity bill.

Example:

Appliance	Watts	x	Hours per Day	x	Days per Year	÷	Convert to kWh	x	kWh Rate	=	Cost per Year
Window Fan	200	x	4	x	120	÷	1,000	x	.14	=	$13.44

Speak out, do, educate

Try one or two of the energy saving measures you identified above in your home / school. Re-calculate your energy consumption. How much energy can you save?



Activity 2.8 Investigate environmental facts – to follow on from World Environment Day Pack Activity 7

Background

All of the activities suggested here follow a common theme of environmental sustainability. These activities have introduced reasons why environmental sustainability is important. However, finding out reliable information about sustainability issues can be difficult, as demonstrated in Activity 7 of the World Environment Day pack. The challenge, then, is to understand more about sustainability issues in order to make informed decisions about these issues. And the only way to understand more is to start researching!

Activity

Pick your favourite World Environment Day activity and then choose something about this activity to investigate further. For example, if your favourite activity was making your own, home-made paper, then you might like to investigate questions like these:

- What different materials can be used to make paper?
- How much paper would I save if I used my computer to read emails and articles rather than printing them out?
- How much water is needed to make one ream of paper?

The questions that you ask are limitless. The more you ask, the more you'll find out about a particular topic and the more you'll understand. You can apply this strategy to other questions you might have about other topics. The ability to ask questions and find information about a topic you care about, is very important for later learning and life.

Speak out, do, educate

Share your questions with the rest of your group. Did other girls have similar questions? Compare how you went about finding information about your topics. Where did other girls find out their information? For older girls, this could form the basis of a discussion about good sources of information, bias and continuity, compared with information that may not be as reliable. As introduced in Activity 7 of the World Environment Day pack, this might be a good time to discuss various sources of information and why they may or may not be reliable.

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