

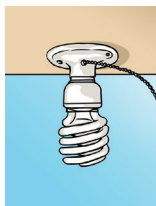
Energy use assessment activity sheet

How much electricity are you using at home?

An energy use assessment is a step-by-step process to help you find out how much electricity you and your family are using at home over a period of time ... for instance, one week.

Choose two lights in your home for the assessment: Say, one light in the passage near your bedroom and one light in the bathroom you normally use.

Now, let us follow a step-by-step process of questions and answers to find out how much electricity these two lights will be using over a period of one week and how much they will be adding to your parents' electricity bill (in Rand).



Question 1:

What is the W (watt) rating of each light? The watt rating can normally be found at the base of the lamp. It can also be found on the package of the lamp - your parents must have similar lamps still in their packages stored in a cupboard for future use; ask them to see one of the packages.

Answer 1:

- _____ W (watt) - the light in the passage
- _____ W (watt) - the light in the bathroom

W (watt) rating simply means the number of watts of electricity the lights will use (or demand) when they are switched on.



Question 2:

For how many hours were the two lights switched on between Monday and Sunday? Record the times when they were switched on and off in the table below.

Template for answer 2:

Day	Times the passage light was switched on and off	Number of hours	Times the bathroom light was switched on and off	Number of hours	Number of hours both lights were on
Monday					
Tuesday					
Wednesday					
Thursday					
Friday					
Saturday					
Sunday					
Total					

Question 3:

Look at your parents' electricity bill. You will see that the amount of electricity you have used for the month is listed as kilowatt hours (kWh). Work out how many kilowatts are used by the lights in the bedroom and bathroom in.

How do you change a watt (W) rating into a kilowatt rating?

It is a simple calculation: 1 watt ÷ 1 000 = 0,001 kilowatt (kW). Using this formula, change the watt (W) ratings of the lights in the passage and the bathroom into kilowatt (kW) ratings.

Answer 3:

- _____ kW (kilowatt) - the light in the passage
- _____ kW (kilowatt) – the light in the bathroom

Question 4:

Kilowatt hour (kWh) is the amount of energy a light uses over the period of time it is switched on.

It is a simple calculation: 1 watt ÷ 1 000 = 0,001 kilowatt (kW) x 1 hour = 0,001 kilowatt hour (kWh). Using this formula, calculate the kilowatt hour of the light in the passage and the light in the bathroom from Monday to Sunday – as you have recorded in the table above (Answer 2).

Answer 4:

- _____ kilowatt hour (kWh) - the light in the passage
- _____ kilowatt hour (kWh) - the light in the bathroom
- _____ Total kilowatt hour (kWh) - both lights

Question 5:

Look again at your parents' electricity bill.

**You will see that the total amount at the bottom of the bill has been calculated as follows:
Total kilowatt hour x R per kilowatt hour (as charged by the municipality you live in).**

Assuming the municipality charges you R2 per kilowatt hour, how much will you have to pay for the lights in the passage and the bathroom that were switched on between Monday and Sunday?

Answer 5:

- Rand _____ (Monday to Sunday)

Supporting letter to educators and parents

Energy use assessment activity sheet: Calculating the cost of burning two lights

Dear teacher / parent

This activity sheet is a playful and interactive tool for use by teachers in the classroom and by parents spending time with their children after school or on weekends. Thank you for using information about the use of electricity to nurture and develop young minds.

Answers to questions 1 to 5 reflect an assumed scenario of energy use in the home.

Answers to questions 1 to 5

Suggested example answer for question 1:

20W (watt) - the light in the passage

15W (watt) – the light in the bathroom

Template that can be used for answer 2:

Day	Times the passage light was switched on and off	Number of hours	Times the bathroom light was switched on and off	Number of hours	Number of hours both lights were on
Monday	18:00 – 20:00	2	19:30 – 20:00	0.5	2.5
Tuesday	18:30 – 20:30	2	19:30 – 20:30	1	3
Wednesday	18:00 – 21:00	3	20:00 – 21:00	1	4
Thursday	17:30 – 20:00	2.5	19:30 – 20:00	0.5	3
Friday	18:00 – 22:00	4	21:30 – 22:00	0.5	4.5
Saturday	18:00 – 22:00	4	21:30 – 22:00	0.5	4.5
Sunday	17:30 – 20:00	2.5	19:00 – 20:00	1	3.5
Total		20		5	25

Answer 3:

(Number of watts of the light bulb in the passage) ÷ 1 000 = number of kilowatts (kW)

(Number of watts of the light bulb in the bathroom) ÷ 1 000 = number of kilowatts (kW)

Answer 4:

Light in the passage: Number of watts ÷ 1 000 = number of kilowatts (kW) x number of hours
= number of kilowatt hours (kWh).

Light in the bathroom: Number of watts ÷ 1 000 = number of kilowatts (kW) x number of hours
= number of kilowatt hours (kWh).

Number of kilowatt hours =

Answer 5:

The total kilowatt hour x R per kilowatt hour (as charged by the municipality you live in)

= how much you will pay for the lights in the passage and the bathroom that were switched on between Monday and Sunday.

Note: This energy use assessment activity sheet can be used as a template to help children calculate the cost of countless energy use scenarios in the home over periods of one week, one month or one year.

For instance, ask them to calculate the energy use (kilowatt hours) and the cost (Rand) of using the following lights and appliances for a certain number of hours at different times of the day over a period of one month:

- Outdoor light
- Desk lamp
- Television set
- Microwave
- Washing machine
- Light
- Desk lamp
- Light and desk lamp
- Light above the mirror
- Ceiling light

Once they have done these exercises they will have a clear understanding that “switching off” and using electricity for the shortest period of time possible throughout the home will save energy and result in lower electricity bills for their parents.

Suggest to the children that every home or classroom should have an “Energy Manager”. Even a “Water manager” and a “Recycling Manager”. Suggest to them they ask their parents to join them in doing monthly energy use, water use and recycling assessments.” Parents and teachers can reward managers for targets met or changes of behaviour instituted in the home or classroom respectively.

Kindly rate this activity sheet after having used it. Your input and comments will help us to improve our energy efficiency education material for South Africa’s children.

Was it easy to use the activity sheet?

Circle your rating:
1 = not suitable / 2 = adequate / 3 = appropriate / 4 = good / 5 = excellent.
Comments:

Did children find the activity engaging?

Circle your rating:
1 = not suitable / 2 = adequate / 3 = appropriate / 4 = good / 5 = excellent.
Comments:

Do you think children will apply their new knowledge at home or in the classroom?

Y	N
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Comments:

Would you like to receive more FREE energy efficiency resource material in future?

Y	N
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Comments:

Contact details

Name (teacher / parent):.....
E-mail address (teacher / parent):.....
Contact number (teacher / parent):.....
School name and street address (teacher):.....
School postal address (teacher):.....
Which grade do you teach (teacher)?.....
Home street address (parent):.....
Home postal address (parent):.....

Please e-mail your comments and answers to info@eskomsschoolyard.co.za or fax them to 086 459 4697

More CAPS-aligned educator guides and learner activity sheets on energy efficiency for other grades can be downloaded for free at www.eskom.co.za/idm. Click on the School Yard button.

Moreover, if you have or teach five to seven year olds, *Ruby and the Powerpals* can be downloaded for free at www.rubybook.co.za or www.eskom.co.za/idm. This colourful children’s book features a collection of four stories (together with sing-along-songs on CD) that introduces children to Ruby, a little girl who learns how to save electricity by interacting with four special friends in her home - Laatie the Lightswitch, Hottie the Hot Tap, Freddie the Fridge, and TiniRemote, the television remote.

Sincerely

Eskom Education Programme