

## NST Grade 4 Term 3 Weeks 2

# Energy around us

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Do not answer the following questions. They are for you to consider while reading through the notes.

- What forms can energy take?
- What are energy sources?
- Can energy be transferred from one form to another?

## Energy

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- ultraviolet rays
- infrared rays
- thermal energy
- vibrate
- transferred



Let's find out how energy can be all around us.

Energy comes in many different forms and is all around us.

## A. Identifying energy all around us

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There are many things we do daily that require energy. We get energy from food, so breakfast is an important meal. Movement requires energy and in this picture some people are carrying some boxes, also using energy. There are other kinds of energy in this picture too.

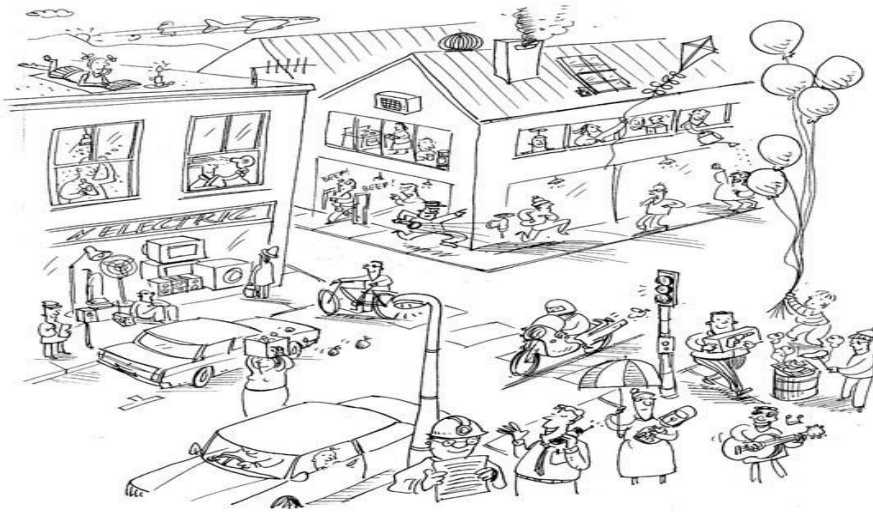
You need to know all these different kinds of energy. There are bicycles, motor cars, motor bikes and an aeroplane and all these kinds of transport need energy to move. Also there are electric lights on the streets which give us the light we need. There is sound energy coming from the man playing a guitar, from people talking, from the traffic. A lady is sun tanning on her roof and absorbing the Sun's energy. There are many activities happening in this town. Observe the different uses of energy.

**INSTRUCTIONS:**

Look at the following picture.

If you have printed these pages:

1. Draw a circle around all the places where you think energy is being used.
2. If you have coloured pencils, you can colour the picture in.



### QUESTION:

A.1..Write down five of the activities that you circled.

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We saw in the activity that energy comes in many different forms, such as light, heat, movement and sound energy. Let's take a closer look at these different forms of energy.

### Light

The Moon may seem like a source of light, but it does not provide light like the Sun. It only reflects the light from the Sun to us.

Light is energy that travels in rays. Some of these rays we can see, so we call that visible light. Some of the rays we cannot see but we can feel their effect on us. We cannot see ultraviolet (UV) rays but they burn our skin when we are in the Sun without sunblock. We can also not see infrared rays but we can feel how hot they are on our skin.



Living things need light energy from the Sun to survive.

Your body also needs sunlight to make Vitamin D in your skin. Without Vitamin D your body cannot absorb calcium and your bones cannot grow and get strong.

Light comes from a light source. Anything that produces light is called a source of light.

- The Sun is a source of light.
- Stars are sources of light.
- A fire is a source of light.
- A candle is a source of light.
- An electric bulb is a source of light.

## Having fun with shadows

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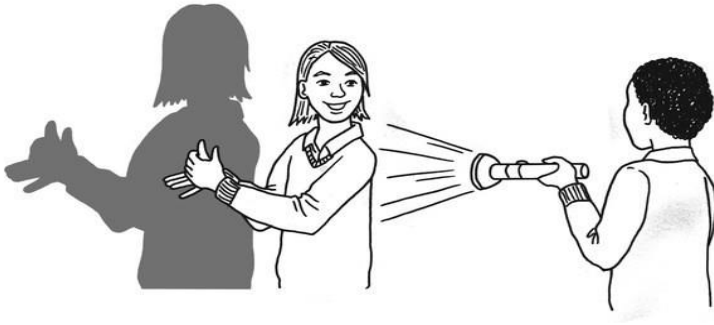
A shadow of an object forms when light cannot pass through it. Let's see how many different and interesting shadows we can make!

### MATERIALS:

- differently shaped objects
- a torch

### INSTRUCTIONS:

1. Find some objects around the house.
2. Once you have some objects, turn the lights off and close the curtains in your room.
3. Stand with your brother or sister near a wall.
4. One of you must hold a torch and shine it onto an object that you have found so that a shadow is made on the wall.
5. Your brother or sister must guess which object it is from the shadow. Do not peak at the actual object!
6. Experiment in your pairs with one object and answer the questions.



Can you make a shadow shaped like a dog?!

## A.2. QUESTIONS:

A.2.1. How can you make the shape of the shadow bigger?

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A.2.2. How can you make the shape of the shadow smaller?

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## Heat

Do you enjoy standing outside on a warm summer day and feeling the warmth from the Sun on your skin? What about warming your hands on a frosty cold morning in front of a fire? You are feeling heat! You know that the Sun provides us with light, but it also provides us with heat.



Look at these lions enjoying lying in the heat from the Sun!

Heat can be found in many different places. Anything that provides us with heat is a source of heat. Let's look more closely at different sources of heat energy.

## Sources of heat energy

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### A.3. INSTRUCTIONS:

A.3.1. Look at the pictures of some sources of heat energy below.

A.3.2. Can you recognise the source of heat energy in each picture?

A.3.3. Fill in the sources for each picture.

A.3.4. Can you think of any other sources of heat energy from everyday life? Add some of your own sources of heat energy into the blank blocks.




## Extend your thinking

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**INSTRUCTIONS:**

1. Look at the picture of the lady in the image below.
2. Answer the questions.

**A.4. QUESTIONS:**

A.4.1. How does the blanket help her to stay warm?

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A.4.2. Do you think a blanket should be included in the table above showing the **SOURCES** of heat energy? Complete the sentence below by drawing a line through the option you do not want. Then write an explanation for your choice:

A.4.2. *Yes I think it IS a source of heat energy / No, I think it is NOT a source of heat energy*

*because...*

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**Movement**

When objects are moving, they have movement. The faster the object is moving, the more movement it has. Look at the examples of movement below.



While you are riding your bicycle, you have movement.



A race car that is travelling has lots of movement.



A rocket that is taking off has a huge amount of movement.



When I am dancing I have movement!



Yusuf



Ayesha



Tom and Jerry

A.4.3. Look at the pictures above. They show different types of movements. Explain why they have movement?

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## Sound

Did you know sound is also a type of energy?! Sound is everywhere.

# B. Observing sound energy around us

## B.1.INSTRUCTIONS:

B.1.1. Close your eyes and be very quiet for two minutes.

B.1.2. Be very still and listen to your surroundings.

B.1.3. Write down five different sounds that you heard.

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Sound is a special type of movement. Sound is energy that makes substances vibrate. Sound travels as vibrations that we can hear and sometimes even feel. All sounds are caused by vibration of substances.

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B.2.Use your dictionary to write down a definition for `vibration'.

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Sound can come from different sources. You can clap your hands, stamp your feet, talk, sing or play a musical instrument. Different vibrations will make different sounds.

## Use a ruler to make sound

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### MATERIALS (What you will need):

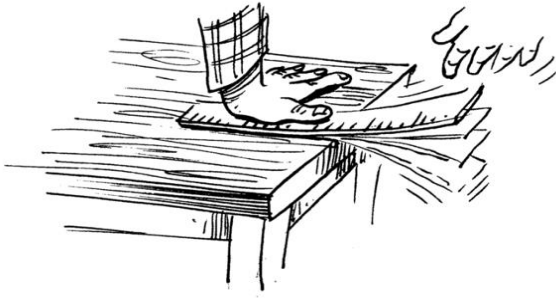
- A ruler



- the edge of a desk

**INSTRUCTIONS (What to do):**

1. Put the ruler on the table so that it sticks out over the edge.
2. Push the ruler down.
3. Pluck the ruler and hear the sound.

**QUESTIONS:**

You can see the vibrations of the ruler as it moves. Can you hear the vibrations?

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What do you learn:

- You cause vibrations by giving energy to the ruler.
- The ruler gets vibration energy from you.
- The ruler is a very simple musical instrument!