



<TACO>  
robobricks

# STEM MAKER KIT

LESSON PLANS



WIND MILL

IMAGINE  
BUILD  
PLAY

## OBJECTIVE

1. Define wind energy
2. Understand that wind is one of the important sources of energy
3. Understand the concept of wheel and axle and its applications in different models.
4. Create a WindMill model using the STEM maker kit.

## WORD WALL

- **Energy**

Ability to do work.

- **Wind**

Movement of air on the surface of earth.

- **Wheel**

A device that is circular in shape, made of hard material that turns on an axle.

- **Axle**

Axle is a rod that goes through the center of the wheel and helps it to move or stay in place.

- **Windmill**

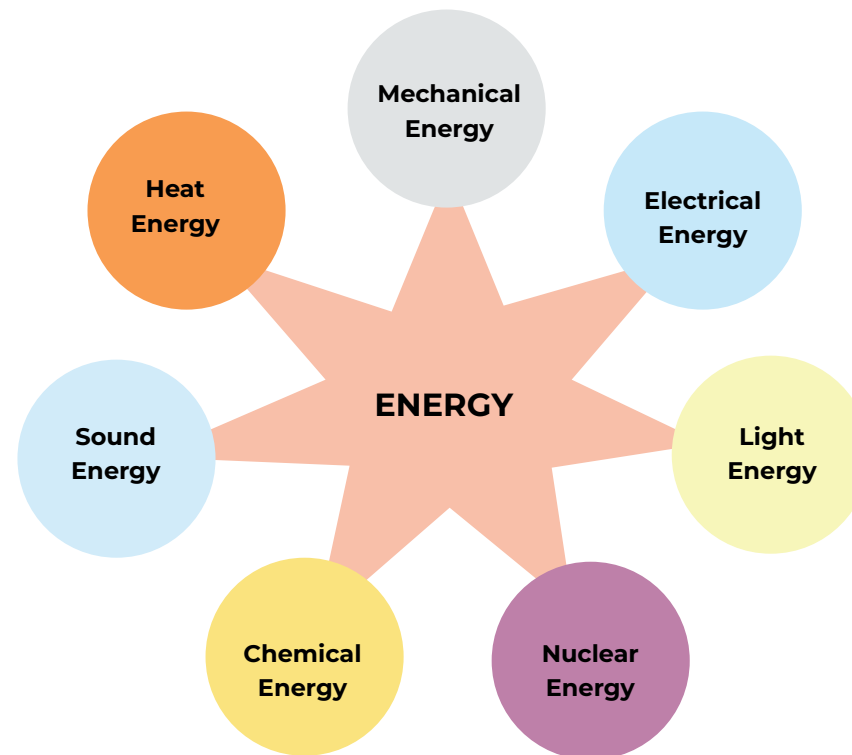
A machine used to produce energy.

## PRE KNOWLEDGE-CHECK

1. Recognize that wind is an important form of energy
2. Analyze how many objects would be required to create this model
3. Complete the model by snapping blocks with one another

**ASK****1. What is energy? What are the different types of energy available?**

Energy is the ability to do work. Energy is also called power. It makes machines also work. There are many forms of energy. Basic types of energy are light energy from the sun, sound energy, wind energy, electrical energy and so on.

**2. What is wind energy? What is the use of wind energy?**

Wind energy is the energy generated from the bulk movement of air on the surface of the earth. The main uses of wind energy are - generating electricity, pumping water, sailing ships and boats, wind sports such as paragliding, kite flying, etc.

**3. What are windmills? What is the purpose of a windmill?**

Windmills are devices for using the energy from wind. Usually, windmills are machines that are used to generate electricity from wind. Huge wind turbines are used to generate electricity from wind.



## IMAGINE

### 1. Have you played with a pinwheel? What will be the outcome, if a pinwheel is used in the following ways?

- Placing it in an air-free or less air environment.
  - » The pinwheel may or may not rotate.
- Facing the pinwheel into fierce wind.
  - » The pinwheel will rotate faster, depending on the wind speed.
- If, pinwheel is facing the ground and sky, when it is rotating
  - » As long as there is wind, it will rotate, irrespective of the direction in which it is facing.

### 2. Apart from generating electricity, for what other purposes can windmills be used?

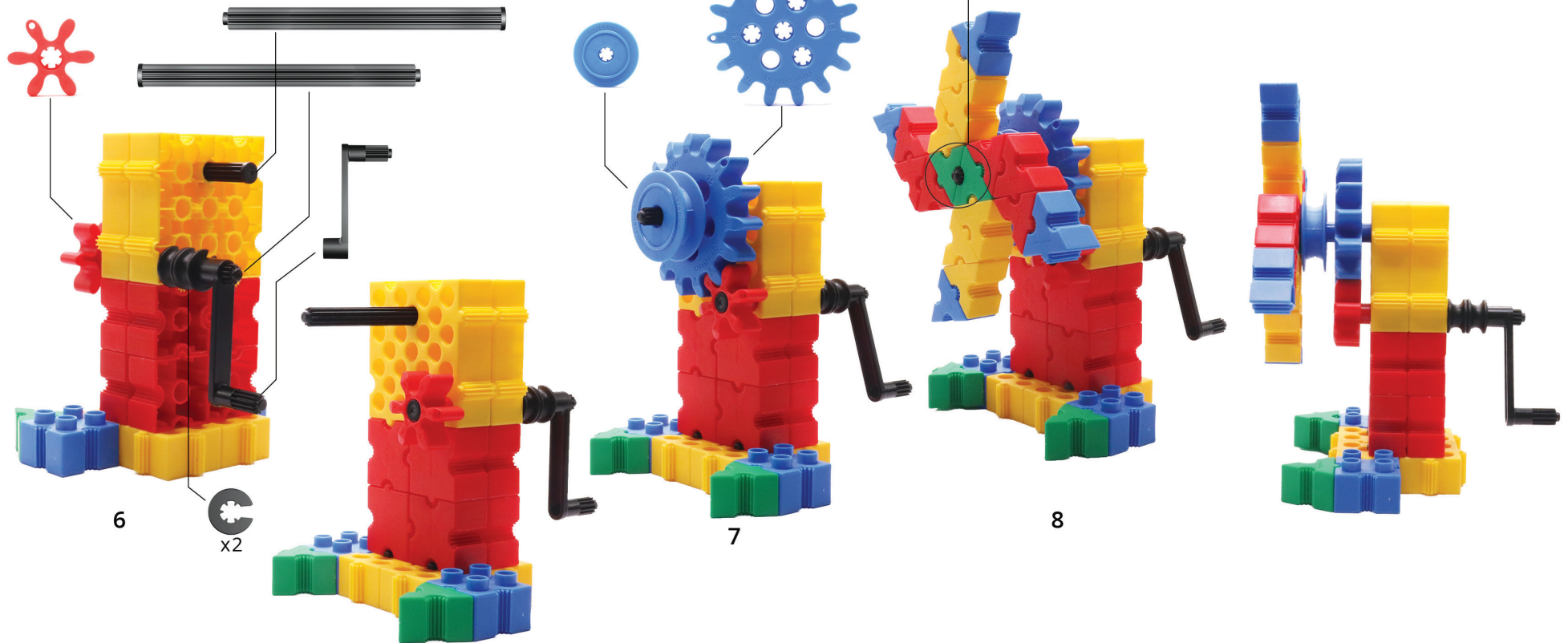
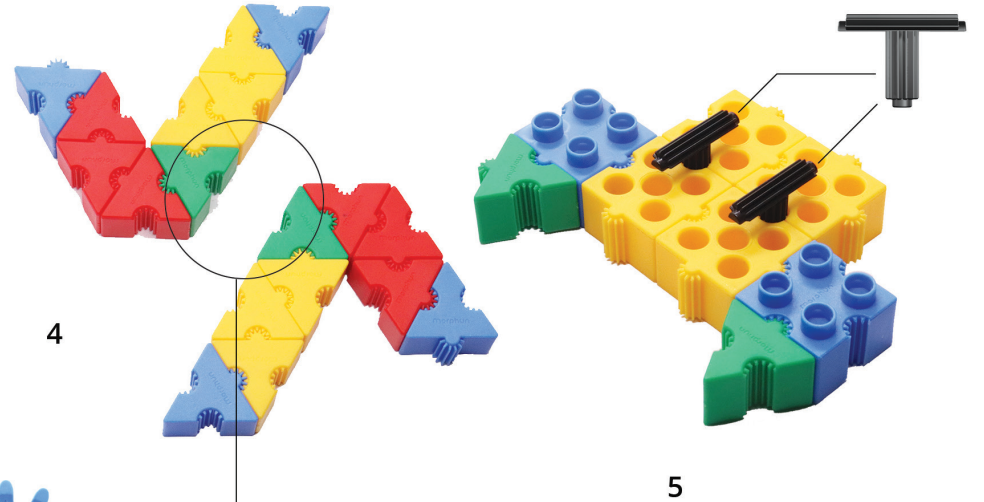
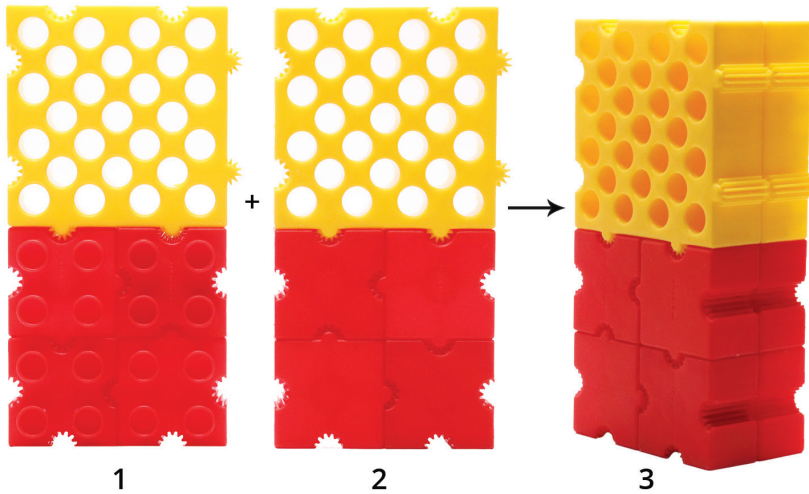
- Grinding grains
- Water pumping
- Extraction of oil from seeds

## PLAN

Discuss among your friends and construct a windmill. Think which among the parts will be required and how many will be required.

# CREATE

Create a windmill with steps by following the steps shown below.



## EXTEND

Replace the big blue gear used in the model with a smaller red gear and observe what happens to the speed of the windmill.

## SHARE

Share the created model with your friends and family and have fun trying theirs.

## DID YOU KNOW?

- Windmills originated in the 11th century. The Netherlands used to have over 10,000 windmills, of which over 1,000 are still in use today. They were mainly used for pumping water out of the lowlands and back into the rivers beyond the dikes so that the land could be farmed.