The **BE ENERGY WISE!** project is part of the ***Consummer Classroom Inter-School Competition 2016-2017*** on the topic of **Smart Energy Consumers.**

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WORKSHEET

"Saving trees"

Waste paper is a valuable raw material. Paper is made of cellulose fibres, which are exceptionally strong, that is why we can reuse it up to seven times. Reusing waste paper it is not only a rescue for trees but also energy and water saving. 17 trees need to be cut down in order to produce one ton of paper. We need 100 tons of waste paper to produce 90 tons of paper.

Exercise 1. Find out how much waste paper is collected at your school in a year. Then count the amount of trees you save this way.

Exercise 2. Check information about the number of schools in your country. Imagine that all of them collect the same amount of waste paper as your school. Then you can count the number of saved trees.

One tree produces the amount of oxygen within a year that is enough for one person to use during two years. It is worth mentioning that a man uses 14-18 m3 of air in the process of breathing and the usage of oxygen is between 60 to 200 grams, depending on physical activity.

Exercise 3. Calculate how much oxygen a tree will produce in a year and how much oxygen will be produced by the saved trees from your school.Finally, try to find out how many people will be able to breathe thanks to the rescued trees.

“Savings at home”

The task for your students is to calculate how much gas, electricity and water is used by their families in a year. Then to check how much their parents pay for bills.

Divide students in groups taking into account the type and the size of a building in which they live:

Group 1: A flat with the area below 60 square meters.

Group 2: A flat with the area equal or above 60 square meters.

Group 3: A terraced house with the area below 120 square meters.

Group 4: A terraced house with the area equal or above 120 square meters.

Group 5: A detached house with the area below 120 square meters.

Group 6: A detached house with the area equal or above 120 square metres.

Collected information need to be presented in a form of a table and a graph.

Then calculate the average monthly usage of gas, electricity and water by each family. After that students may compare the data and they should be able to analyze it to find out what the reason for the highest and the lowest usage of media is. The last task is to write the improvement plan to decide what steps need to be taken to reduce the bills and keep the same quality of life.

“The second chance of waste paper”

Earth Day is a time to think about our planet and what we can do to keep it special, to think about saving water and energy, reducing pollution, recycling, protecting our animals, trees and plants, and generally getting young people interested in protecting their environment. Our school organizes many events on Earth Day. This year as a happening, students prepared robots, everyday objects and animals by using recycled materials. They had some math tasks to complete afterwards.

Exercise 1.

The first task was to calculate how much paper they need to wrap the garbage eater. To complete the exercise students had to split the robot into parts and then count the area of each part. The garbage eater consist of cylinders and cuboids. With the base and hands only the side area was calculated.

The head's area equals :

$Pc1=2\cdot29\cdot20+2\cdot20\cdot23+2\cdot29\cdot23$

Pc1 = 1160 + 920 + 1334

Pc1 = 3414 cm2

The neck's side area equals:

$Pb1=4\cdot10\cdot7$

Pb1 = 280 cm2

The trunk's area equals:

$Pc2=2\cdot39\cdot29+2\cdot39\cdot76+2\cdot29\cdot76$

Pc2 = 2262 + 5928 + 4408

Pc2 = 12598 cm2

The side area of a hand is:

$Pb2=10\pi\cdot41$

$Pb2\approx10\cdot3,14\cdot41=1287,4\ cm2$

Both hands are: 2574,8 cm2

The side area of the base is:

$Pb3=18\cdot\pi\cdot43$

$Pb3\approx18\cdot3,14\cdot43$

Pb3 = 2430,36 cm2

Summing up you get:

P =3414 + 280 + 12598 + 2574,8 + 2430,36

P = 21297,16 cm2

Exercise 2.

Another task was to calculate how many cubic meters of paper the robot is able to consume.

This is just an example of what you can do with students if you want them to practise math using recycled materials.