

***Scenario title/name of the game:*** Friendly insects

***Children’s age (primary school students):*** 8-9 years old

***Time needed:*** 15 minutes

***Content/Subject:*** Four Operations

***Aim of the activity:*** Recognize basic facts of multiplication/division using different strategies that mobilize numerical relationships and properties of operations.

# Introduction

## In this game children must know the 4 arithmetic operations and use the properties of the arithmetic operations to have easier calculations and faster results. Each insect has a property: commutativity, associativity, neutral element, distributivity with respect to addition and subtraction and the rule of multiplication by 0. By going through the necessary steps, they will reach the insect and will find out the result of the calculations applying these operations.

## Resources:

***Programmable robot or a toy:*** the robot is a small and programmable robot that moves in different directions and distances.

***Cards:*** with exercises, with insects and with magic words

***Accessories:*** colorized scotch to make the table on the floor or a map divided in 15 cm squares or a map made of carton

# A detailed description of the scenario

**I**nsects play an important role in nature. Insects are small and shy. Many children love insects and want to be friends with them, but can't speak their language. There is a password for each insect so that you understand it and be friends with it. The password is given in numbers If you solve the exercise correctly, you will have the password! Let's be friends with the insects!

# Steps

1. Students and the teacher decide together the rules of the game.
2. Students make a mental map of the road to get to the insect, alter the calculation is done.
3. Then they program the robot (or put the arrows in the right order). Press start!
4. Students need to choose an insect they want to be friends with. They need to program the robot to get to that insect. When arriving to the insect, they need to sole an exercise. The answer will take them to a magic word that insect is speaking in.

Example of road map:

Choose a ladybug. The steps are 1 up, 2 left-3 down, and 3 right.

Choose the cricket. Steps are 3 left- 2 down, and 3 right.

Choose the caterpillar. Steps are 4 right- 3 down, 5 left.

Choose a butterfly. Steps are 1 right, 3 down-2 right, and 5 up.

Choose the cockroach. Steps are:4 right, 2 up-4 down, 1 left.

Choose the beetle. Steps are: 2 up 2 right, 3 down.

# Tips and tricks for the teacher

Give instructions at the beginning of the game!

Encourage children to speak out loud when they think!

Let children make mistakes. Trying again and discovering the error is part of the game!

Use funny magic words with interjections and hard pronunciation.

Let children choose their favorite insects.

Play the game in teams to add competition, if you aim to increase the speed of solving the tasks!

# scenario implementation and other resources

* Maps, arrows, other materials especially created for this scenario.
* Didactic materials: cards with insects, cards with exercise, cards with magic words

# Variants of the scenario/the game

The same game can be played in teams to add in competition if another aim is to speed up solving the tasks.

Increase the difficulty of the exercise. Add time limitation for solving the exercise and spice things up by introducing the possibility to not get the magic word if the calculation is not done in time.