Cardboard Calculating Machine

Subjects Integrated in Lesson: Math and Art	Grade: 4-5
Suggested Time: 50 minutes	Designer: Ziyad Khan

Overview

Students will work in groups to design a manual calculating machine using a cardboard and strips of paper with numbers and signs printed on them. They will then test the machine by performing some basic mathematical operations on it like addition, subtraction, multiplication and division to make sure their machine is working accurately.

Objective

Design and build a calculating machine using cardboard.

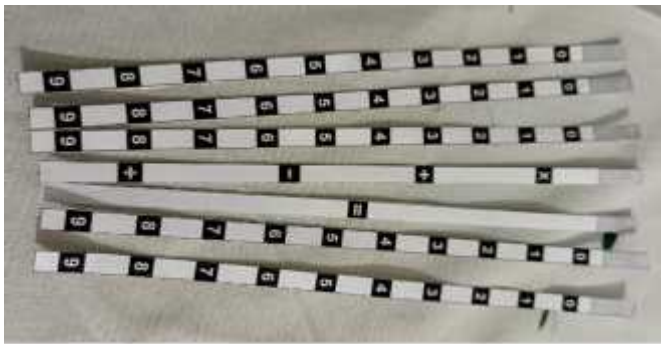
Perform basic mathematical operations using the machine.

Understand how to use different materials to construct the machine.

Develop higher order thinking skills by discussing with each other how they can upgrade the machine to perform more complex mathematical operations on it.

Required Materials

Cardboard/Used Carton	
Cutter	To be used under teacher's supervision
Glue gun	To be used under teacher's supervision
Numbers and signs templates	(As shown below)
Lead pencil	



The Lesson

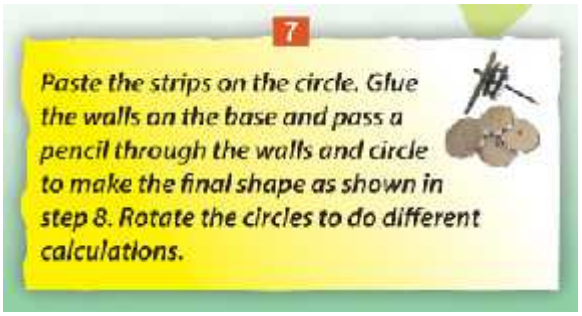
Part 1: Introduction (10 minutes)

Teacher will explain to the students about the activity they are going to perform, the materials required for it and the steps to be followed. The teacher will also tell the students how to perform mathematical calculations using the machine once the students are done building it.

Part 2: Building the manual calculating machine (30 minutes)

1. The teacher will divide the students into groups of 4 to 5 students each.
2. The material will be distributed among the groups in required quantities.
3. Student groups can exchange materials among each other as per need.
4. Students will build the machine by following the steps as explained to them by the teacher.
5. After building the machine, the students will now perform different basic mathematical calculations using the machine and check if the answers are correct.
6. Every student in the group should perform at least two calculations on the machine.

Some important steps involved in making the machine are as following:



The machine will look like this after completion:

Part 3: Q&A session with students (10 minutes)

After the completion of the activity, the teacher should have a questions and answers session with the students. He/she can ask questions like:

1. How much fun did students have while doing this activity?
2. Was it easy to build the machine following the step wise instructions given to them?
3. What was the easiest part of the activity?
4. What was the most difficult part of the activity?
5. How can the students improve their machine the next time they will build it?
6. Were the students getting correct answers of their calculations?
7. Who was the best team member in every team?