**Activity**

Lego® Language

MODULE 13: Computer Languages, Applications, and Emerging Technologies

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# Module 14: Computer Languages, Applications, and Emerging Technologies

## Activity: Lego® Language

The student uses Lego® or other interlocking bricks to demonstrate precise directions that are needed for a computer to understand what it needs to complete.

## Standards Assessed

* **12.03** Express an understanding of basic terminology used in programming (e.g., algorithm, binary, code, block-based, objects, functions)

## Teacher Notes

This is a demonstration of how important it is to give exact directions and what can be done if the directions are not understood. Students will be explaining to each other how to build a Lego shape.

This activity requires a bag of Lego® bricks for each student. Put the same number of bricks in each bag. The size of the bricks can vary.

Chairs will need to be arranged in pairs and back-to-back to start. Seats can either be assigned or allow students to select them. If there is an odd number of students, the teacher may need to be the computer/program for the extra students.

Rules for part 1:

1. Students sit back-to-back.
2. One student is the **computer**:

* The computer cannot talk.
* The computer can only listen and complete the task the programmer tells them.
* The computer can say the word “ding” when the task is complete so the programmer knows you are ready for the next step.

1. One student is the **programmer**:

* The programmer tells the computer what to do.
* The programmer may only use direction-type sentences such as “Place the blue brick on top of the red brick.”

1. The Teacher distributes bags of Lego® bricks to each student. Neither the programmer nor the computer may turn around or look at the other’s bricks.
2. The programmers will put the bricks that are in the programmer’s bag together in any order they wish.
3. When the programmer is ready, they can give the computer directions on how to build the shape they have just created. (Only words in direction form may be used.)
   * Do not tell computers to open the bag, the programmer should be telling them that. This can be used as the 1st teaching moment if the computers open the bags before the programmers tell them to. Ask why they opened the bag. Did the programmer tell them to open the bag?
4. The computer will build the shape exactly how the programmer explains it.
5. After all the programmers have completed the directions to the computers and the computers are done building, have the students turn around and compare the shapes. Are they the same?

## Estimated Student Completion Time

* 45 minutes x 2-3 classes to complete the activity

## Activity Rubric

Consider evaluating the student’s work based on measures of quality. For example, with a maximum of 4 Points Possible, the following could be applied to the activity:

* **1 Point Earned** = ***Needs Improvement*** (the student work did not meet more than 50% of the requirements and did not follow instructions)
* **2 Points Earned** = ***Developing*** (the student met between 50% and 75% of the requirements and generally followed the instructions)
* **3 Points Earned** = ***Sufficient*** (the student met between 75% and 90% of the requirements and clearly followed instructions)
* **4 Points Earned** = ***Above Average*** (the student met > 90% of the requirements and followed all instructions)

# Activity: Lego® Language

**Students Instructions**: Complete the Lego® Language activity as instructed by your teacher and be prepared to answer the following questions in class:

1. Did your shape match the shape of your partner?
2. How could directions be improved?
3. What might make it easier for you to complete the task?

New Program:

1. Next, you will switch roles. The programmer now creates a new shape.
2. Complete the activity as instructed by your teacher.