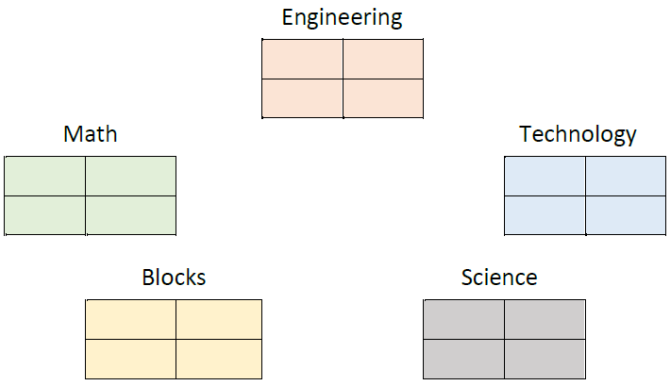
VOLUNTEER INSTRUCTIONS

# STEM Skills Activity

Students will participate in several STEM challenges in a fun and active way.

**SETUP: Arrange desks (or tables) into 5 groups. If possible, move chairs away from desks.**




**Goal***:* Students will use teamwork, leadership and soft skills through STEM activities followed by discussion.

**Introduce yourself and briefly share your career/education background.**

- **Opening remarks**:
  - Let the students know that they will be participating in several STEM activities.
  - Ask the students if they know what STEM stands for (Science, Technology, Engineering and Math)
  - Discuss why STEM is so important. STEM jobs are in high demand, which means there are not enough workers to fill positions. Basic concept of supply and demand. Ask the students, "What do you think happens when you have a skill that is high in demand?" Pay rates go up.
  - Examples could be: In the technology field where technology is changing so rapidly people don't have time to be trained quickly enough. The medical field when we don't have enough people going into specialized fields. Also, the trades, such as electricians, plumbers, welders, and automotive technicians. We are in a situation where the average age of skilled trades workers is 45 years old which leaves many positions in a huge demand across the country. These positions can be careers that may require only a high school diploma while others may require certification or a four-year degree.

## Activity: STEM Stations

**Steps:**

- Ensure that the students are evenly divided among the 5 groups of tables.
    - Each student gets one handout/answer sheet.
- Each group will have 3 1/2 minutes to complete each activity at each of the five stations.
- Tell the students that they will work on 5 different STEM activities, one at a time, rotating every 3 ½ minutes.
- Briefly explain the activity at each table.
- Inform the students that you will be keeping the time and when they hear the timer and my stop command, they should stop, you will score their answer sheets and then they will move to the next station, taking their answer sheet with them.
- Once they have all moved to the 2nd station, say GO and repeat the same process.
    - Students should work together as a team and move as a group from table to table.
    - Instructions are on a table within each group, in case the students need them for additional reference.
- Once all the students have completed the 5 activities, you will check the score sheets and determine which group has the winning score.

- **Description of each activity:**
    - **Math activity:** Students will solve each of the 6 math card problems. Each student will take a turn rolling the die and solving the problem on the corresponding math card. If they need help, they can ask other team members to help. They are a team working together to complete all 6 cards in 3 ½ minutes. Record their answer on the answer sheet. They will receive **1 point for each correct answer**.
    - **Engineering activity** - Students must build a cantilever (a structure that extends horizontally and is supported at only one end) using the materials provided. The cantilever must extend 12 inches from the end of the table. The judge measures with the ruler provided and the ruler cannot be used in the cantilever construction. **If the team completes this challenge in the allotted time, they will receive 5 points on their answer sheet**.
    - **Technology activity** – Students must correctly program the mouse's movements to eat the cheese and finish the maze. The answer key has the steps shown in the correct order. Note: They **will** use all the programming squares. **If the Student completes the challenge within the allotted time, they will receive 5 points on their answer sheet**. If the finish they should help their teammates.
    - **Science Activity**: The students will use the diagram and construct the circuit pieces to make the light bulbs light up. **If the team completes the challenge within the allotted time, they will receive 5 points on their answer sheet**.
    - **Blocks**- The students will take turns turning over a card and will add the block that is on the card to the structure. When completed correctly, they will put the card

aside and another student will draw a new card. **Each team will get 1 point for each correct completed card. A total of 18 points is possible.**

*Note: A teacher may be asked to help with the building block station, to ensure that the students are building the structures correctly.

**Closing Remarks:**

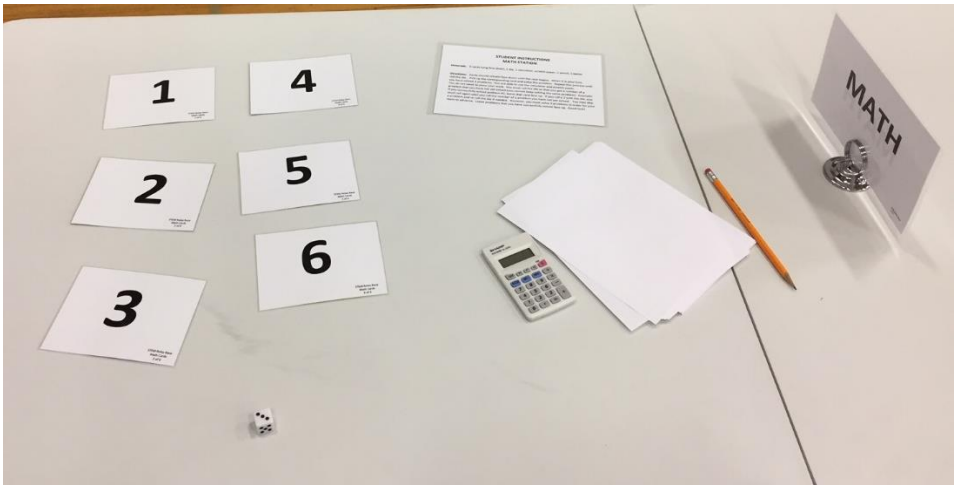
- What was required to be successful at the different station?
  - Possible answers:
    - Teamwork
    - Leadership
    - Communication
    - Conflict Resolution
- How does this relate to future workplace dynamics?
  - Possible answers
    - You need all of these when working in any group, including work groups.
    - Leaders have a lot of the same attributes. Many times a leader isn't chosen, but due to the attributes displayed, a person develops into the leader.
    - Teamwork is important because everyone has different thoughts and strengths and working together builds great results.
- Have you ever heard the phrase: "Talent wins games, but teamwork and intelligence win championships." --*Michael Jordan*
  - How can this relate to work or careers or life in general?

SET UP INSTRUCTIONS

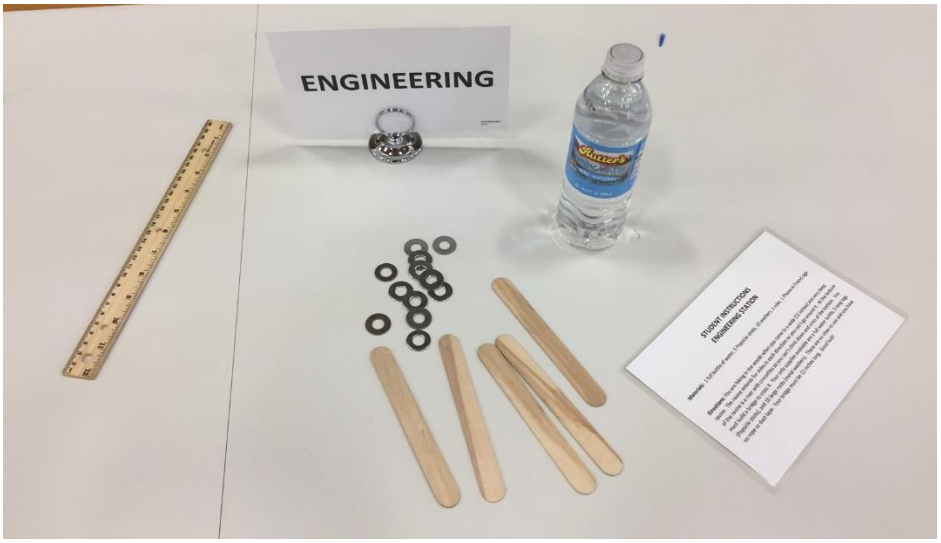
# STEM Skills

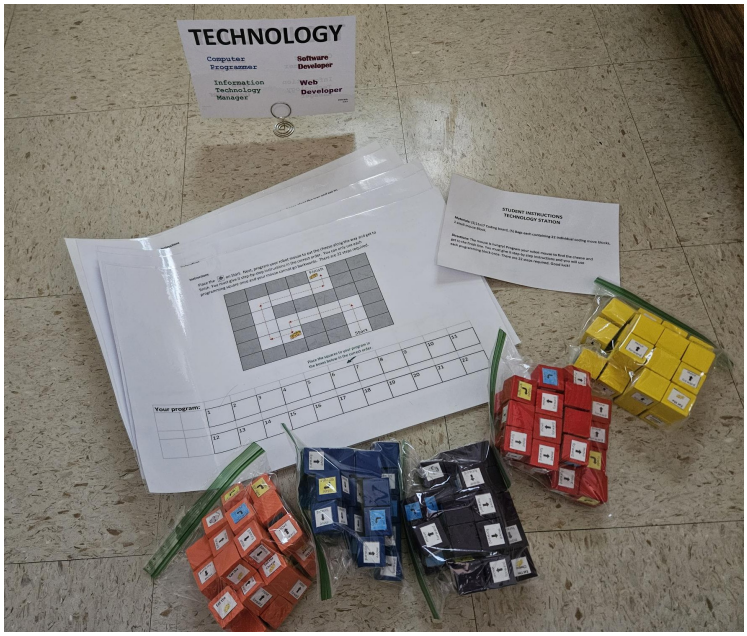
Tables/desks should be arranged in 5 groupings. Each group will have a different STEM activity placed on it. Below is a picture or guide on how to set up each grouping.

- **Math** – 6 cards lying face down, 1 die, 2 calculators, scratch paper, a few pencils, 1 Student Instructions card, 1 MATH sign in a silver holder.

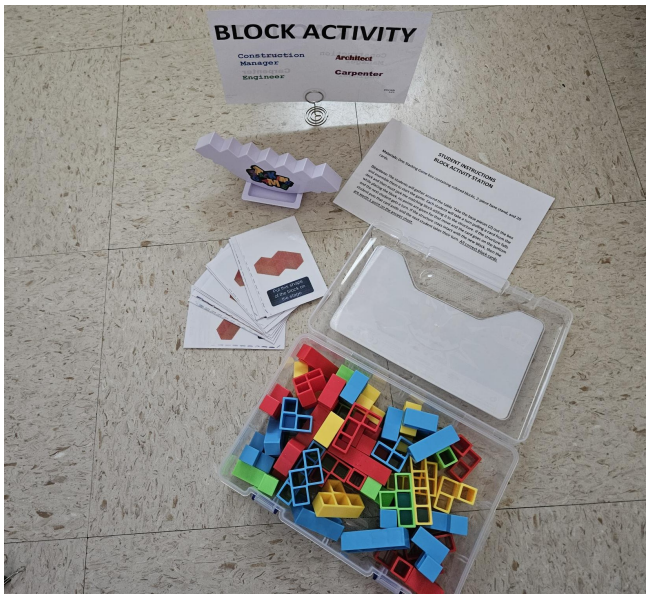



- **Engineering** – 1 full bottle of water, 5 Popsicle sticks, 10 washers, 1 ruler, 1 Student Instructions card, 1 ENGINEERING sign in a silver holder.

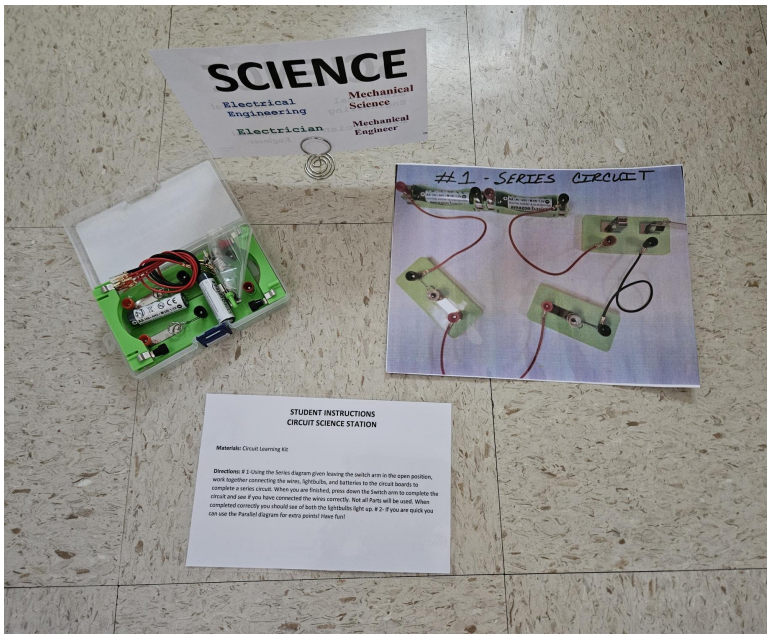





- **Technology** – 5 Programming the Mouse boards, 5 bags of different colored individual programming blocks,each bag contains 23 blocks. 1 Student Instructions card, 1 TECHNOLOGY sign in a silver holder.




- **Building Blocks**
  There should be 1  Game box with colored blocks and a 2 piece stand, and a pile of 20 cards, student instructions card and 1 BLOCKS ACTIVITY sign in a silver holder.




- **Science- Circuit Activity**
  1 Circuit Kit box Containing (2 batteries, 2 light bulbs, 1 Switch board, 2 Bulb boards, 2 battery pack boards, 3 Black and 3 Red wires with connectors) , 1 student instructions card, 1 Picture of Series circuit 1 Picture of Parallel circuit (front and Back), 1 SCIENCE sign in a silver holder.